*Gleanings in*

FEBRUARY 1980

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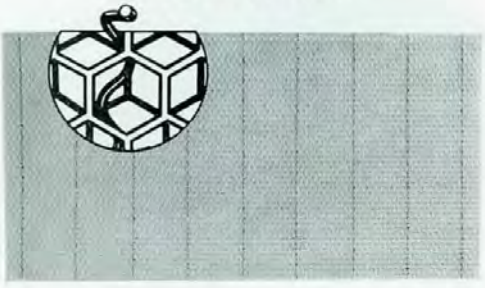

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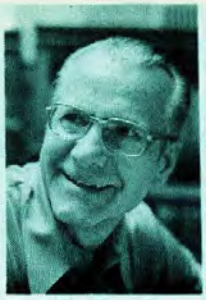

Lawrence Goltz

# Gleanings in Bee Culture


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Created to Help Beekeepers Succeed
107 Years Continuous Publication by the Same Organization


CONTENTS



## COVER STORY

This lonely, vacated prairie church is being used in a rather prosaic, though utilitarian role in it's last years as a beekeeper's storehouse at Ludlow, South Dakota. Photo by Ken Adams.


# PAPIO VALLEY HONEY HARVESTING KIT

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# Monthly HONEY Report

LAWRENCE GOLTZ

**January 10, 1980**

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

| Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged | Reporting Regions 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 60 lbs.(per can) White | 39.00 | 31.50 | 32.10 | | | 35:45 | | 30.40 | 31.50 |
| 60 lbs. (per can) Amber | | 29.00 | 31.20 | | | 32.25 | | 29.40 | 30.50 |
| 55 gal. drum (per lb.) White | | .52 | .55 | .55 | | .56 | | .52 | .53 |
| 55 gal. drum (per lb.) Amber | | .49 | .53 | .53 | | .52 | | .50 | .48 |
| 1 lb. jar (case of 24) | 25.00 | 22.50 | 22.00 | 19.75 | 33.50 | 21.15 | | 22.30 | 23.25 |
| 2 lb. jar (case of 12) | 24.00 | 21.15 | 20.00 | 18.30 | 33.00 | 20.50 | | 19.75 | 20.70 |
| 5 lb. jar (case of 6) | 29.00 | | 23.50 | | | 23.35 | | 21.10 | 24.30 |
| Retail Honey Prices | | | | | | | | | |
| ½ lb. | .83 | | .73 | .67 | | .69 | | .69 | .74 |
| 12 oz. Squeeze Bottle | 1.30 | 1.10 | | .93 | 1.50 | 1.15 | | 1.13 | 1.20 |
| 1 lb. | 1.38 | 1.30 | 1.22 | 1.10 | 1.75 | 1.10 | | 1.16 | 1.37 |
| 2 lb. | 2.55 | 2.39 | 2.50 | 2.00 | 3.45 | 2.02 | | 2.02 | 2.64 |
| 3 lb. | 3.50 | | | | 4.75 | 3.25 | | 3.13 | 3.72 |
| 4 lb. | 5.00 | 4.49 | | 3.90 | 5.75 | 4.00 | | 4.36 | |
| 5 lb. | 5.85 | | 5.19 | | | 4.75 | | 4.96 | 5.37 |
| 1 lb. Creamed | 1.40 | 1.35 | 1.29 | | | 1.42 | | 1.30 | 1.43 |
| 1 lb. Comb | 1.85 | | 2.02 | | 1.87 | | | 1.50 | 1.45 |
| Round Plastic Comb | 1.75 | 1.95 | 1.50 | | | 2.00 | | | |
| Beeswax (Light) | | 1.75 | 1.85 | 1.85 | 1.70 | 1.80 | | 1.77 | 1.80 |
| Beeswax (Dark) | | 1.70 | 1.80 | 1.75 | 1.65 | 1.75 | | 1.70 | 1.75 |

Misc. Comments:

**Region 1**

A warm fall has caused the bees to be more active than in most years. Very little snow through December. Warmer weather has allowed more activity than usual and some brood rearing. Bees should be checked even if they were in good shape early in the fall. Market for honey keeping up at higher prices.

**Region 2**

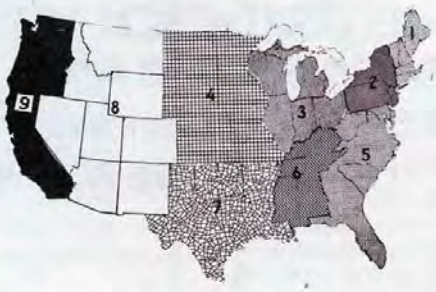
Bees wintering well. Honey prices in retail stores has advanced. Honey sales in pounds reported off by Pennsylvania packers. Moderate winter.

**Region 3**

Bees were active during moderate temperatures through December. Little snow, but considerable rain. Bees appear to be wintering well. Honey sales continue good.

**Region 4**

Very little snow and unseasonably mild winter through December. Colonies seem to be in good to excellent condition. Honey sales have been very good.




**Region 5**

Honey sales moderate to fair. Bees in fine condition although some feeding may be needed due to unusually warm conditions through December. Bees have had many cleansing flights.

**Region 6**

December was above average in temperatures and precipitation was normal. Bees are wintering well. Honey at wholesale and retail showing average movement. Bees consuming stores fast and may need early feeding.

**Region 8**

November was cold but bees were flying in December. This may necessitate feeding if severe winter comes later. Spot checks showed some brood rearing by bees in Colorado. Moisture needed in Montana where it has been an open winter through December. Very dry in Idaho, no heavy snow through December. Outlook poor for summer irrigation reserves.

Honey prices steady, sales satisfactory at wholesale. Retail honey sales over the holidays were above normal, the good publicity on using honey in holiday baking was partly responsible.

**Region 9**

Weather warm and wet in Northwest. Honey sales normal to a little below average in December.

In California the demand for packaged honey has improved as cooler weather helps to stimulate consumer purchases. Over 2 million pounds of California honey has been placed under loan pro-

(Continued on page 101)

# SCIENCE FAIR WINNER

MICHAEL DUNLAY, a 12 year old with 3 colonies of bees, recently won first prize at the Town School for Boys Science Fair and a second prize in the Behavioral Science section of the San Francisco Bay Area Science Fair, for his project entitled " Honeybees Co-operate to Survive?" Competition for the Bay Area Fair came from 8 counties and some 5 00 projects competed for the 300 spaces at the fair. He also has earned the Boy Scout Beekeepers merit badge, last summer, and is the only boy, at least in recent years, to have done so in urban San Francisco. Mike and his parents, Michael and Carolyn Dulay are all members and active in the San Francisco Beekeepers' Club. Mike has recently paid off the money he borrowed to get started with his bees and is beginning to make a profit from his honey.


**Mike Dulay, 12-year-old beekeeper with his award-winning beekeeping project. Photo by Hal Randall.**

# The Behavior of Two Societies

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

SEVERAL THINGS THAT the honeybee society does, our human society does also — and in a somewhat similar manner. Take, for example, the committee system of each of these two societies.

The honeybees employ a committee plan in finding a new nest site in the wild before swarming. Human society appoints committees in an effort to determine what it should do about many of its projects. The nest-finding committee of the honeybee society is self appointed — in accordance with the fact that every bee is largely her own mistress, and not to be ordered about.

A human committee, whether it be one established by a branch of government, or one set up by a corporation to decide, let us say, whether the concern should establish a branch in a foreign country, is always appointed.

Lately, many of the human committees have tended increasingly to take on the characteristics that typify honeybee nest-finding committees.

Prior to the 1960's a human committee normally met with all members present together in one room. Often it spent many days trying to come to grips with its problem, whatever it might be. Meanwhile each member of the committee felt that his individuality and personal talents demanded his haranguing his fellow members with all the ideas and reflections he could command about the problem at hand. Always, or nearly always, his comments were given in an oracular manner designed, first of all, to establish his own personal reputation as a thinker and orator.

Much time, often months or even years, was required to give each committe member time to establish his identity and the magnitude of his ideas. Meanwhile, of course, all members except the speaker must listen, often in laborious boredom.

Each committee member is then given copies of the other members' answers, and asked to write a second set of answers, and perhaps a third or fourth. Usually by the time a third set of answers has been written, something approaching a consensus has been reached — all without a great expenditure of time and pain in being impressed with other committee members.

My experience with the Delphi technique is more limited than with the older and traditional committee system that was so time comsuming. I like it better. It seems to enable a committee to arrive at logical answers without all the pontificating the old method tolerated.

The Delphi technique is obviously not attainable by the honeybee society since their communication must be largely by way of the dance rather than the written word.

### The Materials Used by Man and the Honeybee

It is rather challenging to us today who live such complicated lives and who enjoy such extensive and varied diets, to note that our ancestors behaved quite simply, and ate a markedly restricted list of foods.

Even our grandfathers ate very simply in many cases. Many of them consumed pork and chicken chiefly as meat. For large numbers, fish was not available except on a limited basis because of the lack of refrigeration. Buckwheat in some areas was the chief cereal. Garden vegetables could be preserved in many instances only by way of canning or drying. Sweets were chiefly gotten from maple trees and from the honey produced by bees. Yet it was enough. And appetites were in most cases stimulated by hard work which helped make digestion efficient.

The honeybee which is at a stage of development even more primitive than that of our grandfathers, gathers only four substances: nectar, pollen, water, and propolis.

### What is Propolis and for What is it Used?

Propolis is a sticky resin-like substance which bees gather from certain trees which exude it, chiefly (in the U.S.) poplar, birch, elm, adler, beech, conifer, and horse chestnut trees.

Bees gather propolis largely for the following purposes: To make interior sides of the nest free from water intrustion; to combat disintegration of the walls of the nest (as in a tree cavity); to restrict the size of the entrance to the nest (chiefly to reduce the intake of cold winds into the nest); to coat the wax combs; to strengthen the comb, chiefly at the points where it is attached to the sides of the nest so that it will support heavy loads of honey; to cover sharp or rough parts of the interior of the nest; to fill holes or spaces in the nest that are more or less than ¼ inches in width; to incarcerate foreign objects which are too heavy for the bees to remove from the premises.

Thus we see the bee using a single product for a great variety of important purposes. Without propolis the bee colony would often be unable to carry on their tasks. But is propolis such a simple product?

A review of propolis has recently appeared in **Bee World** (1979). The writer, E. L. Ghisalberti, cites authorities who assert there are no fewer than 26 compounds in a typical sample of propolis. Constituents are believed to vary somewhat, depending on the individual source.

### Is Proplis Antiseptic?

In folk medicine this substance is given credit for possessing antiseptic and healing qualities. For example, during the Boer war it was used to some extent in surgery in the belief that it helps in the healing of wounds and assists in tissue regeneration.

Some writers have stated that it has an astringent value in skin creams and ointments. A long list of antibacterial qualities in propolis has been compiled from time to time. Ghisalberti states without equivocation that "propolis possesses antibacterial activity."

Unfortunately, adequate research on the individual values of propolis have not been made. As a consequence, many of the medical and therapeutic claims made for it by some believers must be held in

question until its properties have been definitely proven.

### Gathering and Using Propolis

From the list of uses which I enumerated earlier, it is readily understandable that a strong colony of honeybees has need of a considerable quantity each year. In some cases such a colony will collect nearly a pound annually. Often the bees that do the collecting put the propolis to use.

Usually, however, the gatherer of propolis has to have some help in removing the substance from her pollen baskets (corbiculae). Observers of individual bee activity have noted that sometimes a bee has to wait anywhere from an hour to two days before another bee makes the observation that a propolis gatherer needs relief. Propolis gatherers are usually older bees, beyond the wax producing age.

The gatherer moistens bits of propolis as she finds them, then bites off small quantities, and with the use of her legs passes the particles to her pollen baskets. One of the uses of propolis in the nest is to seal interior walls in order that moisture may not escape when it is needed in the brood nest. So far as I know, no research has been carried on to determine the quantity of water normally gathered by a colony. Except in the hottest weather I should guess that the quantity is not great since the nectar brought into the hive contains, at times, as much as ¾ water. This is not a waste substance but one as clean and pure as the part of the nectar which the bees retain for placement in the cells.

### Characteristics of Propolis

When propolis is cold it is hard and brittle. When warm it is soft and can be very sticky, especially shortly after being used in the nest. It is not definitely known whether bees change the nature of propolis or add anything to it after gathering it. If they do, it is likely that the items would be in the form of enzymes from the bees' saliva.

Producers of comb honey traditionally attempt to use hives and hive equipment and combs that are largely free of propolis. Otherwise, since bees transfer propolis freely, either the wood sections or the comb honey itself may become contaminated with propolis. Toward the end of the honey season, particularly, the bees tend to apply propolis freely at nearly all points. One reason for this liberal use is to keep moths out of the supers.

Honeybees remain creatures that limit the number of different items they collect. Man, on the other hand, has markedly proliferated the number of items he gathers.

### Common Use of Resources

We observe quite a contrast between the honeybee society and the human society in the matter of their members having access to resources.

Man finds difficulty when he gives anyone access to the public treasury, or to his own. Elected officials, many of whom seem never to outgrow their political inclinations, are usually not allowed access to public funds.

Not so the honeybee. Sometimes when gathering propolis, a long and arduous task, the worker bee finds it necessary to return to the hive to secure needed sustenance before continuing. This is especially true during the comparatively long period needed to be devoted to the project. I think it's significant that she goes to the colony hoard rather than to a flower to secure the food she needs, a field bee frequently needs to take food before venturing out on a gathering mission that may require from twenty minutes to two hours. The entire swarming assemblage traditionally engorges before leaving the nest.

Can it be that each bee is oblivious of the fact that the others are dipping into the food treasury? This can scarcely be so since they are quite aware of the behavior of others at times. Does each one look upon the stored food as being the possession of the others except for the part she herself has stored? I think we may conclude that each one does little thinking about the matter.

Nothing in an individually bee's experience or inference give her any reason to question the propriety of what her sisters do. We do see some concern shown when one of them wishes to influence the behavior of others in a positive direction, to stimulate it, to change it as, for example, when urged to perform a dance, or when desiring to break up a cluster. But as for any feeling of doubt or criticism of her sisters' taking their fill of food from the pantry shelf, there seems to be none.

The single instance of evidence of reluctance to perform whatever needs to be done, so far as I have ever observed, occurs when a gatherer of propolis is left hours on end before another bee ventures to help her unload. Does this reluctance stem, perhaps, from a dislike for the task, or does it have its excuse or reason in the job being one that requires special skill restricted to a few knowing individuals?

We have noted that it is the older bee that gathers propolis. Perhaps it requires an older, experienced, bee to help unload a ball of sticky propolis. Could it be that the wait is prompted by the fact that the heat of the hive over an extended period is needed to soften the load before it can be unloaded and applied where needed?

### Variety of Choice

It may possibly be that one reason for the uniform success of the honeybee society lies in two facts which are not true in man's world: All honeybees concentrate their efforts on one vocation — making honey. The second fact is that most bees enjoy the benefits that come from change. Many young people find it difficult to settle upon a vacation. Often they fail to find the desired one at first trial.

This problem does not confront the honeybee. She tackles her house cleaning job as soon as her hairs are dry and she realizes she's a bee. Change, however, is one of man's primary urges. He seems in most cases to need variety of experience, and this is hard to achieve when he's tied down to one exacting vocation all his life.

Not so the honeybee. She has few if any choices, so she harbors no doubts, no hesitation. But she does experience a stimulating effect from the fact that she goes from housekeeping to tending brood, to making wax, to guarding the front door, and to the most exhilarating of all occupations — gathering from the fields. Some take up special responsiblilities such as scouting or propolis gathering, but it's all a part of the gathering process.

But the beekeeper has some choices in producing honey: He can produce liquid honey, or comb honey. In the comb honey category he has a choice between sections (wood or plastic), or cut comb frames.

### The Significance of Storing

Both the human society and the honeybee society store materials.

What other animal does so? Except for squirrels, I can think of no animal that stores to a similar extent. Even the storing of winter food by squirrels is to a lesser extent. To the degree that the squirrels store food in the ground, their storing is haphazard and careless, and often nonproductive.

Many other animals, especially the birds, gather food, and materials for nests, and so on. But they seem not to store it in great quantity.

Man has not always found food storing easy. For example, the Indian of North America had available few highly desirable receptacles for the food he gathered. In cases where he had suitable pottery he used that. But the Indian of North America was not an habitual maker of much pottery, especially in the Northeast. Consequently he often used leather pouches, hollow logs, and woven baskets.

The Indian was faced, too, with a dearth of good places to stash his receptacles. The wigwam or tepee was somewhat fragile. It was not too spacious. It was often damp. It was somewhat vulnerable to pilferage by animals. Just the secure storing of seeds for the following spring planting constituted a challenge. If the challenge was not successfully met, and the seeds were pilfered, damaged by frost or dampness, or lost altogther, primitive man was faced by an overwhelming problem.

Even the white settlers of this country faced at least moderate challenges in storing their crops and seeds satisfactorily. Storage buildings were expensive to build and to keep rodent free.

Much of what the early settler needed to store required special handling. Many resorted to earth cellars for storing certain vegetables such as potatoes, parsnips, carrots squash and turnips.

The storage of meat or fish presented a problem. Placement of fish or meat in salt brine was a favorite practice. Smoking and drying were resorted to also, as they were by the Indian. But after this treatment had been applied, proper storage frequently presented problems, especially to the Indians. Only comparatively recently has canning in glass been available to housewives.

Indian squaws must have had some difficulty in scrounging satisfactorily for a tempting breakfast. Indians often shared in the spoils of a kill, but seldom joined in communal cooking except at feast times.

Even the availability of the modern home freezer to the homemaker who ventures to produce all or part of his own food needs is not without considerable cost of purchase and of operation.

Not so with the honeybee. To begin with, she elects a rather admirable rustic home. This she seals with propolis and thereby reduces the effects of the onslought of winter.

As a storage place she specializes on the honey comb which she herself manufactures from wax out of her own glands, and strengthens it with propolis which she gathers free and freely.

Few intruders can vandalize her stores if she has chosen a nest wisely. And we can rest assured her nest selection is based on the exercise of much inherited wisdom plus some very careful committee judgment.

Her stores, honey and pollen, are the consequence of her own selection and her own efforts. They are pure; they are bacteria free. Though her stored pollen supplies are not quite so nutritious as a freshly gathered supply, it has usually been sealed under honey and wax and is therefore quite satisfactory.

### The Special Qualities of Honey

Honey is a substance which if properly ripened and kept free of the absorption of excessive moisture seldom spoils. Furthermore there are few if any living things that can endure in it.

Honey has defensive mechanisms that thwart the growth of microbial organisms This is due to the presence of three qualities: Acidity, osmotic strength, and the presence of inhibine.

ACIDITY. The general range of honey pH is from 3.2 to 4.5 (White 1975). This degree of acidity will not tolerate bacterial forms.

OSMOTIC STRENGTH. Honey is a supersaturated solution. In non-scientific terms, it exerts such a tremendous absorbing strength that it pulls moisture from any living foreign substance with which it comes in contact so that the foreign substance loses its liquids, and consequently its life.

INHIBINE. Inhibine is the term used to describe the antibacterial factor in dilute honey. When honey is diluted so that it contains more than about 17 percent water, glucose oxidase in the honey liberates peroxide which is in itself a known antibacterial agent. Glucose oxidase is contributed to the nectar which the worker has gathered, being manufactured by the hypopharyngeal glands of the bee.

The hypopharyngeal glands which are in the heads of the worker bees also produce the enzymes diastase and invertase. These glands also produce royal jelly at a time in the life of the worker when she is feeding larvae.

When nectar is first brought into the bee nest by the forager, it is at its most dilute stage. It is then most susceptible to contamination by microbes. Nectar at that stage nevertheless contains a considerable quantity of peroxide which temporarily protects it until enzymes are added by the bee that processes the nectar until it is ripened into honey. Meanwhile, through the elimination of water to the point that the honey in the comb contains not more that 17%, osmotic strength in the honey is built up.

Beekeepers have to be concerned to assure that honey, once ripened, does not accumulate moisture beyond 17%. Osmophelic yeasts which are always present in honey will cause damaging fermentation if too much water is absorbed. Too great a volume of water can occur when crystallization takes places, since the crystallized portion releases water to the remainder of the total substance.

Crystallization can be discouraged for a time by heating honey to 63 degrees Celsius for 30 minutes, which kills the yeasts.

In a paragraph above I mentioned two enzymes: diastase and invertase. Enzymes are materials formed in living cells that assist in the functioning of the cells. Diastase is an element added to nectar by the bee. Its purpose in life is not too well determined. Its presence in honey can be measured, and when found missing, or when reduced in quantity, it may be suspicioned that the honey in question has been heated — a fact deplored by individuals who prize what they call "natural food".

Invertase is probably more important. Its function is to change the sucrose in nectar into the invert sugars, dextrose and levulose.

### Conclusion

The human society and the honeybee society have many problems that are somewhat similar in nature. We can learn much about ourselves by studying the behavior of the honeybee.

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# Requeening

**By TIBOR I. SZABO**
**Canada Department of Agriculture**
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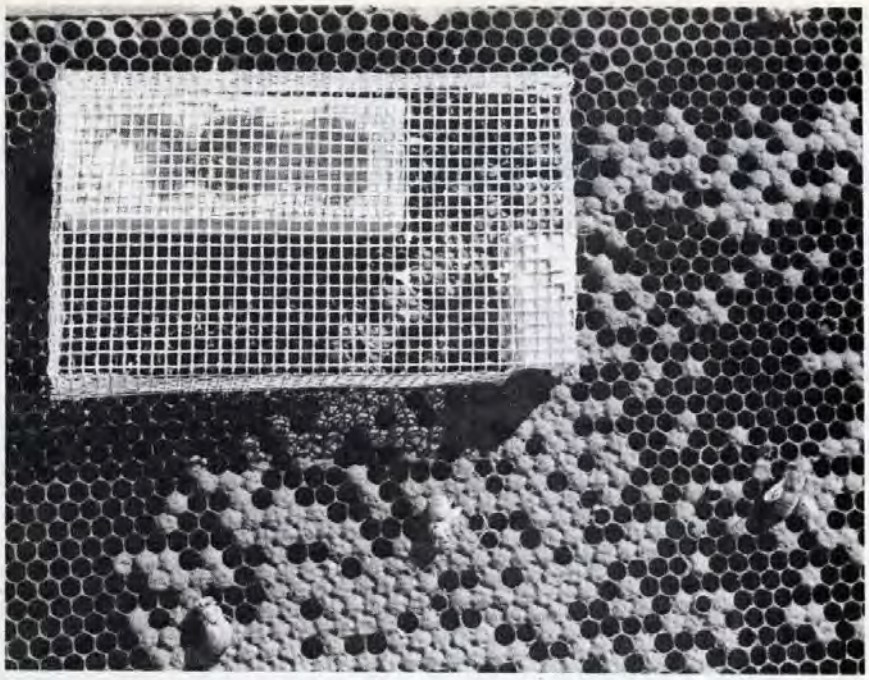
**T0H 0C0**

A BREEDER QUEEN is too valuable to lose during improper introduction into a colony. Reduction of queen losses during the yearly replacement of queens in overwintering colonies is of considerable economic importance. Each queen lost represents a minimum of a $5 reduction in profit.

Using a new understanding of queen and worker behavior at the Beaverlodge Research Station, existing methods were modified and a safe system of queen introduction was developed.



**The screen mesh enclosure fits over the queen mailing cage.**

### Queen Recognition

Young workers accept any queen however, workers 8 to 12 days old, learn to recognize their own queen. Probably the most important factor in queen recognition is the rate of pheromone production and evaporation by the queen. Other characteristics such as the weight and age of the queen, which are associated with attractiveness and probably with the quantity of pheromone, could also be important. In certain circumstances, a hive and/or colony odor could also play a role. These characteristics of the queens are influenced by nutrition and environment, such as feeding or honey flow. Workers in close contact reject any queen which is different enough from their own queen. Queenless workers accept a new queen more readily. The successful queen introduction is probably contingent on: (1) fading the memory of workers (through temporary queenlessness) (2) altering certain characteristics of the new queen to suit the new colony and (3) eliminating the defense reaction of the bees by slow release of the queen.

### Practical Steps of Queen Introduction

A push-in cage (Fig. 1) is a simple device to confine and protect the queen for a limited period of time. It is made of 3mm (#8) mesh wire screen, cut out of a 165 x 115mm (6½" x 4½") rectangle. A 20 x 20mm (approx. ¾" x ¾") square should be cut from three corners. The forth corner will have the escape tube by making one 32mm (approx. 1¼") cut, parallel with the short side, 20mm (approx. ¾") from the corner. Then the 20mm strip should be folded up at right angles on all four sides. The end of the 32mm cut also should be folded up at a right angle. This gives a four-sided screen wire cage with an open bottom, 20mm sides, 20 x 12mm (approx ¾" x ½") opening (with 32 x 12mm (approx. 1¼" x ½")screen tunnel) in the side and a 125 x 75mm (approx. 5" x 3") top. A 32 x 12mm escape tube (made from a strip of tin) should be soldered in the screen tunnel opening and filled with soft candy (a mixture of icing sugar and invert sugar).

There are certain requirements to be met for successful queen introduction under any circumstances: (1) the colony should be queenless (2) the queen should be placed in the brood nest with protection (3) the colony must not be disturbed for about ten days after the queen has been introduced.

**1. Queenless colony.** An important factor is to introduce the new laying queen into a colony which was queenless for about 5 days. If the new queen was shipped, or virgin, the queenless period should be 7 to 20 days respectively. Finding the queen is quite easy during the spring when the colony population is at its lowest. The same task during summer and fall is more difficult. By dividing the colony with the help of an inner cover or moving part of a colony to a new hive, the queen will remain with a portion of the workers. About 5 days later, all the queenless parts will have queen cells and the old queen can be found and removed with less difficulties. Each division of the colony could be requeened in early season. During August and September the divisions should be united prior to queen introduction.

**2. Queen introduction.** Queens are usually received in mailing cages. Before introduction, remove all attendant workers from the queen cage. This should be done indoors, near a closed window where the queen could easily be caught if she escapes. The next step is to destroy all the queen cells in the colony. Then, find a comb with emerging brood. The bees should be shaken off from this comb. The push-in cage should be placed on the comb so that the area covered contains emerging brood, honey and empty cells with the ratio of about 1:1:2 respectively. To prevent the queen from escaping, the following precautions should be taken. The cork of the mailing cage should be removed and the hole closed with one finger. Then, the cage should be pressed into the comb of empty cells so that the open end will be upwards. **The push-in cage is placed above the mailing cage and pressed into the comb.** The queen will find her way out of the mailing cage and soon will be accompanied by the newly emerging workers from the push-in cage. She is able to continue or start egg laying and alter her characteristics according to the colony. The colony workers will consume the candy from the escape tube in 2-3 days and then the queen is able to leave the push-in cage.

**3. Checking the new queen.** After the queen introduction, the colony should not be disturbed for about 10-14 days. Then the colony should be opened and the cage removed. Usually the presence of a large number of uniformly layed eggs and larvae are proof of successful queen introduction.

# How Valuable is the Honeybee?

**By WALTER HALL**
**Dallas, TX**

THE BEES CONSTITUTE a very large group of hymenopterous insects of the superfamily Apoidea, including besides the well known honeybee and the bumblebee, thousands of other species. Many of these can be oberved visiting various flowers on any pleasant day.

Of the approximately twelve to twenty thousand living species of bees in the world today, approximately 2,500 are from North America with the exception of the honeybee. It was introduced here in 1638. Since then the honeybee has made quite an advance of progress, for several strains of this valuable bee now inhabit various parts of North America.

The honeybee was at first used solely as a source, or harvester, of nectar. No thought was given to its ability to pollinate, since wild bees were more than plentiful at that time to carry on the work that is now expected from the honeybee. But today the value of the honeybee as a pollinator is fully realized far beyond measure. This highly valuable and social bee is used to pollinate at least fifty or more agricultural crops upon which we depend for our daily needs. It has also been discovered by modern civilization that the honeybee is by far the most active flower visiting creature known today. So essential is the transfer of pollen from flower to flower that beekeeping must be carried on to maintain profitable agriculture.

It has been said that God must have loved the insects when He created them, for in His divine wisdom He created countless thousands. It has been estimated that there are well over 600,000 different species upon the planet earth. Each and every insect has been assigned to carry out **with no deviation** its designated purpose in the Master Creator's handiwork. Yet, of all the insects that the Master Architect created, I have never known of an individual insect that is as important or necessary as the magnificent and mysterious honeybee. No other insect known today takes from mother nature so little and yet gives back to mankind so much more in abundance. I do not believe it would be possible for us to draw the dividing line as the point of no return in the daily life and task of the honeybee. You may ask, "Is the honeybee more important to us while in the field, the vineyard, the backyard garden, the flower bed, or is her value placed on a far greater scale once she returns to her home, which in itself continues to bewilder, disturb, and jumble the minds of the most capable genius or exceptional architect?"

The worker bee confounds the mind of the modern architect, for she neither requires nor uses mathematical or other tools; yet the honey comb is precisely and minutely constructed to exact diametrical measurement and degree. Today, entomologists know something of the chemistry of beeswax; however, nothing is known about the engineering and technical construction used by worker bees in building their combs. Computers today show us that the six sided comb cell which the worker bees construct is the strongest possible construction, using a minimum amount of material for the best use of available space. Place the bee and her constituents in a large or small confine and she will build according to her need. Mankind has to tear down to expand his purpose, but the bees accomplish their goal with only a small amount of space.

Basically the honeybee is only valuable for three roles of nature. First is pollination. Second is the gathering of nectar. Third is the changing of nectar into what we know as honey. Some beekeepers or entomologists may debate and try to argue that the third role of the honeybee is not controlled by herself, no more than we have the control over our own digestive systems, and that it all comes automatically. This is true to a great extent, but there is a fact that you may have never known of, or never realized. Mr. Park in 1932 discovered that the honeybee changes the concentration of nectar only very slightly while enroute to the hive, and that the change is a decrease instead of an increase as had been assumed heretofore. For most practical purposes it may be considered that the honeybee does not appreciably change the concentration of nectar while gathering a load and carrying it to the hive.

Let us now ask ourselves a question: How important a role does the honeybee play in the act of pollination? Let us also see how she fulfills her assigned task. First of all, let us not be hasty and give all the credit of pollination to the honeybee. She doesn't do all the work. Other species of bees and a host of other insects contribute their share into the complicated and fascinating world of pollination.

Have you ever stopped to consider what a dull and different world we would live in if all our pollinating friends decided to drop out of the picture? What a problem this world would present to us. Sure, we would still have the fruits of grasses, such as wheat, and corn, and plants that are either cross-pollinated by the wind, or undergo self pollination. Most of our legumes such as peas and beans would still be available since their usual mode of pollination is selfing in unopened, young flowers. Yet, on the other hand, it would be practically impossible to grow alfalfa and zucchini, and the yields of many other crops such as buckwheat, cotton, onions just to name a few. Gone forever would be the beautiful carpets of spring flowers that we enjoy so much. Through the summer we would have to do without sweet cherries. No longer would fruitstands be stocked with delicious watermelons. Thanksgiving would definitely be a thing of the past without pumpkin pie, almonds, and apple cider. Christmas would be changed to a degree since holly trees only produce good commercial red berries after cross pollination. So, God, in His divine wisdom knew exactly what He was doing when He placed the pollinating creatures into our world.

Up to now we have looked into a portion of the insect's life. Now let us look into a small portion of the life of the flower world and see how the Master Creator planned the survival of the flower.

Let us take an instant and examine the wild geranium and see how this species of plant is protected and beckons to the honeybee or other pollinating friends. At the base of each and every petal, on the hollow inside, and also along the margin if you study it very closely, you can see a great number of very soft, and yet very small, hairs. Now, if your naked eye could detect, you would be able to observe a very small amount of sweet fluid, which is called nectar. This is the substance given

off by mother nature and the flower world, which attracts honeybees. But what protects, we may ask, and keeps in store this abundantly sweet fluid for the honeybee until she arrives at the geranium to gather the nectar? The hairs mentioned are there for that very purpose.

When the foraging bee begins to gather the nectar for her home, she in turn gives back to nature. She may not only gather nectar and pollen for her hive, but at the same time she gives back cross pollination. During her very short span of life of "give and take", she has in turn pollinated literally thousands of various types of plants, of which many of these are commercial plants. How does this all add up from the valuable generosity of the honeybee? It may astound you, but in 1970 the total food bill amounted to one hundred and thirteen billion dollars. The amount affected by cross-pollination comes to an almost grand total of forty billion dollars. So, the next time you start to terminate the life of the honeybee that gives you so much of a problem, stop and weigh this figure through your mind.

We have discussed the importance of the honeybee oustide her hive, and into the plant world. But how important is she, or how valuable is the extent of her labor, once she returns to the hive? There are four very important products carried daily into the hive by the returning worker bee. These four are: Nectar, water, pollen and propolis. Of these four products carried into the hive, nectar and pollen are the most important. Without either of the two, or both, the colony does not, will not, and cannot survive. Just as you cannot survive without four basics of substance inside your body, the colony cannot survive without these two. Without pollen and nectar inside the hive, the hive is 100% worthless. But, with these two it is worth more than a small fortune, both to the colony and to the global population. Yet as important as both are to the colony, it is impossible for either one to be useful without the other. In other words, you cannot raise a successful colony of bees with only pollen, or only honey. As little as pollen gives back to mankind, without it the bees cannot and will not exist. Without pollen there will not be any queen for long. Without pollen there will not be any brood, for as a new born baby needs milk, so the new brood needs pollen. Pollen is the nursing bottle of the hive.

How important is the nectar of the hive? Well, to start off simply: Without nectar there would be no honey. Honey plays a far greater role in civilization than the average individual can really comprehend. Just as we do not really understand what all is given back to us from crude oil, likewise we do not fully understand what is given back to us from honey. The housewife doesn't really understand that the honey on the waffles helps not only the tummy, but the digestive tract as well. Not only is the honey good for the tummy and digestive tract, but the wax from the honey is also used to a great extent in the cosmetics which she uses to help her present herself to the public, her family, and the one in her life. Wax from honey is used in the processing of tons of cosmetics, if I can use that figure.

Early races used honey for preserving meats and for curing leather. It is believed that honey was the basic ingredient of the secret embalming recipe employed by Egyptians to mummify their noble dead. Infants embalmed in a jar of honey have been found with both child and honey in an excellent state of preservation.

We could go on and on, dealing with the value of honey. A new library could be written about honey and never really come to a final conclusion. From the extractor the honey has a never ending voyage into the lives of mankind. Its voyage has an alpha, but no omega — a beginning, but no end. It can be produced but cannot be destroyed. Attempt to destroy it, and it only changes into another form of matter.

What is in that white box over by the fence? Bees could be the answer. But is that all? It may be thousands of feet smaller, and hundreds of tons lighter than your big city bank, but its contents is far richer than the bank's currency. Open your hive and pull up a chair. Watch the bees come and go. Lift out each and every honey laden frame of honey for only a few moments. Close the hive. You have just looked into the past, the present, and the future. Not only has the Creator given you the opportunity to hold in your hands a portion of today, but you have stood at the threshold of a new generation. In your hands you have handled a portion of the next one hundred years.

# Book Review

**APICULTURA** by Felipe Martinez Lopez, 214 pages, hard cover, Septima Edicion.

The latest edition of this Spanish language book on beekeeping offers instruction on the principles of beekeeping. The text is well illustrated.

No price is given.

Information may be requested by writing direct to the author Felipe Martinez Lopez, Calle 19 #89 Col Mexico, Apartado Postal #827 Merida, Yuc., Mexico.

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**BEEKEEPING IN RURAL DEVELOPMENT.** Commonwealth Secretariat Publications, Marlborough House, London SW1Y 5HX. England.

The title does not make it clear but this 196-page paperback is an informative, interesting collection of oddments from around the tropical world. It has been only recently that beekeeping in the tropics has received the attention it deserves. More than 20 authors contributed.

Several chapters are concerned with traditional methods of keeping bees in such places as Nigeria, Kenya, Uganda, and India. Two chapters are devoted to new developments in the South Pacific, where no species of honeybees were to be found until their recent introduction; New Zealand has been active in promoting beekeeping on many islands to her north. Three chapters are devoted to recent developments in Central and South America. In many of these areas new methods of keeping bees are being introduced and in some instances with considerable success.

One of the last chapters illustrates the ancient art of making brass figures starting with a beeswax model around which a sand mold is built. When the sand is heated and baked the wax is melted. the mold is pierced and the wax removed. The mold is then placed back into the fire and brass scraps placed above the open mold; as the brass melts it fills the cavity left by the wax. Because beeswax is scarce and costly in many countries, the castings often sell for a high price. This age-old art is apparently common in many parts of Africa and Asia.

It is unfortunate the authors were not allowed to see proof copies. As a result there were many minor errors which are a distraction. Still, the publication will be a value to those who plan to visit or work in a tropical area. Copies are available by writing the International Bee Research Association, Hill House, Gerrards Cross, Buck, England SL9 0NR. The price is $10.00.

Review by Roger Morse, Dept. of Entomolbgy. Cornell University, Ithaca, N.Y. 14853.

# Beekeeping in Belize

**By JEFFREY LEWIS**
**Middleville, MI**

DURING THE WINTER of 1978, my family and I were fortunate in having the opportunity to tour the countries of Mexico, Belize and Guatemala in our small camper. While in Belize, we visited with as many beekeepers as possible. Our purpose was to make an assessment of the current beekeeping situation in that country.

Belize (known formerly as British Honduras) is a small country of about 13,800 square miles in size and with a population of about 129,000. It is bordered by Mexico to the north and Guatemala on the west and south. To the east is the Carribean Sea.

It is quite a rugged land and development is slow in coming there. The lack of adequate roads is probably the main reason for this. With long rainy seasons, thick jungles and steep mountains road building is extremely difficult.

Agriculture is the main industry. In the northern part of the country sugar cane is the main crop. There is a large citrus growing area farther south and in extreme southern Belize rice is grown.

It was difficult to get much information on the honey plants of Belize. Almost all of the major nectar secreting plants are wild flowers, the only exception to this seems to be the mango. These large trees were covered with beautiful blossoms at the time of our visit. Apparently, they yeild a lot of nectar as I did see the bees working them. The major honey plants, I was told, are *Rivea corymbosa* and *Vigueria helianthoides*. The first of these plants appeared to be related to morning glorys and the second seemed to be in the aster family. We were in Belize during January which is at the end of the rainy season and the bees were just building up for the flow.

The country is broken up into a number of districts similar to our own states. At the present time, most beekeeping takes place in the two northern districts. This is the sugar cane growing area and this area also has less rainfall than the rest of the country.

The honey that I saw was light amber to amber in color and of good but distinctly different flavor. Most honey is exported in drums. Several of the districts have formed beekeeper's cooperatives to aid in exporting honey.

Our first stop was in Corozal. This is the northern most district in the country. We visited a number of beekeepers here. Wilfrido Baeza has probably been keeping bees as long as anyone in the country. He has about 300 hives. He complained of a loss of bee pasture to sugar cane as they clear the jungles to plant this crop. Another problem is that they spray the cane and the drift often takes a toll in bees. So far, cane growers have not been cooperative about finding a solution to this problem. Mr. Baeza, as most beekeepers in Belize, also had problems with several varieties of ants and a bee eating toad. He has special stands with moats around the hives which the ants cannot cross. This has solved the problem to a degree. The hives are too high off the ground for the toads. Mr Baeza extracts 3 times a year. All extracting is done with a 3-frame hand extractor. He exports all his honey.

The next district south is Orange Walk. We had a nice visit here with Fernado Quijano. This man operates 700 hives, making him I believe, the largest beekeeper in Belize. He also had the only motor driven extractor I saw in the country. It was an old American built 30 frame. He also complained of losses by spray intended to protect sugar cane. In addition he said that he has over 100 hives poisoned each year. Evidently this is done by neighbors that are jealous of his prosperity. He had problems with paralysis also.

We next drove to one of the several Mennonite commumities in Belize. We had hoped to visit their shop where they manufacture most of the bee equipment used in the country. As it turned out, the road was much worse than we had expected and by the time we got there it was too late to see anything. The equipment that these people make is interesting in that it is all made of mahogany. It is standard 10 frame equipment but the frames have unusual frame spacing devices on the end bars made of old tin cans. All equipment is sold assembled and painted.

We then took a very scenic drive through mountains and past jungles and streams with cascading waterfalls to Stann Creek district where the majority of the fruit production goes on in Belize. Here there are acres and acres of citrus with practically no bees in the area. There are several reasons for this.

There is a type of wild bee in Belize that the natives call "drunken beemen". This insect is said to injure fruit blossoms by boring holes in them. The result is that many orchardmen believe that all bees are harmful to fruit and do not wish to have honeybees in their orchards.

Another problem is the spraying of the fruit trees would make it necessary to move the bees to protect spraying loss. The only road that goes through the district is in such rough condition that it would be very difficult to transport bees.

We did find one beekeeper in the area. He was a young American and unfortunately was not at home while we were there. We did have a nice visit with his wife and got a chance to inspect several of their hives. Evidently they got a honey crop last season and it looks like they are off to a good start if they can overcome the many problems of the area.

We were told that the road south of Stann Creek was much worse than any we had been on up until that point. For this reason and because we were running low on time we did not get to the Toledo district and can not report on beekeeping in that part of the country.

We drove north then west to the Cayo district. This district is in the west central part of the country along the Guatemalan border. After crossing beautiful Belize River on a hand powered ferry, we made our way to another Mennonite community. Here we visited Isaac P. Dyck. He was a cabinet maker as well as a farmer and beekeeper. He made his own hives and they were all the old jumbo type. Perhaps it was a coincidence, but his bees were in about the best condition of any I saw in Belize. This made me wonder if that type of hive was better suited to conditions in Belize.

There was a young Peace Corp volunteer from the United States working in the Cayo district. One of the problems he was working on was disease. Apparently both American and European foulbrood are wide spread throughout the country. Most beekeepers know little if anything about disease. Very few are willing to allow their hives to be burned. When we were in Belize, the Peace Corp volunteer was using sulfathizole in sugar

(Continued on page 101)

# A Personal History of the Puget Sound Beekeepers Association

**By C. H. MOEN**
**Seattle, WA**

MY FRIENDS in the Puget Sound Beekeepers Association call me "Cap Moen." I joined in 1954, and have been active since, most of that time as a director and a life member.

Since the Puget Sound Beekeepers Association will host the 35th Annual (or is it the 36th Annual) Convention of the American Beekeeping Federation starting January 18, 1981, I thought I might bring out a few things we have accomplished.

First, I became interested in bees way back in 1919, when an old man in his 90's presented me with a hive of bees. This was during my sailing times. I kept them for several years, but could not take proper care of them. In 1940 I came ashore, accepting a position as Inspector of hulls in Toledo, Ohio. A year and a half later the second World War began. The Coast Guard took over the Steamboat Inspection Service and I remained with them until I retired as Commander in 1954. During my stay in Toledo, I became active in beekeeping, looking ahead to the time when I retired to my permanent home in Seattle, Washington.

I wasn't long in starting in with bees again, and soon I was a full member and very active in the association. My memoirs and log books (diary) go back to the time when I joined.

The association was started in 1948. I remember the early day picnics we had out in the country, when one of the old timers would bring a hive of bees a day or so before the picnic, and we would play games, like putting the most bees in a bottle. We had our own public address system which we brought along.

Later, some of the members suggested we purchase a few hives of bees, and find a place to keep them. We visited the Arboretum, and wrote them asking permission to put a few beehives there, telling them bees in the Arboretum would help pollinate the flowers and give them better seeds to exchange with foreign countries. The Arboretum, after several board meetings, gave us permission to keep 12 hives of bees in a part of the grounds away from the public. They later said the bees would not improve the seed, because of cross pollination. We were told that the Arboretum at that time had over 400

**"Cap" Moen works on a skyscraper hive. Seattle Times Photo.**

species of plants from all over the world.

Now to find the bees. We thought we would start with six hives. We would call it a "Bee Garden." A few other members and I were selected to find the bees, and bring them to the Arboretum. I believe we paid only $10.00 per hive. One of our members had recently died and his widow said she would sell us six of his hives. Here is a story that fits in here. Before he died, he asked me to put a "Queen Bee" in his coffin when he died, which I did. I went to the funeral parlor and the attendant opened the casket and I put a dead Queen Bee right on his chest for all to see.

Two members and I drove the 30 miles to his apiary and were met by a friend of his who had thought he would be given all the hives. When we got there, he had six of the worst and meanest hives partly nailed up for us to take. We had no trouble getting them in our truck, and they seemed quiet while driving, but we had to stop for coffee on our way. The bees boiled out of the rotten hives and started stinging the neighbors. We got out of there in a hurry and drove side streets all the way to the Arboretum without any further incidents.

We placed the six hives in a row, waiting a few minutes for them to quiet down. When we removed the entrance screens, the bees boiled out and stung everybody within a block, as we were told later. Of course, we had our veils and gloves on.

Later, we realized we had a bad bunch of bees and decided to do something about it. We sent to Georgia for several packages of bees and queens, which took quite a while, and some arrived mostly dead. They sent replacements, and later we were able to pick up several swarms, and everything was fine.

On October 8, 1959, we had a little surplus honey. We put it on the table at the Arboretum Plant Sale. Soon we were sold out, and that was the beginning of our annual surplus honey sale, now held in May, which has continued to this day. I also sold the surplus to health stores, supermarkets, corner grocery stores, even from my home, all through the years.

A few years back, one of our charter members died and left several first edition books on beekeeping. Our association bought the books and donated them to our main library.

In the spring of 1959 I took it on my own to start a swarm control list of about 20 members living in different parts of the city. We now have about 30 members on the list, including two local pest control outfits, which has paid off over the years. Several times I have received a call from a homeowner saying they had a big swarm in their yard, low down on a shrub. They would say they had called one of the pest control outfits which came right out and found that the insects were bees, not yellow jackets or wasps. They would not destroy them and suggested the homeowner call me. I also would refer people to the pest control companies when I got a call for bees that turned out to be hornets. It worked both ways. I still send out a list of the swarm control people each spring.

About this time I was giving away swarms. Several of the bigger outfits would stop by with six or eight deep supers with drawn comb in them. I would put a swarm in each. Later friends would bring an empty hive over for me to fill up. I charged them $5.00.

I sent the list each spring to the Police Department, Sheriff's Department, to many city and county officals, the Humane Society and all the small town police.

My log shows that the first year I mailed out the list I hived 35 swarms, and the next year 49 swarms.

About this time several people gave me hives of bees. I added them to the Arboretum bees, and with so many swarms, I kept enlarging the apiary. It wasn't long before I owned six hives and the Arboretum owned six hives.

In the late 50's some members suggested we start a class in beekeeping, which we did. It lasted for six years, starting on a Saturday in June, continuing for five Saturdays. I remember one year we had 40 students, some of them in grade school. My wife was very active at that time, keeping books, charging a small fee for the course. We met at the picnic tables. We would have one of the old times talk for an hour on different subjects. Then I would take the class over to the beeyard. We called it the "Bee Garden". We would take one hive each week, tear it down to the floor board, show them brood, eggs, honey, even drones. After five weeks they were getting to be experts, we thought. We gave them each a check list with about 40 questions on it, such as, "Did you see the queen?", "Did you see eggs?", "Did you see brood?", etc. The class would open several hives the last day and several students would work at a hive and fill out their check lists. We gave them a card, signed by the president of the association stating that they had taken the course. I don't remember anyone getting stung as most of them would suit up, even with gloves. Some of those boys are grown up now, keep bees and are members of our association.

Getting back to my wife, she was a great help to me for many years. She later was stricken with arthritis and confined to a wheel chair, but with her wonderful voice, having been a telephone operator for nine years, she would be my secretary and take all the swarm calls, even answering many of the questions herself. My log shows we received 40 calls in one day. Mostly on "What should I do?" questions. The most swarms I hived in one day was five. That was a busy day. I do not use a swarm box, but I do take along a paper box in case the bees would be in a crotch of a tree, where I had to sweep them into the paper carton, then dump them into a hive. I use regular beehives with drawn comb, shallows for small swarms and deeps for prime swarms. Sometimes we get a jumbo swarm, and we add another deep or shallow. More than half the calls are for yellow jackets, hornets and wasps, although most people call them bees. Most people calling are quite excited when calling the police, stating a big swarm of bees were flying around the yard or landing on a shrub or tree in the yard.

Soon more calls than I could handle were coming in, many from other parts of the city or county. I would quiz the person calling me to make sure that they had a swarm of bees. I then checked my swarm list and called the nearest beekeeper.

I soon found out that a swarm of bees does not wait long for you. I missed many by just seconds it seems. I carry a light extension ladder and a coil of rope. Also several old sheets. First I ask permission to trespass, then if I may cut off the limb the bees are on. I do not use a veil or gloves. Sometimes the swarm would be high up and far out on a limb. I first placed a sheet on the ground, set my hive with drawn comb directly below, so if some of the bees dropped off from the vibration, they would fall on the sheet and crawl into the hive. Most of our western trees are cedar or fir. I set my ladder to the first limb and with the end of the rope made fast to me and my pruning saw in my pocket, I climbed up. Being an old sailor, the height never bothered me. I climbed one limb higher than the limb with the swarm on it. I put the end of the rope over the limb above the bees and then made the rope fast to the limb the bees were on. I never had any trouble or help at this time. Capturing a swarm almost always attracts a crowd and I would shout to someone on the ground to pull the rope tight and stand

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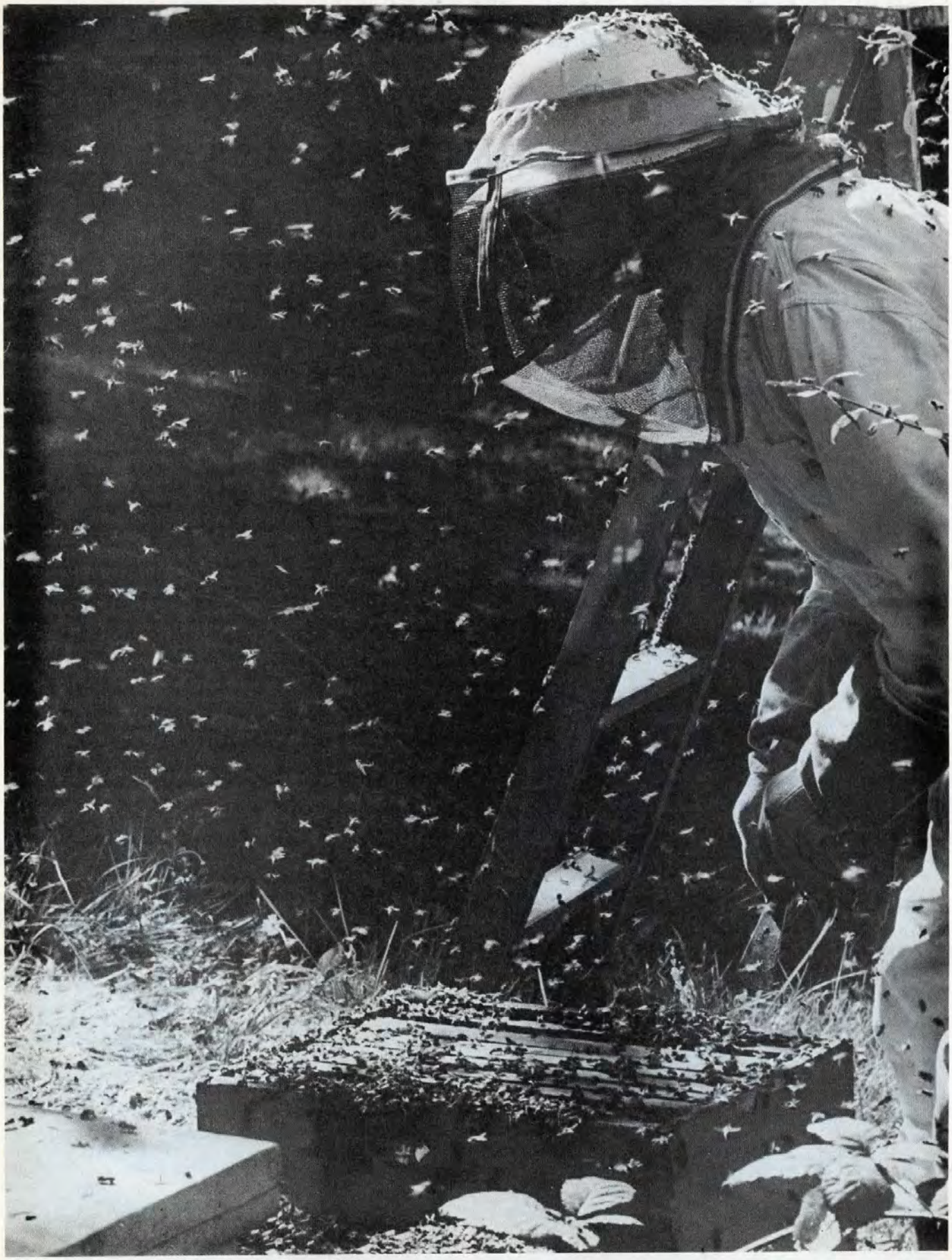

**The author inspects a colony. Seattle Times Photo.**

## A PERSONAL HISTORY OF THE PUGET SOUND BEEKEEPERS ASSOCIATION

(Continued from page 78)

back a short distance. I then would take out my folding pruning saw. First I undercut the limb, then cut it the rest of the way from the top, being careful of vibration. Some of these limbs would be over two inches in diameter and the swarm ten feet out. I would shout down to start lowering away. I then came down the tree slowly, steering the limb clear of other limbs. When the limb with the swarm was just above the beehive on the sheet, I shouted to stop lowering. I then came over to the limb with the swarm, putting the swarm right in front of the entrance. The bees would march in like soldiers. Sometimes I could see the queen march in. Many times several virgin queens would be in the swarm. After most of the bees were in the hive, I would shake the rest of them in. Then I folded the sheet over the hive and left them until sunset. Sometimes I could take them home at once if they were not flying. At home I checked them, sometimes adding two or three more swarms by the newspaper method. Later I would move several of these strong hives over to the Arboretum, putting them on various hives over paper. By the end of the swarming seasons we had each hive stepladder high, eight to nine feet.

I once was called to pick up a swarm on a dry dock, and just a short while back I picked up a jumbo swarm on the side of a boat. Once I got a call to remove a swarm from the cockpit of a boat. Many calls are for bees in buildings or smokestacks. Many of our members are experts on these jobs.

Each year the calls increased. My log shows I hived 91 swarms of bees in the year 1967 and I directed 68 to other beekeepers. In the year 1968, I hived 74 swarms, but directed 194 swarms to others and so it went over the years. Now in the late 1970's the swarm total read "hived 24 swarms of bees and directed 9 swarms to others." All of the places we used to get swarms from have been cleaned up. Some people put ads in our local papers that they will pay $10.00 a swarm, and so it goes.

I said I kept a log for 25 years, and that it now shows I have hived 1,118 swarms and that I directed 1,138 swarms to fellow members. I am now 87 years old and have donated my six hives at the Arboretum to the association. I can still climb a tree, but soon I expect to hang up my equipment and take things easy.

**"Cap" Carl Henry Moen**

**Association members at work in the bee garden. Seattle Times Photo.**

# Little Things Worth Trying

**By WALTER CRAWFORD**
**Massillon, Ohio**

ONE CAN WORK for years at the same job, doing it the same way, putting up with small aggravations, and never giving a thought to what could be done to eliminate a problem. Did you ever have trouble finding a satisfactory crack between supers where one could easily get the hive tool started? Sometimes they fit so close one is tempted to drive the tool in with a bump on the end. Such a jolt to the hive could arouse the bees to retaliatory action and should be avoided.

If a small area of the top edge of each super of hive body is beveled slightly but only within ¼" of the inside, the hive can be inserted easily. With a sharp knife, cut a bevel about 1/16" deep and two or three inches long about two inches from the left end of each side. I'm right handed so when the super is pried up at this point, I place the spout of the smoker in the opening and pry the other end loose. This allows me to support the super with the right hand instead of letting it settle back down, thereby crushing any bees caught between burr comb or the edge of the super. This idea may save some time in working the hives.

Every beekeeper develops a preference in his methods. Some use nine frames in the brood chamber and some ten. Most will agree, the nine frame spacing encourages the building of burr comb between the top bars. When the first frame is removed for inspection bees are injured or rolled on broken burr comb. If ten frames are used, not so much burr comb is found between the top bars but propolis builds up on the self spacing end bars causing frames to fit too tightly for easy removal. If each end bar is trimmed just a hair, extra space is gained and there is still plenty of room for the brood and bees between the frames when ten are used.

All shallow supers can have nine frame spacers in them. This seems to be a universal practice for extracting supers because of the ease with which the cappings can be removed. Many even reduce to eight frames, once the combs have been drawn out. Less equipment is needed and uncapping can be even more quickly done. One less frame per super is handled but more honey is removed with the cappings. After trying eight frames, I have returned to nine frames because of the lesser quantity of burr comb found on the bottom bars and attached to the top bars of the super below. If it is not removed, bees are crushed when supers are replaced.

Shallow supers are generally made with a shallow rabbet and no metal strip for the frame to rest on. When a frame is placed in a super, the lug of the top bar often crushes bees because there is no space for them to escape. If the rabbet is one inch deep, the metal frame rest should allow a ¼" space under the lug. Scraps of galvanized furnace duct can be cut about one inch wide and nailed ¾" below the top end of the hive. No bending is necessary and a sharpend 16 penny nail can be used to start small holes for the four ¾" nails needed to hold it.

I have cut away the rim on my inner covers to leave about a ten inch slot on one end. This is about equivilent to placing a block under one corner to provide top ventilation in the winter, as recommended by many. The entrance reducer should always be used to prevent a draft through the hive. I drill a ¾" hole in the center of one end of the telescoping top. When the top is placed against the inner cover at the front of the hive, the ten inch slot is reduced to the ¾" hole. When the top is moved forward, the slot is open but protected from the weather. It can be closed altogether by turning the top end for end and setting it against the slot in the inner cover.

While reading the book **A Living From Bees**, by Frank Pellet, I was surpised to find that he had used the same idea of the hole in the rim of the top, fifty years ago. I had decided to raise some queens by fastening strips of comb containing eggs, to bars in a frame with the cells in a verticle position. This was also mentioned in Mr. Pellet's book as being the method used by Henry Alley in 1883.

When using metal spacers for nine or eight frames in shallow extracting supers, there is no need for self spacing end bars and those who make their own frames can save time and material by cutting the end bars the same width as the top bar. No propolis will be used between them.

Bees are more prone to sting through the soft cotton gloves than those made of leather. In an effort to make them sting proof, I melted some beeswax and painted it on the backs of the gloves so it soaked in to some extent. None was needed on the palms. I found that the bees do not try to sting through the wax. Why should they? To them it is a familiar material and not an enemy.

## WARNING

BEEKEEPERS HAVE BEEN repeatedly warned not to store foundation or drawn comb with Vapona (Vaponette) anywhere around. Vapona is called Dichlorvos, also DDVP, which is an abbreviation for the chemical found in Johnson's Wax Pest Strips and Shell's No Pest Strips. When Vapona gets into beeswax it remains permanently toxic to bees.

Resemtherin has been reported to be absorbed by mating nucs made of the porous plastic materials and it takes a long time for them to air out enough that they will no longer kill bees. You may expect hive insulation of the plastic foam material which has absorbed a chemical used to kill bees to take some time to air out to the point where it will no longer kill bees established in the hive.

You should expect that methyl bromide, ethylene dibromide (EDB) and paradichlorobenzene used to kill wax moths will also be absorbed by the foam plastics. Ascetic acid probably will behave similarily.

G.K. Guth of Manchester, New Hampshire unhappily reports that PDB moth crystals falling to the bottom of the plastic foam mating nucs eats holes in them.

Until the researchers come up with more information play it safe. Place moth-free mating nucs made of plastic foam material in plastic trash bags when not in use. If a few get moth infested place them in a freezer overnight.

P. F. Thurber, Kirkland, WA

## SMOKER TIP

IF YOUR smoker needs cleaning, stop up the nozzle and use an aerosol oven cleaner. Just follow the instructions as if you were cleaning an oven. A clean and fresh smoker will result.

From **Beekeeper News**

# Strictly Backlot

**By CARL CALLENBACH**
**135 College Avenue**
**Elizabethtown, PA 17022**

THIS IS LATE November and I have just been stung five times in the stomach and armpit by the occupants of a hive that on two occasions chased me out of a small yard during the summer. "Not a very friendly way to say 'goodbye-for-the-winter' to your bees," said my friend, who was waiting quietly as I applied meat tenderizer paste to my arm. "I have a feeling **that** hive will survive the winter," I replied. "But I'm not sure the queen will survive the spring."

I must add that I was treated kindly and patiently by the other hives. I was closing down the entrance openings just a bit with two short pieces of roofing paper, stapling the pieces to the hive body and leaving a full-height opening of between five-to-six inches. A month or so earlier I had placed half-inch hardware cloth strips across the entrances for protection against mice; I had also placed quarter-inch wood chips **beneath** the rear edge of the inner covers. Though limited in experience, I've become a firm believer in lots of ventilation.

With the reduction of the hive entrances my real beekeeping is over until March. It's been a crazy year!

Three Mile Island, inflation, Iran, energy crises, the Los Angeles Dodgers, Jimmy Carter, air pollution, and Uncle Al. Those being, of course, some of the big things, but there have been some little things, too. Equally unfathomable, unmanageable, frustrating, and disconcerting. Like the cold, wet spring, my first experiences with insecticide poisoning and American foulbrood, and a phenomenon I'd like to focus on now: swarming. Things in Iran should straighten out. The Dodgers will make a couple of good trades, and Uncle Al was crazy. We all know that!

But swarming...I believe I know everything and absolutely nothing about swarm control. I'm working on a theory which I'll get to in a minute. But first, let me explain the paradox, everything and nothing, or almost. I have two hives next to the garage of an automechanic friend of mine. He believes I know what I'm doing with my bees. Neither hive swarmed and both produced a very respectable surplus of honey. I have five other hives in the wooded backyard of a colleague. None of these hives swarmed. Three were extremely strong. I placed round comb supers on one of these and despite the miserable weather, I took off three completed supers. My fellow worker is duly impressed; he thinks I'm a genius. (He didn't see me get chased out of his yard during the summer; he was out-of-town today.) In a third lot I have my other bees and I'm sure the owners of the land must snicker when they see my little green truck drive up their lane. "Here comes Carl," I'm sure they say, "let's get out the lawn chairs, sit down, and have some more laughs."

The data: Nine hives, an eclectic hodgepodge to be sure — three Caucasians, two Carniolans, four Italians, and a partridge in a pear tree. Four hives were quite strong going into May; three were weak; two were so-so. Three hives consisted of two full-sized brood hives. The rest were made up of one brood chamber and a medium super. I reversed the brood chambers of six of the nine twice during the April build-up. I added extracting supers to five hives, shook swarm two of the strong hives, and added comb honey supers to the remaining two.

All of this loosely kept (and presented) information must be entertained within the context of an extremely wet spring and early summer. I believe it rained for eighteen straight days in May and early June. Both months were cool and bleak, good garden pea weather into June.

When all hell broke loose in my crazy yard.

Because of the constant rain, I had to mow the drive in front of the hives weekly. For three straight Wednesdays I arrived at approximately high noon. On the first Wednesday I was greeted by a swarm head-high in a sassafras tree overhanging the row of hives. I hived the swarm and began mowing the grass. Thirty minutes later I saw a cloud of bees building in front of another hive. Five minutes later I watched it twist over a tree and slice (or hook?) into a nearby golf course, failing to make the dog leg to the right by the tenth tee, I think. When I finished mowing, I placed the mower into the back of the truck. I went home.

The phone rang. I answered it, and it was my friends at the crazy yard. "I think maybe you left too soon," she says. "There's a swarm in the dwarf pear tree near the shed."

This continued for the three weeks, and it was embarrassing. I took the lawn mower out of the truck, started it up, mowed for ten minutes, and watched a hive or so swarm. In between times, when I wasn't mowing, the phone rang and up the road I'd go. "I've known a few beekeepers in my time," my friend would say — a retired construction worker who meant well — "but none of them put on a show like this."

I set up swarm boxes and two were quickly occupied. I caught five swarms, three large, two small, and combined them with established hives. I watched two large swarms disappear into the woods to the east of the yard. My friends observed at least three other swarms pass their living room window. "It was a bit unnerving the first time," she said. "I mean the noise and the sight of them. But after two or three, we're used to it." She obviously meant well, too.

Again, the data: All hives except one of the shook comb honey hives swarmed, many with two or three afterswarms. I was able to take honey off three of the nine hives in late June. August and September, however, were so wet again — keeper onions rotted in the ground and on the porch drying area — that I had to feed back three supers of honey from my other yards. Three hives did regain enough strength following swarming to produce a small surplus which was taken off in September.

The theory: I really can't explain my small successes or my grandiose failures with swarm control. Nothing makes any sense. Millions of words have been written about it: Ventilation, brood space, young queens, rotation of brood chambers. I've read a lot of them and I've applied many of the practices described in the books and the magazines. You can see what happened and didn't happen.

My friends at the crazy yard make delicious crab apple wine. One day after we had waved bon voyage to yet another swarm, they invited me to sit down for a glass with them in their patio. "How do you account for all of this?" he asked, pointing in the general direction of my hives, raising his hand into the air, feigning the flight of still another swarm.

"I believe swarming is a virus, a disease." I said. "Like chicken pox it is extremely contagious. The disease itself

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# Siftings

**By CHARLES MRAZ**
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SOME YEARS AGO on a visit to the beekeeping laboratory in Beltsville, an entomologist was using wax moth larvae to raise parasitic nematodes. They are tiny, almost invisible, but very hardy creatures that could be raised in large quantities. These nematodes can be sprayed on apples, for instance, for coddling moth control, an orchard pest most difficult to control with toxic insecticides.

The nematodes would seek out, attack and destroy the young coddlings moth larvae. It made a safe, cheap and effective "animated" insecticide. When I tried to question the entomolgist about his work, he was very guarded in his answers and would not say too much. I asked why these nematodes were not being used commercially. He said that is what he would like to know. I gathered from his remarks he could not publicize his work.

Perhaps times have changed, at least a bit for the better. In a recent USDA Agricultural Research Bulletin, November 1979, there is an excellent article on grasshopper control. In all of man's history, there is perhaps no more destructive insect than the grasshopper. In the western states in 1875, the article states, flights of grasshoppers were observed 100 miles long, 3 miles high and 15 miles wide. They ate everything in their path, even fences and shovel handles.

Toxic insecticides have been used for many years that have also killed beneficial insects and wild life. The article adds, that insecticides are costly and because of grasshopper migration habits, are often impractical to use. Furthermore, the possibility of grasshoppers developing genetic resistance to insecticides always exists. Twenty years ago chances are a government agency could not make any statements againts the use of insecticides. In those days it was said toxic insecticides were going to save humanity from the devastation of insect hoards that were going to destroy mankind; this to justify their use and more importantly perhaps to increase the use of these toxic materials.

As an alternative, this USDA article describes one method of biological control for grasshoppers with the use of pathogenic bacteria. One of these is *Nosema locustae*, a specific pathogen that attacks only grasshoppers and crickets. These disease spores can be propagated by infecting grasshoppers. So effective is this pathogen for controlling grasshoppers that the spores from only one diseased grasshopper can supply enough spores to infect up to 4 acres of grasshoppers. The spores are mixed with bran and spread by airplane. The first grasshoppers to eat the infected bran will die of the disease. These dead grasshoppers are in turn eaten by other grasshoppers and they in turn will also die. The spores remain in the soil to effectively control future infestations for at least 10 years.

It is obvious if just one diseased grasshopper will control up to 4 acres of grasshoppers for 10 years there just "ain't no money in it" for the insecticide industry. They are less inclined to encourage any such cheap, safe and effective insect control that could reduce or even eliminate the use of toxic insecticides.

The drawback at this time to *Nosema locustae* controls is that it does take time for it to take effect. In that time, the grasshoppers could do a lot of damage. There are however, two other Nosema controls that are faster acting, *Nosema acridophagus* and *cuneatum*. Methods are being developed for propagating spores of these faster-acting diseases of grasshoppers. Corn ear worms are being used to propagate the *Nosema acridophagus* and *cuneatum* bacteria. Perhaps even wax worms could be used to propagate these pathogens as they were used to develop parasitic nematodes.

So, cheer up, beekeepers, those of you that were hit this past summer in parts of the Dakotas with grasshopper poisoning. Alternate and biological control of insect pests is finally coming out into the open. Since there is "no money' in biological control, it must by necessity be done by government agencies. Beekeepers should advocate and promote the use of biological and alternate control methods by being sure the government agencies working with these methods are well funded so they can carry out this work.

One of the methods used in the past to stop research in biological control was to take away funding for this type of research. It is now time to increase funding for research in biological control, not only with grasshoppers, but other insects. The use of virus diseases for Gypsy moth is already well understood, but apparently has been effectively "discouraged" by propoganda that it is not effective, or some other excuse. Perhaps its greatest problem is that it is too effective. We have had Gypsy moth here in Vermont for many years and I have seen this virus disease wipe out heavy Gypsy moth infestations so effectively that it has not returned in over 20 years. Again, just a few diseased Gypsy moth larvae will effectively wipe out the insect in an acre of forest, with no reinfestation for many years. The spores of this disease also remain viable for many years.

Effective biological insect control is not a problem of biology and entomology, but rather, a problem of money and politics.

On page 36 is an article by Roger Morse on the "Denver Entomological Meeting Report". It is an article that Joe Traynor (**Gleanings**, Nov. 1979, page 586) should read as well as every beekeeper. While in some respects there is more freedom in the publicity and application of biological control for insect pests, it is obvious from Roger's report, the insecticide industry is not bashful about taking over the entomology meetings so that only their reports gets on the program. No wonder Roger went away discouraged when all there was on the program was to increase the use and sale of encapsulated insecticides!!!! This in spite of the tragic consequences of its use on bees and Lord only knows on how many other forms of beneficial insects and wild life. Also, when the facts finally come out, I will not be surprised to see some serious poisoning come to light in the use of these "safer" encapsulated insecticides. This article will give some idea of the money and propaganda that biological control is up against. You can be sure, even though it was an Entomological meeting, not a single thing on the program even suggested anything on biological control of insect pests. I wonder if Joe Traynor might get something on biological control of insect pests at the next program of the Entomological Society Meeting? Let us know how you make out, Joe.

On page 22, January 1980 **Gleanings** is an article on hive assembly. This brings to mind the many different methods used in wiring frames of the past 100 years. Years ago, vertical wiring was used to wire frames but for some reason horizontal wiring is commmonly used today. It is difficult to understand why. Personally I think wired frames are much better than wired foundation, it makes much better combs that will not warp and break out of the frames.

Vertical wiring has many advantages over horizontal wiring. Plain foundation can be used and there is no sagging of foundation, if at least 7 wires are used, strung between the top and bottom bars, vertically. A groove about ¼" deep should be first cut along the center of the top and bottom bars so that the wires are below the top of the frames. This prevents wires

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# Bee Talk

**By DR. RICHARD TAYLOR**
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ACCORDING TO THE reckoning of my friend J. G. Stevens, down in Roanoke, Va., this installment will round out ten years of "Bee Talk'." Which reminds me of what an old time beekeeper once told me in connection with his golden wedding anniversary. He said that on the day of his wedding his main worry had been that he and his bride would run out of things to talk about after a day or two. I guess happy beekeepers, like happy married people, just get wound up and can't stop talking.

And what I want to do this time is go on talking about comb honey. I seem to be making converts all over the place, according to my mail, so I might as well go on with the subject.

Last time I said that the main thing you have to do to get good big crops of comb honey is have strong colonies. You want colonies so strong that the bees will go right up into the supers and get to work in them just about as soon as you put them on, rather than gradually working their way up into them a week or two later when the honey flow may be half over. And the best and easiest way to get strong colonies is to have them heavy with honey the preceding fall; not just enough honey to get them through, but enough to inspire them to early and rapid brood rearing when spring comes. Those are the bees that are going to get you your big crop of comb honey.

But aren't they also going to get you some big swarms? Maybe, unless you tackle that problem right. Which brings us right to the perennial question of swarm control.

A lot has been written on this. You can find whole books on the subject. One British beekeeper, E. L. Snelgrove, made himself famous by his ingenious (and complex) methods of swarm comtrol. It is something beginning beekeepers really sweat over. Sometimes they experiment with immensely complex manipulations, often ending up with hives several stories high, with brood chambers on top, maybe a couple of queen excluders in the stack, and that sort of thing.

Well, there is really no point in bucking a colony that has decided to swarm. Sometimes the bees will make preparations to swarm, building queen cells and everything, and then for no apparent reason just change their minds and tear down the queen cells. But you can't count on that. Other times you can knock yourself out trying to get them to stay put, and they'll merrily swarm in spite of it all.

So what you have to do is humor them. That is, you create, with a few simple steps, at your own convenience, the basic result of swarming, so that the bees get it out of their system, but according to your schedule and plan rather than their own. In other words, you split the colony

And here is how you do it.

You go up to a colony that is getting so strong you think it might start queen cells, or perhaps already has. But it is best to get to them **before** any queen cells get started; that is, queen cells with larvae and royal jelly in them. Empty little cell cups are of no significance. Now from that strong colony you take at least three, maybe as many as six, combs of brood and bees, trying to get mostly sealed brood. Get as little unsealed brood as possible. But also be sure there is some honey and pollen in at least one or two of the combs. Don't get the queen. Examine each comb as you take it out to be sure you are leaving the queen behind; but keep as many of the other bees on the combs as possible, by handling them gently. Put those combs into empty hive bodies, at least three per hive body, and as many more as you wish. You can put combs of brood and bees from different colonies into the same hive body if you want to, and they won't fight, because the flying bees, which would be the trouble makers, all end up back in the parent hive, leaving only young bees on the combs, and they'll get along just fine. Now replace those combs in the original hive with frames of foundation or drawn combs.

Result? Well, that strong colony now finds itself with three or more empty combs right in the middle of the brood nest, and the queen can't wait to fill them up with eggs. This, together with the considerable reduction of population, tends to take the bees' minds off swarming. It goes against their nature to swarm when the whole center of their brood nest is completely empty. If, in addition, foundation was used instead of drawn combs, then the bees are exceedingly unlikely to swarm. They go to work building comb, instead, which keeps them busy for awhile. And have you weakened the colony by the removal of all those bees and brood? Not really, because in three weeks all the eggs that the queen laid in those empty combs turn into adult bees, and you have got yourself a very powerful colony indeed, with nothing better to do than make lots of comb honey.

The time to do all that is when the bees appear to be on the brink, not of swarming, but of swarm **preparations**; or in other words, just ahead of the beginning of the swarming season. That would be early or mid-May around here. And as for supering, your comb honey supers, at least two, should go on right away, as soon as you have made the split, or soon thereafter.

And what about the split? What do you do with that? Well, it is valuable, no matter how you look at it. You can with drawn combs or frames of foundation, set it off in another part of the apiary, give it a bottom board and a cover and a new queen, and you have got another hive of bees, same as if you had hived a stray swarm there. If you don't want another hive of bees, then sell it to someone who does. It is worth quite a lot. Or you can, instead of making up full colonies, make up three-frame nucs in special nuc boxes, give each a new queen, and sell those, getting the nuc boxes back to use again the same way next year. That requires the least use of extra equipment, such as bottoms and covers, and can be very profitable.

It is no trouble requeening such splits or nucs, because the new queen is introduced to young bees, the older bees having all flown home. I just poke a nail hole through the candy end of the mailing cage and lay it screen down over the tops of the frames. The queen gets released in a day or two. It is a good idea, though, to stuff the entrances of these splits, whether they be full hives or nucs, with some grass, so that the young bees will stay there. Otherwise they tend to drift out and weaken the split. In a day or two the grass dries out and falls away. Don't feed the split; it will get robbed out and perish if you do. And as a last thought, you can set the split right on top of the parent hive if you want to, over a double screen, with entrance to the back, thus utilizing the warmth of the parent hive below; but that is not necessary.

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# Research Review

## Varroa Detection and Control

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

THE DRS. KOENIGER (Nickolaus and Gudrun) were in Ithaca for a few days recently. We talked about many projects but the recent varroa scare in Maryland* caused me to ask many questions about what is taking place in Germany, where the disease was discovered in 1977. There is still much to learn about the biology of this disease; I picked up some new facts I did not know.

Adult female varroa mites enter brood cells just prior to their being capped. They lay only three to eight eggs each; this is a surprisingly low number and one I still find difficult to believe. The eggs are deposited on brood cell walls just after the cells with mature larvae are capped. No one knows why mites appear to prefer to deposit their eggs in cells with drone brood but apparently they do. The eggs hatch rapidly and the mother mite and her young feed on the developing pupae. While the mother mite remains with the young, she does not care for them in any way. The mites are very well protected in a capped brood cell which appears to explain how they can be successful with such a low reproductive potential. Because of their low rate of reproduction it may take several years before a sizable population is built up and before it is detected.

Mite feeding may kill the pupae, or the bees which develop may have deformed wings and legs and often small abdomens. The most obvious symptom of varroa disease is bees with deformed wings; however, slightly chilled brood may also develop into bees with bad wings. If one sees many deformed bees it would be well to report the incident to a bee inspector and to look closely for mites.

***Two varroa mites were found in Maryland this fall but it appears now the mites, from an unknown source, may have already been in the vial in which a field-collected bee was placed.**

### Checking for Mites

Knowing where the mite is, and isn't, is not easy. There is no simple method for checking infestations. At the present time the preferred method in Germany is to fumigate a colony with formic acid. Formic acid kills the mites and causes them to drop onto the bottom board; it has no adverse effect on adult bees if used correctly. This is a dangerous material to handle and burns any skin which it contacts. It is especially important to protect the eyes. Rubber gloves and safety glasses should be worn.

Formic acid is sold as a 98 per cent solution; diluting it to a 70 per cent solution apparently does not lessen its effectiveness but does make it less dangerous to handle.

The correct dose of formic acid is about 200 milliliters (about ⅘ of a cup) which is placed in a flat (cough syrup) bottle that will fit into a frame from which a piece of comb has been cut. (An alternate method is to place it in an empty super above the brood nest.) The bottle should have and opening about half an inch in diameter. A cotton wick should reach to the bottom of the bottle and protrude from the neck about an inch. The formic acid should evaporate at the rate of 10 to 20 milliliters a day for a week. Too much formic acid will kill some brood and adult bees (twice the recommended amount).

We do not know if this method would receive approval from our food and drug people should the disease appear in this country. Detecting formic acid in honey is difficult and methods for doing so are still being worked out in Germany. At this time it is not known if the formic acid treatment would be satisfactory as a control measure. The treatment was first used in 1979 and whether the treated bees will survive the winter is not clear; we will know this spring.

Checking for low level infestations is extremely difficult. It is an interesting fact that, in the apiaries studied so far, all the colonies have near equal infestations. The development of a mite infestation is slow;; it may take three to five years to reach a level where it will be seen by beekeepers. It appears clear the mites are spread from one colony within an apiary to another by drifting bees.

In checking for mites where the infestation is very low it is not necessary to check every colony; however, in those colonies which are checked all of the bees are killed. The bees are first brushed from combs into a box where they are killed by burning sulphur. Any bees remaining in the hive are also killed in the same way. The bees are then placed in two-quart jars which are half-filled with bees. The jars are then filled about three-quarters-full with gasoline. White gas has less odor and is easier to use.

The bees remain in the gas for about 30 minutes, after which time the bottles are shaken for about 30 minutes. This soaking and shaking will dislodge the mites, both those clinging to the bees' bodies and those which have burrowed under body segments.

After this treatment the bees and gasoline are poured into a shallow pan. The bottom of the pan is covered with a sheet of white cotton cloth. Over this is placed a piece of eight-mesh hardware cloth. The pan is shaken carefully and the adult bees lifted out on the hardware cloth. Next the cotton cloth is lifted from the pan. If mites are present they will remain on the cloth where they can be seen. I was told the method works very well and if only one or a few mites are present on the bees they will be found. Of course, this does not account for mites which may be present in capped brood cells. At the present time there is no satisfactory way of finding such mites except to remove the pupae one by one. Even then not all of the mites may be found as they roam free around the brood cell and do not cling strongly to the developing pupae.

There is a low, natural mortality of mites during the winter at a time when the colonies are not rearing brood. To check for mites at this time one places a piece of white paper on the bottom board; mites which fall onto the paper can be seen easily. If the weather is sufficiently warm that the bees might undertake house cleaning, one places a piece of eight-mesh hardware cloth over the paper to prevent their removing the dead mites. There is much debris which will fall onto the bottom board under these circumstances and one

(Continued on page 102)

# Fundamentals for All

## "Ideas Keep Beekeeping Going"

**W. A. STEPHEN, Professor Emeritus**
**The Ohio State University**

AT A RECENT beekeepers' meeting, a speaker was telling of some of the benefits of belonging to our organization and of how worthwhile it is to attend beekeepers' meetings. One of the points he stressed was that you might get an idea that you could use in your beekeeping and that this one idea could pay well for your time, expense, and effort in attending.

This reminded me of what a friend from Australia told me. He came to the United States at the time of the International Apicultural Congress in Maryland in 1967. He said that, in talking with a beekeeper there, he got an idea which would pay for his whole trip! I reminded him of this when I saw him at the Congress in Adelaide, Australia, in 1977 and he enthusiastically affirmed that it was true.

Do you ever get an idea from someone? Heaven help you if you don't! You may be quite successful with your bees, but if they do not cause you to stop and think, on occasion, then you are not very observant. Beekeeping is an art. If and when (and I doubt if ever) it becomes an exact science, it will have lost its romance and fascination. When beekeeping ceases to arouse your curiosity; when beekeeping no longer stimulates you to question; then beekeeping ceases to be a challenge for you, then you will no longer be a beekeeper. You may still have bees, but that will be it and you can then be defined as a bee-haver.

The Rev. L. L. Langstroth, whom we revere as the "Father of Modern Beekeeping" never ceased to ask questions of his bees. He kept up a voluminous correspondence with others interested in bees and he attended beekeepers' meetings within reach. He attended every meeting of the Cleveland, Ohio, group, the first organization of its kind in America. But Langstroth wrote his ideas down. He got them out in the open where he could look at them as they appeared on paper — as others might see them. They accumulated to the point where he had enough for a book and he wrote **Langstroth on the Hive and the Honey Bee, a Beekeeper's Manual**, which appeared in 1853 and has recently been republished by The A.I. Root Company.

But Langstroth didn't stop there. This was but the beginning. He continued to question his bees, how and why they acted as they did and how and why they reacted to his "improvements" for their homes. As we read succeeding revisions of his book, numbering four in all, and extending to ten printings, we are thrilled with how he has accumulated knowledge from his critical observations, his well-thought-out experiments, and his meticulous recording of results.

Langstroth was not above noting that his own ideas, translated into a modification of design of his hive, weren't always good. He learned much from his mistakes. At a time when comb foundation had not been invented, he strove to get good combs in frames strong enough for handling. Thinking to strengthen his frames, he put an upright in the middle. When he found out that this was a barrier to comb building, and could easily be done away with, he noted that if he had tried, he would have found it difficult to think of anything less appropriate to incorporate in a frame. I wonder if any research worker today would dare to record his errors in judgment as openly.

The beauty of Langstroth's later editions is that they reveal how he modified his thinking in line with what the bees taught him. When he got an idea, he wrote it down. "What would happen if . . .?" He then tried it out, made accurate observations, and meticulously recorded whatever he saw — the good and the bad. He interpreted his findings and used these as a basis for future observations and experiments.

I have a story that I like to tell which illustrates the value of an idea. Sam was not an overly bright student. He was not an under-achiever; he just did not have the ability to do well in school. He found school work too difficult and it was much easier to skip school and go hunting, or fishing. But Sam liked the woods, so it was no surprise that he got a job in the lumber yard. He was well able to handle lumber.

Sam had one virtue. He did not get many ideas, but when he got one he liked, he hung on to it doggedly. Eventually his one big idea became a reality and he found himself in the lumber business. And then his fortunes boomed. His business grew and everyone in his small town marveled at how the school dropout had blossomed into a successful business man.

One day, Sam's erstwhile teacher met him on the street and stopped to chat. The teacher had not stopped just to pass the time of day. He told Sam that all the town was proud of his success, but, quite frankly, they would like to know his secret. Sam had no reticence in saying that it was due to an idea he had got in school. This pleased the teacher very much, but he was more pleased when Sam said, "It was what you taught me." Sam then went on, "You know how you tried to teach us what you called percent. You said that if I could buy something for one dollar and sell it for three dollars, that would be a profit of two hundred percent. Right then I got the idea that if I could buy lumber for, say, a hundred dollars and sell it for three hundred, that I could stay in the lumber business. That profit idea you gave me has worked."

It was not what Sam was taught, but the idea that he got from what he was taught that culminated in success.

Langstroth demonstrated the scientific method, giving us a clear picture of it all. We can learn much from reading and rereading Langstroth, but we need to get fresh ideas, not because fresh is good, but because these new ideas may incorporate elements which will make for more successful (and profitable) beekeeping. Unfortunately, some of what Langstroth learned one hundred and twenty-five years ago we have lost sight of . Every generation must prove for itself the truths of our ancestors, but some truths can be, and are, lost with passage of time and must be re-discovered. This is particularly true in beekeeping, as any student of Langstroth will affirm. We need the knowledge of yesterday's sages to give us the ideas we require for today's and tomorrow's beekeeping.

# Notes From the Straw Skep

**By BESS CLARKE**
**Canton, PA**

FEBRUARY IS my favorite month of the year. That statement puts me in a minority group, I know, but I'm entitled to my own opinion . I've always lived in or near Pennsylvania so I don't know beans about the weather in the South or Western parts of our country, but here it is cold in February. If there's going to be snow this is the time for it; if there are bad storms, February is the time.

You say I don't have to go out and work in it. That's true, partly, but in my lifetime I've shoveled a lot of walks, and for nine years I did barn chores, including carrying the hose to the barn from the house twice a day in cold weather so it wouldn't freeze, which was only one step above dragging it after it had frozen, so it could thaw for the next chore time.

Ever since I was a child I've loved to play in the snow. My mother and one of her friends took their childern sledding before we were old enough to go to school. I remember one time I went alone to a hill (across two streets) where I crashed into a tree and suffered a concussion. My parents were frightened, of course, and when I had recovered sufficiently they read the riot act to me. I still don't like to go out alone to skate or ski. But I surely do like to go out!

We can put our skis on at our back door and go up the hill to an old railroad right-of-way. Once there we can go for miles on a gentle grade through the beautiful countryside of our endless mountains.

When I was in high school I wrote an essay about the blue skies of February. It seems to me that the air is clearer in February, and the clouds and sunsets are the most spectacular of the year.

There's another thing about February. The days are noticeably beginning to lengthen, and that's a sign of spring. So are the little snow drops which struggle up through the drifts and bloom as soon as the sun shines on them.

One more reason I like this month is that it's my birth month — and I share that with lots of famous people. Fortunately I have a host of family and friends who indulge me and I can always count on a party or two.

February has Valentine's Day too. Here's a beautiful dessert to celebrate the event. I've adapted it slightly from the California Honey Advisory Board Cookbook, **Treasured Honey Recipes.**

**Honey Nut Torte**: 4 eggs separated, 1 cup honey, ½ teaspoon salt, ½ teaspoon cinnamon, 1 teaspoon vanilla, 1 cup finely chopped soda crackers, 1 cup finely chopped pecans, 2 cups strawberry sauce (recipe follows) 1 cup heavy cream whipped and sweetened with honey to taste.

Preheat oven to 325°F. Separate eggs and beat whites till stiff but not dry. In another bowl beat yolks until thick. Add honey in a fine stream while continuing to beat yolks. Fold in salt, cinnamon, vanilla, cracker crumbs, and nuts. Gently fold beaten egg whites into mixture. Cut waxed paper to fit the bottoms of two ungreased 9" cake pans. Pour batter into pans and bake 20 minutes or until torte is lightly browned across the top and the center is set. Cool 5 minutes and carefully loosen around the edges and turn onto wire rack to finish cooling. To assemble, spread ½ the strawberry sauce between the layers. Frost the sides and top edges with the whipped cream. Spoon the rest of the strawberries onto the center top. Cut into pie shaped wedges to serve.

**Strawberry Sauce**: Ten oz. package thawed frozen strawberries, 2 tablespoons cornstarch, ½ cup honey, 1 teaspoon lemon juice. Drain strawberries and use 2 tablespoons juice to moisten cornstarch in small pan. Add ½ cup honey and blend well. Add half the berries. Cook over medium heat, stirring constantly, until the sauce thickens. Remove from heat; add remaining berries and lemon juice. Stir well. The sauce should be quite thick when it cools. You don't want it running down the sides of the torte, but neither do you want it stiff and rubbery. If it isn't right when it cools, either add more cornstarch moistened in water, or more liquid.

Happy Valentines' Day.

# Questions and Answers

**Q. When are we going to have a reprint of Dr. Miller's "Fifty Years Among The Bees"?**

**We have over 300 members in the Long Island (New York) Bee Club and when the club's library was auctioned off to the members the single copy of Dr. Miller's book sold for about $45.00. Many were very disappointed.**

**I have tried to obtain one in many different ways and once had my check returned because someone "wired" the money to the person who had one book.**

**Please consider this matter (reprinting) seriously because it would be great encouragement to the beekeepers everywhere.**

**Your reprint Langstroth's "Hive and The Honeybee" was sensational to say the least. B. M. New York**

A. **Fifty Years Among The Bees** was published by The A. I. Root Company in 1915. We have had several requests, I believe, for a reprinting of Dr. Miller's book **Fifty Years Among The Bees.** We will certainly consider your suggestion in

the future if the subject of reprinting another book becomes a possibility.

Reproducing one of these older books is quite an involved printing procedure and we must carefully consider the potential market for such a special issue.

★★★★★

**Q. I know of the advantages of the slatted rack, but what are the disadvantages? Why aren't they more commonly used? The August 1979 article in "Gleanings" suggested modifying the dimensions of the slats from ¾" wide to ⅞" wide. Do you agree? E. M. Georgia**

A. About the only disadvantage to the slatted rack is the cost which many beekeepers are reluctant to pay and possibly the fact that the brood chambers must be lifted to insert the rack under the hive.

I don't think the difference between three-quarters inch and three-eighths inch is significant, but of course I have not had extensive experience in using these racks.

**Q. I would like to know if you could send me anything on the killer bees, and also I would like to know is it true that they are coming to the United States? L. L. Tenn.**

A. There has not been much new published about the so-called "killer bees" and we hope that this is a good sign that they are no longer being considered the threat that they once were.

We have always believed that the publicity concerning these bees has been very much overdone and that they never constituted the threat that was implied in the various news items. We feel sure that in the years to come the traits of these Brazilian bees will be so modified by mixing with the native bees that they will no longer be regarded as a threat to anyone who lives in the country in which they are kept.

★★★★★

**Q. We purchased a second-hand two-frame rotary extractor this year which apparently some former owner had greased with axle grease. As a result, we have some 30 pounds of honey which is adulterated with black, oily junk.**

**We'd like to be able to save the honey to feed back to our bees this spring, but the grease doesn't settle out in heated, cooled or diluted honey. Do you know of any way we can salvage the honey — or whether the grease will hurt the bees?**

**We've cleaned out the extractor, of course, but now wonder what kind of grease to use on it, and where we can get the right type. G. R. Washington**

A. We would like to be able to suggest a way of salvaging the honey which has been contaminated with grease; but unfortunately we do not know of any, and we strongly suggest that this honey be discarded rather than attempting to feed back to bees. There is a possibility that the grease may be harmful to the bees.

To lubricate the extractor, we would suggest a food-safe lubricant that is recommended for food processing machinery. The manufacturers of extractors list lubricants in their bee supply catalogs that are developed for this purpose.

# Honey Under Siege

**By LARRY GOLTZ**
**Medina, Ohio**

**"There is no doubt, now that honey is susceptable to possibly more types of contamination than here-to-fore suspected."**

AN UNCOMFORTABLE number of times in the past few years honey has been under siege. Whether these periodic assaults have affected the sales of honey to any extent remains to be seen but most likely it will not considering that honey comsumption has never really taken a great leap forward in per capita consumption in the United States despite the increased interest in beekeeping. The increased use of honey may in large part be confined to the small part of the population who have shown a preference for foods which receive a minmum of processing. The increased output of the hobbyist beekeeper apparently supply a part of this special market, not only their own needs but for the sales to others of similar tastes. This discriminating market demands honey which is seldom found on the grocer's shelf, lightly processed honey which is often packed by the beekeeper-bottler.

Whether the trend to a preference to "natural" honey is affected by the recent controversies about honey cannot be readily ascertained. The connection between honey and infant botulism[7] seems tenuous[12] but of course the honey industry must recognize this possibility, however remote, and act accordingly. A long term controversy, hardly touched upon in the charges and counter charges concerning the feeding of honey to infants, is whether the honey industry has safeguards in force that can protect honey if investigations are conducted into its handling standards. If safeguards can be cited are they enforceable? Is honey up to the required standards at present and if the honey industry is held responsible for upholding these standards is it also capable of formulating, proposing and enforcing more strict standards for honey purity? Must honey, much like other processed foods, be subjected to closer supervision by an independent control agency? Honey has so far been exempted from closer scrutiny because it has heretofore been regarded as fairly stable in storage without processing. Honey has been considered as within the sphere of agricultural produce that can be sold with minimum license, fairly free from regulatory agencies.

Looking at honey in the perspective of history has perhaps lulled us into the acceptence of some false concepts about honey. This is understandable. Finding that circumstances are not as they are, or thought to be, is not an uncommon experience considering the rapid advances in the methods of science. As members of an industry concerned with nutritional studies relating to their principal product honey, beekeepers cannot afford to disregard new developments that may affect the marketing of honey.

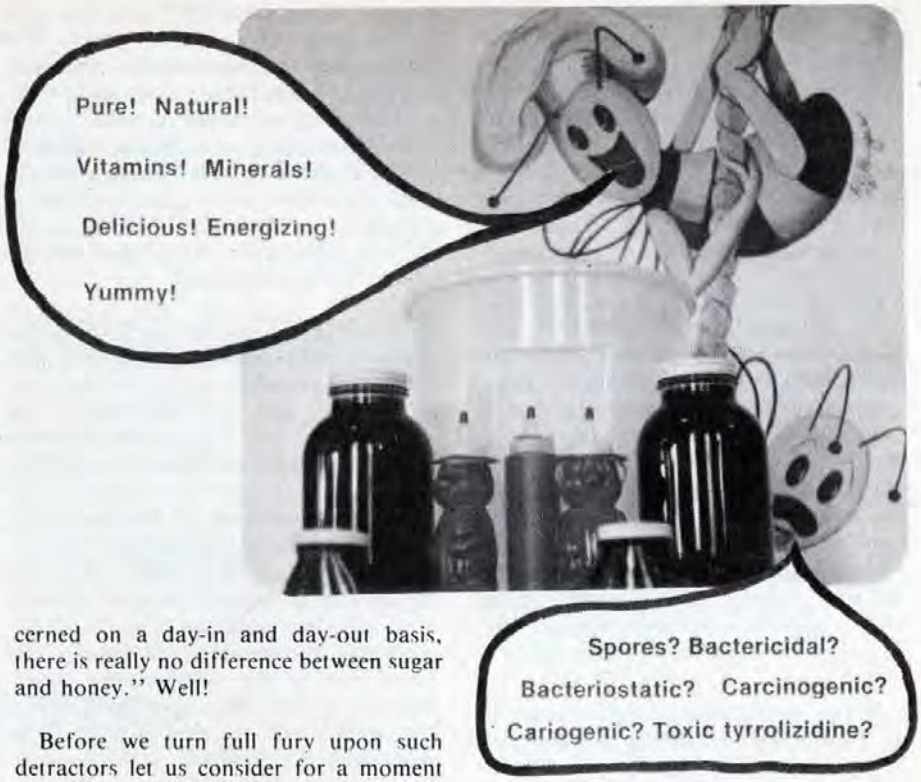
Reporting on the survival of bacteria in honey stored in a refrigerated place at 10 degrees C, a French laboratory reported survival times of between 1.5 months and 2.4 years[11]. Honey must therefore be considered to be merely bacteriostatic (inhibiting the multiplication of bacteria) and not bactericidal (destructive to bacteria). This may appear to be fine line of distinction to the beekeeper but when a question of the purity of honey in regard

to bacterial contamination comes up this reported difference can have some far reaching consequences if and when processing regulations are discussed. Sanitation standards for honey houses may come in for more regulation as a result.

Honey containing *Clostridium botulinum* spores was implicated in the recent reports of cases of infant botulism[2] at the same time it was freely admitted that the honey may have been contaminated with dust containing the spores during the process of bottle feeding. No botulism orgainsms or toxin could be found in seventeen previously unopened honey specimens produced by four commercial processors, or in one specimen obtained from a local beekeeper. In a follow-up study[12] of infant botulism in several states showed that *Clostridium botulinum* or toxins were absent in any of the food sources, leading to the hypothesis that ingested C. botulism spores germinated in the intestine and elaborate (form) toxin. As additional investigation of actual reported cases of infant botulism proceeds, the suggested link between it and honey feeding may prove to be merely incidental and totally unrelated. Meanwhile the implications will continue to be nothing but trouble for the beekeeping industry.

A paper published on honey[3] whose nectar source was tansy ragwort (*Senecio jacobea*) called attention to the fact that honey from this very minor nectar source contained significant amounts of the highly toxic tansy pyrrolizidine alkaloid complex. The report stated that "due to the toxicity and suspected carcinogenicity of these compounds their presence in honey represents a potential health hazard." This report was cited in a widely circulated newspaper medical advisory column to extent of saying only that "honey is a potentially carcinogenic food." All too often parenthetical statements appearing in authoritative and well researched and written research reports are seized upon and elaborated (or simplified) completely out of context of the original report. All honey stands to suffer to a degree as a result of such publicity.

Misinformation about honey is not a remedy recommended to conteract the extremism which characterizes some of the attacks by those who decry the obvious popularity of natural foods, honey it seems, in particular. "The health values attributed to honey are a delusion, and probably a mythology traceable to honey's use in Biblical times"[5] is the way one consumer bureau spokesman wrote of honey. Further, the statement said "as far as the effect on the blood sugar is concerned on a day-in and day-out basis, there is really no difference between sugar and honey." Well!




Before we turn full fury upon such detractors let us consider for a moment the wisdom of words recently sent out by a leading apiculturist[4] who suggests we examine honey in the light of some of the widespread misstatements about the nutritional properties of honey. He concludes that honey has been a victim of "outlandish nutritional claims". He states, "although honey is now much easier to sell than it was in the past, many beekeepers believe they must provide the customer with outlandish nutritional claims about honey. Perhaps this relates to some feelings of insecurity by the beekeeper. He may wish his honey were better than it is. More likely, he has seen the long lists of vitamins, minerals and amino acids found in honey and believes that honey's appeal can be increased by pointing them out." The author goes on to say, with which I am sure most beekeepers will agree, "Let's sell honey as a natural food, a way to obain quick energy, and as a source of delightful flavors not found anywhere else. We don't need any false or distorted claims to sell such a wonderful product."

Honey simply does not measure up to many of the basic foods as to furnishing daily minimum nutritional requirements of the human body, but neither does the sucrose of table sugar or the glucose syrups which are consumed in far greater quantites than honey.

Perhaps spokesmen for honey have become lax in endorsing unsubstantiated claims for the nutritional values of honey. It is not an uncommon fault to believe what we wish to be true about a favored subject, disregarding facts which are not consistant with popular beliefs.

It is obvious from nutritional charts that honey lacks or is deficient in the vitamins and some of the minerals essential to human nutrition. This rather depreciating disclosure, at least to those who may be overstating the case for honey, most certainly must be qualified to the extent of making allowances for variations in the state of processing to which the honey has been subjected. Processing methods designed to remove grains of pollen, particles of crystallized honey and air bubbles are said not to remove the essential nutritional elements of honey; or to destroy or deactivate the other chemically and biologically active parts of honey as proteins, minerals, vitamins and yeasts. Processing honey by filtration and various degrees of heat is, at its best, a process that removes only suspended particles and not the flavors and the nutritional value of honey. Honey processing, even the very basic steps of extracting, straining, and storage may take their toll of some of the highly volatile and delicately belended flavors characteristic of honey in the comb.

I am sure it is quite safe to say that scientists have not as yet fully demonstrated an understanding of the many subtle qualities that distinguishes honey from the common syrups. The quantitative and qualitative analysis of honey can explain much about the composition of honey but to what extent the

infinitesimally small amount of honey flavors in influence the acceptance of honey is not always a matter that can be determined by laboratory analysis. Identification of the floral source of a particular honey has proved to be a relatively easy matter for those experienced in tasting the various distinctive flavors of honey. Honeys which have been adulterated apparently can be detected by people who have difficulty, due to inexperience, in identifying the various floral honeys[8]. Homer P. Powers, a respected authority on honey judging wrote "last fall (1974) at a Maryland State beekeepers meeting Dr. Dewey Caron, extension entomologist, organized a honey tasting contest where the intent was to identify floral sources of honeys. Of ten samples, the most that could be identified by anyone was five. Significantly, the corn syrup imitation was identified by nearly all who entered, indicating that contestant's answers were right because they knew, not because they guessed right."

Floral source identification of honey by tasting is a skill that can be refined in contestants it has been found. This certainly says something about the appeal of honey that can be used in sales promotion of our product. The delicate and subtle flavors of honey are the result of the natural distillation of aromatic oils and other natural flavoring substances far more refined than the additives designed to introduce an acceptable flavoring to the high fructose syrups.

The adulteration of honey with the high fructose syrups is causing the beekeeping industry great concern[1]. An "Adulteration Task Force" has been formed. The task force is made up of honey packer and producer representatives who have engaged Robert Rubenstein, counsel for the Honey Industry Council to assist with the investigations of the cases of suspected adulteration. The recently developed tests to detect adulteration of honey have been accepted by analytical chemists and are regarded as valid evidence in a court of law. An analysis of honey can be obtained from Honeytech, Inc. PO Box 1059, Navasota, TX 77868. Directions for sending samples of honey and the attendant fees may be obtained by writing to the laboratory. Dr. Jonathan White, who developed a test for adulterated honey, founded the laboratory service. Complaints in regard to the suspected cases of adulteration of honey may be directed to the counsel for the Honey Industry Council, Mr. Robert Rubenstein, 6 East 43rd St., New York, N.Y. 10017 (Ph. 212 490 1650). If information warrants an investigation, a sample of the suspected honey may be requested to be sent to the laboratory. The results of an analysis will be sent to the office of Rubenstein who will take appropriate action in the case of finding adulterated products, including notifying federal and state authorities. Counsel Rubenstein will forward periodic reports (including a record of action taken by the Federal Drug Administration and state authorities) to the annual meeting of the American Beekeeping Federation, the Packers and Dealers Association and the Honey Industry Council.

The adulteration of honey is not a new problem[9]. The make-up of honey has been studied by chemists for over 85 years. Dr. Wiley, as chief of the Bureau of Chemistry, led the fight against adulterated foods and played a major part in the passage of the Food and Drug Act of 1906. An analysis of 500 samples of open market honey, by ten state chemists was made in detail in 1890 and it was found that at least 37 percent of them were grossly adulterated. The virtual impossiblity of obtaining pure honey in the latter part of the 19th century greatly retarded its use. Thus, honey was one of the foods which was used to bring about passage of pure food laws in this country.

Honey subjected to exposure to pollutants will show elevated levels of elements known to be emitted by traffic and industrial concentrations or possibly from coming into contact with unprotected metal containers[10]. According to a report published in 1974 the elevated levels of tin found in honey subjected to laboratory analysis may have reflected contact between honeys sampled and tin surfaces during processing, shipping and storage. The report states elevated levels of zinc in certain samples may have derived from contact with galvanized metal parts of the extractor. The pH of honey may be expected to dissolve zinc when in contact with a galvanized surface. Based on this limited study it would appear worthwhile to investigate the possibility that honey produced in the vicinity of heavily polluted areas may acquire elevated levels of certain toxic and non-toxic elements. Direct contamination by air pollutants of nectar — as it resides in the plant — is possible as is the contamination of nectar and pollen by bees in contact with polluted surfaces, water or air.

Obviously the vulnerability of honey to invading foreign substances and microorganisms should be of concern to everyone who is interested in the future of the bee and honey industry. The technology is available to handle honey safely during processing. Progress is being made, although slowly, through environmental controls, which will reduce the possiblility of honey picking up contaminants from soil, water and atmosphere. Food safe materials are now used almost exclusively in new honey processing machinery, including new extractors, tanks of various kinds and conduits. Shipping and storage containers are available in food safe plastic, stainless steel or coated with surfaces resistant to or impervious to the corrosive action of acidic honey. Metal surfaces in contact with honey need no longer be a source of possible contamination.

The sanitation practices of beekeepers and honey packers vary considerably. Once honey is stored in the comb by the bees it remains in a fairly sterile environment. As the combs are uncapped the honey is immediately subjected to possible contaminants from the atmosphere and from its contact with extractors, filters, various tanks, pipes and bottling equipment. Honey handling facilities commonly range from sheds, garages, basements and kitchens of homes, and converted buildings to efficient honey houses. The honey processing location is less important than the care taken to protect the honey from contamination. Sanitation is typically lacking in buildings which lack the utilities of water, heat and ample light. There are obvious advantages offered by modern commercial honey plants but the beekeeper who handles his own honey crop must also manage to achieve at least the minimum standards of sanitation with the facilities he has. Honey is a sticky substance and the temptation to neglect cleanliness can cause untidy floors, clothing and the gummy accumulation of honey in extractors, tanks conduits and storage containers. Honey holds moisture on metal surfaces and moisture combined with the acidity of honey causes metal surfaces to rust much more than if the metal were exposed to water alone.

There is no doubt now that honey is susceptable to possibly more types of contamination than had heretofore been suspected although it need not necessarily be an insurmountable problem if the proper standards of sanitation are maintained during the processing of honey. At the present it is the responsibility of the individual honey handler to maintain these standards. If the beekeeping industry cannot maintain certain minimum standards of sanitation it will become subject to censure which unltimately will lead to closer scrutiny and more rigid controls from outside the industry. A leading writer for apicultural publications, including **Gleanings**[6], prophesises: "All honey offered for sale in the year 2000 must have been inspected and graded by state inspectors before being offered for sale."

"Imported honeys will likewise be closely inspected and graded and their uses specified."

"Those who attempt to sell substitutes as honey will be vigorously prosecuted by federal or state authorites or both."

And lastly and most inportantly, the author suggests that "Health standards in the production of honey will have been placed in effect; this will be particularly true of the honey house and its equipment and operation."

It is certain that closer attention must be paid honey for market. Those neglecting to clean up their operation who need to do so, and, who consciously refuse to abide by the common sense urgings of the majority of beekeepers and honey packers who maintain decent standards of cleanliness will cause pressures to be brought to bear on the industry. As a result, the implementation of controls will require additonal overhead expenses and cause lower margins of profit. Hobby beekeepers may find that their freedom to do with their honey as they please, now an accepted practice, could be curtailed by regulations designed to correct practices of or penalize individual cases that do not respond to the urgency to adapt the necessary sanitation standards for our product.

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# Honey Plants


**By FRANCIS O. HOLMES**
**Henniker, N.H.**


## The Purple Willow

WHEN HONEYBEES BEGIN to fly from their hives this spring, they will start at once to search for nearby sources of nectar and pollen to support the rapid growth of their developing brood and to replace, as far as possible, the winter stores that they have consumed during preceding weeks and months.

If native species of willow are not growing in sufficient numbers close to the hives, the vegetatively propagated purple willow (*Salix purpurea* L.), once important to the early American colonists as a source of supple withes for the manufacture of baskets, may serve as a satisfactory substitute for them.

Curiously enough, this purple basket willow is almost the only species of its genus that has ever been mentioned in our apicultural literature as of little or no value to honeybees. The reason for this surprising and disparaging statement, however, appears to be that the conventional method of culture of this plant for commercial basket-making involved harvesting of the long, straight rods each year before their overwintering blossom buds had developed to the flowering stage. If the branches of a male purple willow are allowed to grow year after year in their own natural way, the upright shoots soon develop innumerable lateral shoots that bear a wealth of staminate catkins. When these catkins blossom they strongly attract honeybees to collect both nectar and pollen.

In southern New Hampshire, a well developed shrub of this species is likely to be humming loudly with honeybees each year from about April 17th to April 29th. It is a popular concept that willows are edge-of-water plants, but this purple willow (like many other Salix species) thrives in a wide variety of environments, some relatively dry, some decidedly wet. At maturity the plant is likely to be twenty to twenty-five feet in height and perhaps equally broad. Ice and snow may weigh its branches to the ground in winter, but the plant is not likely to be injured in any way by the mere coldness of winter and generally it regains its summer stature when ice and snow melt away as a result of the higher springtime temperatures. This willow should not be planted, of course, near shallow wells or sewers where its roots might conceivably clog pipes or drainage fields. Planted as a windbreak well behind a row of beehives, the purple willow may help the bees by reducing the speed of winds in winter in addition to supplying them with nectar and pollen for food soon after the winter conditions are replaced by March winds and April showers.

A number of dwarfish variants of the purple willow are commonly grown as ornamental plants. Among these are the two-foot-high "Arctic willow" (*Salix purpurea* variety *nana*), somewhat taller variety with pendent branches, called (*S. purpurea* variety *pendula* Dipp.), and a variety with silky hairs on the undersurfaces of the leaves (*S. purpurea* variety sericea W. D. Koch). These ornamental variants are much less vigorous than the normal basket-willow type of the species and may not produce enough nectar or pollen to justify their extensive use by beekeepers. The standard-height purple willow, on the other hand, is valuable because it is able to dominate most weedy vegetation provided that it enjoys exposure to full sunlight. After the purple willow has become deeply rooted it will persist for many years.

A considerable volume of literature on this purple willow has accumulated over the years because of the usefulness of this plant in basket-making. Directions for its cultivation for this purpose are not necessarily applicable to the cultivation of the purple willow by beekeepers. Such directions may be of interest to some beekeepers, however, and are to be found in many government bulletins, such as Bulletin 316 of the United States Department of Agriculture, entitled Willows:

Their Growth, Use, and Importance.

### Japanese Pussy Willow

Among our cultivated willows, one of the earliest species to blossom is the Japanese pussy willow, *Salix gracilistyla* Miquel. This ornamental plant of early springtime is sometimes given the descriptive name "rose-gold pussy willow", because of the contrasting colors of its red anthers and golden yellow pollen in the blossoming aments, or catkins, of male specimens.

The Japanese pussy willow blossoms fully two weeks earlier than most of our native willows. It is also much earlier in blossoming than the commonly grown European pussy willow, or goat willow, *Salix caprea* L. The very early blossoming of the Japanese pussy willow is a substantial advantage to beekeepers. This willow can be located close to the hives, where no other source of nectar and pollen may be available so early in the year, at a time when weather may rarely permit lengthy flights of honeybees. Another advantage of this particular willow is its relatively high resistance to insect attack. The leaves of most kinds of willow are eaten to some extent, and sometimes extensively, by the imported willow-leaf beetle, *Plagiodera versicolor*, but this insect does not damage the leaves of the rose-gold pussy willow to any appreciable extent.

The Japanese pussy willow seems to be thoroughly winter-hardy, as indeed the great majority of our willow trees and shrubs are. It is not as tall as the European pussy willow, but it may attain a height of at least four to six feet and seems less disturbed by the weight of snow and ice in winter than many willows are.

When planted in the field, the Japanese pussy willow is tolerant of very substantial differences in soil moisture as soon as its roots have penetrated deeply enough to be unharmed by surface drying of the ground. During the first year of its growth in the field it may need extra watering at times unless the soil is well provided with water naturally.

Few willows are as ornamental as the rose-gold pussy willow for use in indoor bouquets in late winter and early springtime. Its blossom buds are large, and even in midwinter the bud scales can be removed manually without the necessity of cutting through them. It is only necessary to bend each bud sidewise a little in each direction before pulling the scale off lengthwise. Each ament, when thus exposed to view, is snowy white and glistens in the sunlight. If cuttings are held for a few days in water the catkins enlarge and may mature the pollen in their rose colored anthers. If kept dry the ornamental twigs and branches remain beautiful for months or even years.

Willows are commonly believed to be capable of easy rooting if their cuttings are held in shallow water or in moist soil. This belief is correct for some willows, and especially for those willows that have been selected over the years for ease of vegetative reproduction by nurserymen and basketmakers. On the other hand, some of our native willows that are essentially dependent on seed propagation in nature are far from easy to propagate by the rooting of their cuttings. Fortunately the Japanese rose-gold pussy willow seems to produce roots on its cuttings with ease throughout the whole year. Beekeepers who have access to a few cuttings, or to a single mature plant of this species, will find little difficulty in increasing their stock of this excellent early springtime nectar and pollen source to any desired extent within a very few years.

### Chinese Autumn Willow

Most beekeepers are aware of the importance of willow blossoms as sources of nectar and pollen in springtime, but few realize that there is a willow species that never blossoms in spring or early summer but only in autumn. This autumn-blooming willow is *Salix Bockii* Seemen, a native of West China.

Rehder lists this interesting willow as having been introduced into North America in 1908, but it may not have survived here from that first introduction.

Recently this Chinese willow was reintroduced, not directly from China but from Czechoslovakia through the kindness of Dr. Chemlar of Brno. For the time it was confined to the quarantine station of the Soil Conservation Service in Beltsville, Maryland. This autumn-blooming willow will not be available to beekeepers in general for some years to come, because it will have to be multiplied vegetatively in this country before a sufficient stock of it can be made available.

The recently introduced line is staminate and very attractive in bloom. The foliage is also decidedly good looking, the leaves being smaller than those of most willow species and varieties, smooth or with very small teeth on their edges, and with a tendency to revolute margins.

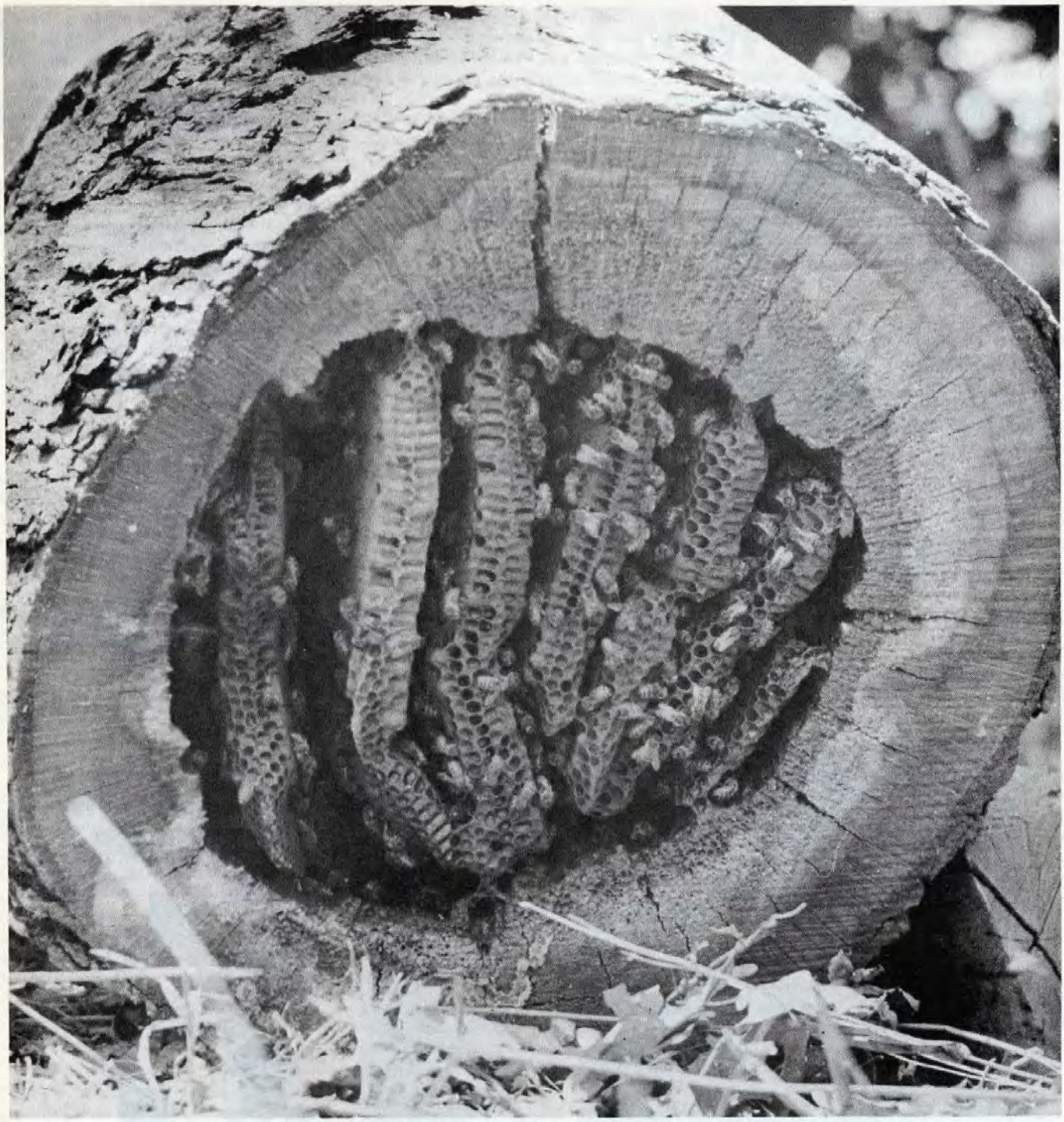
This autumn-blossoming *Salix Bockii* is said to reach a height of about ten feet and to display densely gray-pubescent branchlets. It seems to have acquired no widely used common name, but for the sake of simplicity we can refer to it as the Chinese Autumn Willow, to distinquish it from the American Autumn Willow, *Salix serissima* (Bailey) Fernald, which does ripen its seeds in autumn but actually blossoms as early as May.

**The Complete Book of Willows**, by S. C. Warren-Wren, published by A. S. Barnes and Company of South Brunswick and New York,. mentions the Chinese Autumn Willow as blossoming in October, a month for which we have comparatively few sources of nectar and pollen for our honeybees.

It is not yet entirely clear whether the Chinese Autumn Willow will prove hardy in the northern United States, but Alfred Rehder, in his **Manual of the Cultivated Trees and Shrubs Hardy in North America**, listed it as hardy in his Zone V, the zone to which he also referred *Salix amygdalina* L., *S. koreensis* Andersson, *S. blanda* Andersson, *S. caprea* L., *S. Medemii* Boiss., *S. hastata* L., and *S. gracilistyla* Miq. all of which grow without signs of winter injury in southern New Hampshire. Hence we are justified in hoping that in future years we may be able to provide our bees with nectar and pollen from the October blossoms of the male plants of *Salix Bockii*.

Honeybees commonly fly for one to three weeks after the end of the goldenrod and aster flow. They search diligently for whatever sources of nectar and pollen they can find, but with little success.

The Chinese Autumn Willow may be just what our honeybees need to ensure that they enter the inactive period of winter confinement in the hive without having depleted their winter stores.



**Bees in a bee tree may be outside the law but the beekeeper who hives them may not. Photo by A. Parsons.**

# *Bees, Beekeepers & the Law**

**By DEWEY M. CARON**
**Universtity of Maryland**
**College Park, Maryland 20742**

THE ASSOCIATION BETWEEN honeybees and humans is an ancient one. Man was intitally a predator — a robber of wild bee colonies. With his superior intellect and reasoning abilities, man learned to manipulate and manage the bee in an artificial domicile. Beehives have been continuously improved with the greatest developments occurring since the patenting of the Langstroth hive. Man has not domesticated the bee — he has learned, with varying degrees of success, to guide

and direct the population to his own advantage and service.

Honeybees themselves are not subject to man's laws. In court, bees have consistently been judged as "feral naturae" i.e., a wild animal. The honeybee does present a contradiction for man's laws, however. On the positive side, bees provide us with products, pollination services and a recreational hobby, while on the negative side they can be a human health hazard, a pest or a source of environmental contamination.

The threat of sting from a honeybee is the most frequently mentioned negative aspect of the honeybee. About 40 people die annually in the U.S. from the sting of a bee or wasp. The total is greater than the number of deaths from all the other venomous animals combined. Although most people label any stinging insect a "bee", honeybees accounted for less than 27% of actual stingings in one study. Since a normal person can take 500 or more stings before suffering a toxic reaction, the real danger is an allergic reaction. Studies indicates that 0.4 to 0.8% of the (less than 1 in 100) are in fact allergic to stinging insects. In a suburban Washington, D.C. hospital 4.9% of hospital emergency room visits in August 1979 were for allergic reactions to stinging insects.

Honeybees can be pests (or a nuisance) as they forage in a garden of flowers or around soda containers thrown in a trash receptacle at the park. A swarm of bees may similarly be called a pest since it is a bee colony out of place. Honeybees and pedestrian or vehicular traffic often cannot co-exist harmoniously.

Bees also can contaminate. Spotting of vehicles or wash drying on a line is one source of contamination. Pollination of flowers resulting in more rapid flower death can also be considered an environmental contamination by those who are unaware of the enormously beneficial aspects of bee pollination.

### Beekeepers and the Law

Beekeepers have many laws that they must abide by. Some are of great benefit. Each of the 50 states has an apiary law. Such laws were requested and often drafted at least in part, by beekeepers. These are necessary because AFB disease is not just an individual problem; such laws indicate that the people recognize the necessity and benefits of protecting their states' resource of honeybees from disease. State laws also govern interstate movement of colonies and beekeeping equipment. A federal law prevents importation of bees or bee germ plasm into the U.S. This was promulgated to keep acarine disease and, more recently, bee mites, out of our apiaries. To date it has been successful in this.

Bee products and the honey houses where honey is extracted and packaged are also subject to laws. Local governing bodies are often responsible for enforcement of honey house sanitation and food product sales regulations. Laws vary widely from one area to another. Undoubtedly, sanitation laws are going to be more strictly enforced in the future which may change some of the equipment and techniques now in use.

### Apiary Locations

More beekeepers will establish an apiary site in an urban/suburban location this year than in a rural location. They will face a myriad of laws and regulations. Some states regulate apiary locations and new sites are not available in the best beekeeping territories. Communities may forbid keeping of bee colonies within corporate limits as, for example, Washington, D.C. does. Officials in numerous large and small communities across the U.S. will face the question of regulating bee colonies or beekeepers this coming year.

Zoning regulations are common everywhere. Honeybees may be termed "common household pets", "agricultural livestock", a business or an "agricultural endeavor" and be subject to differing regulations. The interpretation of zoning regulations can be most critical when the question of beekeeping in a residential community is raised. Beekeepers may have rights under non-conforming use (i.e. they were there before the zoning regulation) or they may secure a variance.

It generally is of little use to determine if bee colonies are permitted under existing zoning regulations before you begin with bees in a location. In many cases you may receive a no or simply muddy the water with your request for information. If your bees are determined (i.e. interpreted) to be in violation of a zoning regulation, you have appeal rights and an opportunity to conform before any penalties are levied.

### Nuisance and Neglience

Beekeepers in an urban/suburban location, like beekeepers everywhere, do not have the right to keep their bees in a negligent manner. Negligence, if not deemed illegal, can be the bases for a civil suit to recover damages. An instance of negligence in an area with people, pets, etc. is more serious and potentially more disasterous financially than a mistake made in the rural area. Personal liability awareness is most acute in the general public these days and a beekeeper must avoid negligent beekeeping practices.

A beekeeper's neighbor has the right to his or her property just as the beekeeper has a right to beekeeping on property that he or she owns. Just because a neighbor is afraid of being stung or feels that a family member is allergic to stings doesn't mean that your bees are a nuisance. There has to be a probability of their being a nuisance factor before a court will attempt to limit or halt the beekeeping activity.

The urban beekeeper needs to be a better beekeeper than his or her rural counterpart. Special attention areas are swarm control, inspection time and procedure, water collection, gentleness of the bee, feeding of supplemental sugar water, vandalism and the apiary site itself. Concealment is often the best approach and neighbors need to be sweetened with some of your harvest. The bees also have a story to tell and they are vital and necessary to man. It is often up to the beekeeper to inform and assist elected officials so they legislate and regulate wisely.

*Summary of remarks presented to Southeast Regional Bee School & Tennessee State Beekeepers Meeting, Knoxville, TN. Oct. 19.

# Unusual Calendar From North Carolina

The New Year will be well marked for North Carolina beekeepers by a 1980 calendar issued by the North Carolina Beekeepers Association. The reverse of each page bearing the dates of the month lists a schedule of beekeeping activities for the month shown. Common honey plants expected to be seen that month are very interestingly introduced by line drawings. Average opening bloom dates are noted on the calendar as well as holidays, meeting dates and some beekeeping historical dates.

The average first date of bloom of the honey plants are divided according to the three predominant physiographic sections of the state: Mountains, Piedmont region and Coastal Plain.

**The calendar of the North Carolina Beekeepers Association.**

Apiary hints on bee management are listed on the back pages.

The Exec. Ed. is J.J. Ambrose; tech. asst., S. Watson; layout, S. Bambara; lettering, L. Romanow; art, S. Van Gieson. The editor, Dr. John Ambrose is the extension apiculturist at North Carolina State University and also the editor of the **Enn Cee Bee Buzz**, a publication of the Agricultural Extension Office.

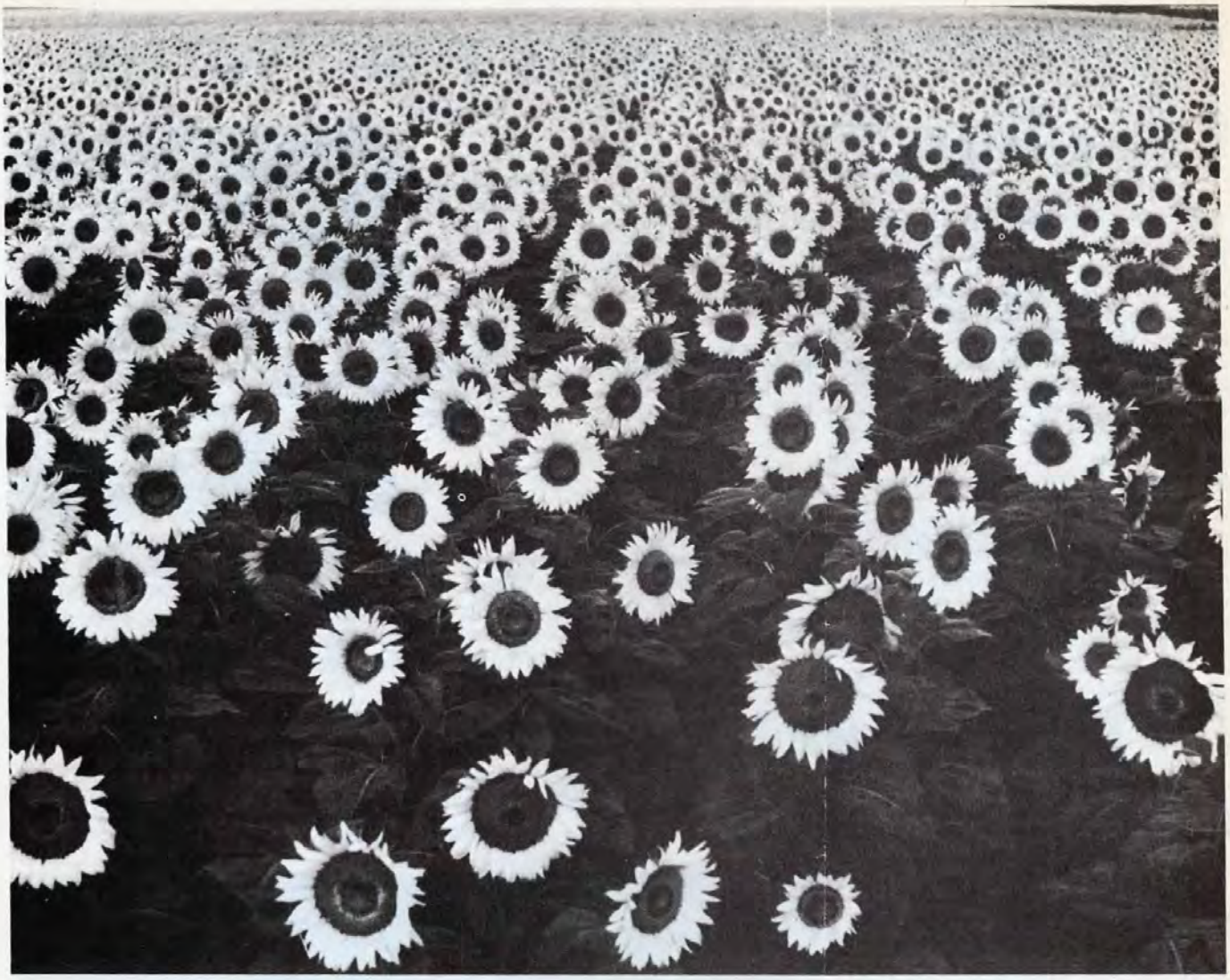
# New Pollinating Bee

**Excerpt from "Agricultural Research" of June, 1979: Vol. 27 (12)**

A New IMPORT from Japan, a species of bee called *Osmia cornifrons,* now under study at the Beltsville Agricultural Research Center May help solve pollination problems for homeowners and small farm fruit tree growers. About two-thrids the size of a honeybee it is short-lived and are more active than other bees when temperatures are lower. Their flight range is very limited, seldom ranging more than 100 yards from their nests. For this reason they are unsuitable for commercial pollination purposes in large acreages.

The Beltsville study began in 1977 after research entomologist Suzanne Batra successfully imported 600 of the bees from Japan. *O. cornifrons* have been used for apple pollination for more than 30 years in some northern areas of Japan. The colony in Beltsville now number about 2,500. Previously U.S.D.A. scientists had tried to establish *O. cornifrons* at the Bee Biology and Systematics Laboratory in Utah but the winters proved to be too harsh. "The East Coast with its higher humidity agrees with the bees" says Dr. Batra.

*O. cornifrons* nests in hollow reeds or similar sites in nature but will adapt to bundles of soda straws; each bee having its own straw. The baby bees develop in the straw from eggs deposited there, hibernate through the winter and emerge as adults in the spring.



# The Sunflower Bee

**Excerpt from "Agricultural Research" of July 1979: Vol 28 (1)**

*Melissodes agilis* or sunflower bees are capable — through pollination — of increasing the yield in sunflowers grown for oilseed production.

Sunflower acreage in the United States has incresed by 67% per year, going from 222,000 acres in 1970 to more than four million acres last year. Many wild bees visit sunflowers, SEA entomologist Dr. Franklin D. Parker at Logan, Utah found. The best pollinator among these bees in *Melissodes agilis*. Pollination by Melissodes increased the number of seeds produced in all sunflower varieties, even those listed as self fertile. Seed oil content was also boosted. Even honeybees are not as efficient pollinators as Melissodes, the article states. The sunflower bee visits sunflowers for both nectar and pollen and the foraging is done in the morning when the plant first sheds its pollen, while honeybees make their visits later, after much of the pollen is shed, researchers have found.

Dr. Parker is continuing to look for additonal native bee pollinators of sunflowers at the Logan, Utah station.

# Bees Prefer Outside

**By DORIS SHERRILL**
**East Hampton, N. Y.**

WE ATTENED the Beekeeping course at Cornell the summer of 1978, and heard all about bait boxes. The whole thing seemed like a good idea; so my husband made two bait boxes for the '79 season. On checking them this fall, one had nothing in it but look at the other! A swarm not in it but on it! It worked but not the way we expected.

**A bait box captures a swarm----almost.**

# News and Events

**The 9th Annual Hubbard Award is presented by L.M. Hubbard (L) for the Florida State Beekeepers Association to the Florida Beekeeper of the Year, Phillip Packard.**

### FLORIDA
**Florida State Beekeepers' Association**

The 9th Annual Hubbard Award was presented to the Florida Beekeeper of the Year, Phillip Packard, at the annual meeting at Ft. Pierce, Florida on November 9, 1979.

### OHIO
**Tri-County Beekeepers' Association**

The Tri-County Beekeepers' Association will have their second annual one day workshop March 8, 1980 from 9:00-4:00 at the OARDC Auditorium in Wooster, Ohio.

The speakers for the workshop are four prominent and highly respected beekeepers: Mr. Tom Ross, Mr. John Caulk, Mr. Jim Tew and Dr. Malcom T. Sanford. They will cover the following topics: Getting Started in Beekeeping, Beekeepers' Calendar, Nosema and Disease Prevention, Hive Manipulations, Two Queen Systems, Beekeeping Equipment, Increasing the Apiary, and The Stinging Behavior.

To register notify: Mrs. Mary Caulk, 6137 Ely Road, Wooster, Ohio 44691 or register at the door. The cost of the workshop is $3.00. A box lunch is available (from Kentucky Fried Chicken) to those who register before February 25, 1980 for $2.75. Tables are available to those who wish to bring their lunch.

Beekeepers who have new or unusual equipment are invited to bring it for display.

### WASHINGTON
**Washington State Beekeepers' Association**

Washington State Beekeepers' Association held their 86th. annual meeting and election of officers November 29, 30 and December 1, 1979 in Portland, Oregon. This year's gathering took place in conjunction with Oregon State Beekeepers' Association (as in 1978), and was hosted by a local Washington group, the Clark County Beekeepers' Association.

Featured speakers from the state, federal and local levels — as well as from Canada — spoke on a wide variety of beekeeping related topics and drew an attendance by beekeepers from Washington, Oregon, Idaho, California and Montana.

Pesticides, with relationship to bee kills, again dominated the business portion of this year's meeting. Explicit data is needed in order to gain effective governmental pesticide protection for bees and three statistical gathering projects initiated by WSBA during 1979 were reviewed.

Election of officers for 1980 took place on the final day of the convention and Robert Longanecker of Wapato, Washington was elected WSBA president, succeeding Elwood Sires of Union Gap, Washington.

P. F. (Roy) Thurber of Kirkland, Washington was re-elected vice president and Diane Longanecker of Wapato, Washington was re-elected secretary-treasurer.

Elwood Sires of Union Gap, Washington and Ed Friis of Pullman, Washington were elected to the executive board succeeding Ken Smith of Yakima, Washington and Bob McMillan of Spokane, Washington respectively.

Mr. Sires and Mr. Friis join incumbent executive board members John Davidson of Omak, Washington, Bill Bade of Milton-Freewater, Oregon, Harold Lange of Mt. Vernon, Washington, and Lee Massey of Grandview, Washington.

Persons interested in joining the Washington State Beekeepers' Association may do so by writing the secretary-treasurer, Diane Longanecker, Rt. 2 Box 2075 — AA, Wapato, Washington 98951.

## NEW YORK
### Empire State Honey Producers Association

Miss Yvette Beck is the 1980 New York State Honey Queen.

She was crowned at the annual banquet of the Empire State Honey Producers' Association held in Syracuse in December and supersedes her sister, Michelle, as the Empire State queen.

Also at the banquet, Harold A. Merrell, of Wolcott was honored for his outstanding contributions to apiculture, among these, a sizeable gift to Cornell University's Dyce Laboratory. Dr. Roger Morse presented a plaque in behalf of the College, and Empire State Honey Producers' President Edward Doan presented a letter of appreciation to Mr. Merrell, former President.

Much interest and many entries resulted from the Empire State Honey Producers first annual honey show. Ribbons and prizes, contributed by suppliers, were awarded for the three best entries in each category.

At the annual business meeting, Edward Doan of Hanlin was reelected to serve another term as president. Other officers elected are: 1st Vice President, Alan Clark, Moravia; 2nd Vice President, Robert Glatz, Feura Bush; 3rd Vice President, John Ryan; Secretary-Treasurer, Jon MacDonald, Sauquoit; Field Secretary, Dr. Roger A. Morse, Ithaca and Newsletter Editor, Duane C. Waid, Interlaken.

**Roger Morse, left and Edward Doan, right presents plaque and letter of appreciation to Howard Merrill at the Empire State Honey Producers Association meeting in Syracuse, New York.**

## MARYLAND
### Maryland State Beekeepers' Association

The 73rd annual meeting and 43rd annual honey/cookery contest of the Maryland State Beekeepers' Association (MSBA) will be held on Saturday, February 9, 1980, 0900-1500, at the University of Maryland, College Park, Adult Education Building.

All beekeepers and friends, members or not, may participate and win cash prizes/ribbons in the 35 classes of entries in the very popular honey/cookery show.

Will you join the close to 250 who normally appear?

For further information, contact John Romanik, MSBA Secretary, 3200 Pine Orchard Lane, Ellicott City, Maryland 21043 (301-465-1809).

## CALIFORNIA
### San Francisco Area

The San Francisco Community College District will sponsor a series of five lecture-demonstrations in practical beekeeping for city hobbyists. The series will begin on Tuesday, February 19, at 7 p.m. at the Marina Junior High School, 3500 Fillmore St., San Francisco and will continue on Tuesday through March 18.

Opportunity to observe correct methods of handling bees will be provided on Saturday, March 22 as well as a hands-on experience for those who have participated in the lecture-demonstrations and are prepared.

There will be no course fee, but participants will be expected to provide themselves in advance or prior to the second class meeting with the **THE ABC and XYZ of Beekeeping**.

Instructors will be Louis V. Dubay and Lenore Bravo. For information call 415-861-5636.

## CONNECTICUT
### Connecticut Beekeepers' Association

The winter meeting of the Connecticut Beekeepers' Association will be held on Saturday, February 23, 1980, starting at 10:00 a.m., in the Donald F. Jones Auditorium at the Connecticut Agricultural Experiment Station, 123 Huntington Street, New Haven.

The meeting will begin with the usual business session. The balance of the morning will be devoted to a group of four workshop sessions, conducted simultaneously: How to Hive Package Bees, Producing and Marketing Comb Honey, Making Pollen Patties and Making Straw Skeps.

The noon break will feature our famous pot-luck buffet luncheon. Bring something you like for all to enjoy. As always, coffee is "on the house".

The afternoon session will feature a single workshop program, How To Dip Wax Candles.

All beekeepers and friends are cordially welcome to attend and to participate in the workshop sessions.

Any questions about the meeting may be directed to the Association's Secretary at 16 Rose Terrace, Trumbull, CT 06611.

## CONNECTICUT
### Beekeeping Short Course

A short course will be given at the White Memorial Conservation Center and Museum, Litchfield, Connecticut.

The instructor will be Professor Al Avitabile of the University of Connecticut and co-author of the **Beekeeper's Handbook.**

The course will consist of three Saturday morning and afternoon sessions (bring a lunch). Sessions begin with lectures at 9:30 A.M. immediately followed by field trips to beeyards for demonstrations. The dates for the course will be March 29 and April 5 and 19.

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

Cost will be $25 per person for the entire course. For additional information contact the museum 567-0015 or Al Avitabile 757-1231 (ext. 38) area code (203).

## ONTARIO CANADA
### Fanshawe College Beekeeping Course

The sixth annual spring course in beekeeping will start at Fanshawe College, London, Ontario, Canada, the evening of March 3rd, 1980. As in previous years the lectures and practical demonstrations will be by Harold Killins, B.S.A. Those registering should contact Mr. Dan Link, Fanshawe College Continuing Education, 520 First Street, London by mail or Phone (519) 452-4425.

## WYOMING
### Wyoming Beekeepers' Association

The annual meeting of the Wyoming Beekeepers' Association was held at the Ramada Inn in Bozeman, MT in conjunction with the Montana Association on November 16-17, 1979.

Guest speakers included Cal Campbell from the Montana Department of Health and Environmental Science who spoke on the State's role in safety and cleanliness in honey plants and warehouses; Dr. Matt Tomaszewski, a Billings Allergy Specialist, spoke on how bee stings and other insects cause hypersensitivity and cures; and Lloyd Harris from Beaverlodge, Alberta, Canada, who spoke on population dynamics and spring buildup of bees. Also attending this meeting was Miss Kim Arnevik from Rice Lake, Wisconsin, the 1979 American Honey Queen.

Election of officers was held with the present slate reelected for the coming year: Kenneth Miller from Dubois, WY, President; Bill Camp from Basin, WY, Vice-President; and Emrie Ann Miller, Dubois, WY, Secretary-Treasurer.

## NORTH DAKOTA
### North Dakota Beekeepers' Association

North Dakota Honey Queen Amy Swearson, Towner, presented a jar of North Dakota honey to Governor Arthur Link during the North Dakota Beekeepers' Association's promotional activities in Bismarck recently. Miss Swearson, the daughter of Mr. and Mrs. William Swearson of Towner, was selected as the North Dakota Honey Queen by the Beekeepers' Association in September.

**Amy Swearson presents a jar of honey to North Dakota Governor Arthur Link.**

## MICHIGAN STATE UNIVERSITY FARMER'S WEEK

### BEEKEEPING PROGRAM

### FRIDAY

**Morning Auditorium, Kellogg Center**
**Chairman:GORDON WARDELL, Dept. of Entomology, MSU**

9:40 Movie — Bee Management: Honey Handling

10:00 AFB in Michigan (1079; Proposed Changes in the Apiary Inspection Law (House Bill 4967); JOHN DREVES, Mich. Dept. Agr.

10:45 Population Build-up — Time and Space Requirements, DR. ROGER HOOPINGARNER, MSU

11:30 Michigan Beekeepers Association, Notes and Comments

**Afternoon Auditorium,Kellogg Center**
**Chairman: JAMES BATH, MSU**

1:30 Bee Pests, DR. DEWEY CARON, University of Maryland, College Park, MD

2:15 Birdsfoot Trefoil, DR. LAWRENCE COPELAND, MSU

3 : 0 0 Break
3 : 3 0 Introduction of Honey Queen Contestants

4 : 0 0 Crystallized Honey its Prevention and Use, DR. E. C. MARTIN, Professor Emeritus, MSU

**Evening Auditorium, Kellogg Center**

7 : 3 0 Honey Queen Pageant — Choosing the Michigan Honey Queen for 1980

Beekeeper of the Year Award — Presented by RICHARD HUBBARD, Onsted, MI

Reception following in the Centennial Room

**SATURDAY**

**Morning B-108 Wells Hall**
**Chairman: ROGER HOOPINGARNER, MSU**

9 : 3 0 Movie — Fall and Winter; Late Winter and Spring Bee Management

1 0 : 0 0 Swarming Behavior, DR. DEWEY CARON, University of Maryland, College Park, MD

1 0 : 4 5 How Bee Equipment is Made, JOHN ROOT, A. I. Root Company, Medina, Ohio

1 1 : 3 0 Beekeeping Associations; Local, State, Regional, National, and International, DR. ROGER HOOPINGARNER, MSU

**Afternoon B-108 Wells Hall**

1 : 3 0 Divisions for Increase — Panel Discussion, A. H. HILBERT, Traverse City, Discussion Leader

2 : 1 5 Honey and Pollen Plants — Recognition and Importance, GORDON WARDELL, MSU

3 : 0 0 Questions and Answers.





# INDEMNITY PROGRAM RECEIVES LIMITED FUNDING

THE U. S. SENATE and House of Representitives agreed on a compromise Agricultural Appropriation Bill which was forwarded to and signed by President Carter on Nov. 9, 1979.

The final bill included an appropriation of only $2,890,000. Of this almost $2,000,000 was committed to pay out standing 1978 claims. Of the balance, approximately $50,000 was distributed in payment of 1979 claims filed befor June 15, 1979. Only $840,000 is available to pay the remainder of 1979 claims which it is estimated will total $3.5 to 4 million dollars.

According to information provided by the Indemnity Payments Office in Washington unless a supplemental appropriation can be obtained, their only options will be —

1. Pay claims in full on a "first come — first served" basis until funds are gone.

2. Withold payment until all claims are filed and pay a few cents/dollars.

Although neither of these options seem very satisfactory, it is pointed out that there is little likelihood that the Department of Agriculture would request any supplementary funds.

Information from the ABF newsletter Vol. 36 "11-12 Nov. — Dec., 1979.

### MONTHLY HONEY REPORT

(Continued from page 62)

gram compared to 1.4 million a year earlier. High interest rates and uncertain future economic conditions, cause handlers to reduce bulk honey inventories. Colony rentals for almond pollination range from $15.00 to $24.00 per colony, with an average of $18.00 to $20.00. 75% of almond acreage has been contracted as of December 31, 1979.

### BEEKEEPING IN BELIZE

(Continued from page 76)

syrup to attempt to control foulbrood. The syrup mixture was sprayed directly into the combs. I do not know what results this procedure achieved.

Another project the man from the Peace Corp was working on was a study of the native bees. There are several varieties of stingless bees that produce honey in Belize. He had three varieties in makeshift hives including an observation hive. We found these bees very interesting. They would not be valuable for honey production, however.

We visited several other beekeepers in the area including a young man who is setting up another small equipment manufacture operation. All of the bees, other than native, that I saw in Belize looked to be Italians and they all seemed very gentle. Although high honey crop averages are reported in Belize there are many problems that must be solved in order to make beekeeping profitable there.

### BEE TALK

(Continued from page 84)

It's a good swarm control method, and only takes a few minutes.

(Readers with questions please make them short and to the point and enclose s.s.a.e.)

**RESEARCH REVIEW**

(Continued from page 85)

must search the paper carefully for the reddish-brown mites which are about the size of an ordinary pinhead.

Russian, Bulgarian and, recently, Turkish beekeepers have reported they are losing thousands of colonies each year because of varroa disease. Beekeepers in Germany have not lost colonies or their entire honey crop, but they have been carefully treating their colonies in the infested area. However, control methods must be carried out religiously.

Beekeeping in Germany is different from that in the United States; they have almost no wild colonies living in trees or buildings; such colonies can serve as a reservoir for a disease. Wild colonies do not survive the winter in Germany because there is little forage and bees cannot survive without being fed. In Germany it is routine to remove all the honey (which sells for a very high price) and to winter the bees on sugar syrup.

The varroa disease problem is being followed closely by the U.S.D.A. Persons who see suspicious material should send it to Dr. H. Shimanuki, Chief, Bioenvironmental Bee Laboratory, U.S.D.A., Beltsville, Maryland, 20705.

**STRICTLY BACKLOT**

(Continued from page 82)

lies dormant until triggered off by the vibrations of a seven-year-old rotary mower."

"Some spring with the bees," he said, and I know he knew I didn't want to talk about it anymore.

"Humbling," I said, and the three of us laughed and changed the subject to solar energy.

**SIFTINGS**

(Continued from page 83)

being broken when top and bottom bars are cleaned with the hive tool.

In addition, these vertical wires help to prevent the top and bottom bars from pulling away from the end bars. The wires tie them together. Extracting frames will rarely break in the extractor with vertical wiring. We used this method in Mexico and it has worked so well we will now start using vertical wiring. It is a little more work, perhaps, but replacing broken and sagging combs is even more work. More beekeepers should try it and see how it works out.

I never did like wood- spaced frames. It really makes no difference if the V side touches the flat side or not. In a year or two when the bees glue up the wood spacers in good shape, there is no V side left. Both become flat sides, filled with bee glue. I like the metal spaced frames. More work to make, but so much easier to handle through the many years that you will use them. It is well to remember you make the equipment just once, but you keep using it every year. Using bad equipment every year can be an awful nuisance.

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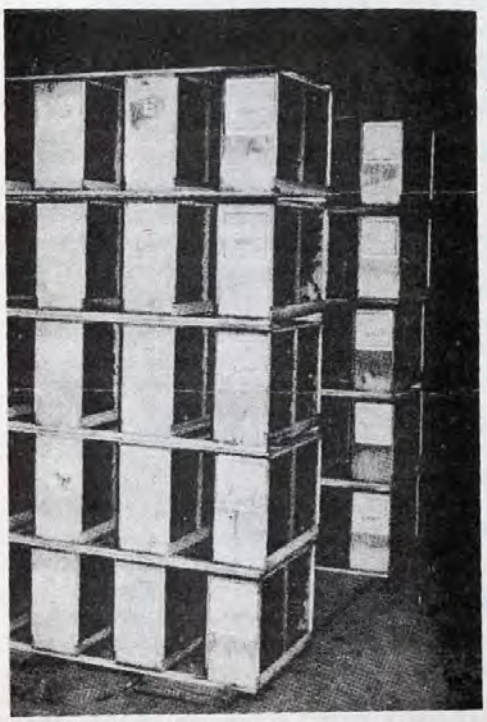

**APRIL 1980**

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**MAY 1980**

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| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

**JUNE 1980**

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NUCS FOR SALE — 3 Frame $25., 4 Frame $27., 20% down to book order. Phone 717-242-0633. After 5:00 or write Art Kohler, R.D. #1, Box 102, Granville, PA 17029. Possible delivery along Interstate 95 into PA during April.

ONE HUNDRED FORTY HIVES, plus extra equipment: 400 deeps, 600 shallows; complete extracting operation: 72-frame extractor, uncapper/wax melter/separator, storage tanks, etc.; Peebles, Ohio (513) 764-1249.

QUALITY SUPERS dovetailed: 9⅝ — $3.50, 7⅛ — $3.00, 6⅝ - 5¾ — $2.25. John Day Apiaries, IZEE Rt., Canyon City, OR 97820, (503) 575-0555.

**MEYER STINGLESS BEE GLOVES** Absolutely the best bee gloves your money can buy. Goatskin/Nylon for long life, flexibility. Ask your dealer for them or $13.00 from Golden Ambrosia Honey, Rt. 1, Box 175-B, Monmouth, OR 97361.

**SQUEEZE BOTTLE**—24 ounce size with snip top spout and cap. 100 bottles 22¢ each, 200 bottles 20¢ each. U.P.S. Shipping weights 11 pounds and 22 pounds respectively. Samples $1.25. Hollowville Products, Hollowville, NY 12530.

QUALITY CYPRESS BEEKEEPING SUPPLIES: Manufacturing for those who know the best costs less in the long run — **dovetailed** 9⅝", 6⅝", 5 11/16" supers, hives, hive parts, Cobana supers, nucs, beginner's kits and complete supplies. Write: BEE-JAY FARM, 1524 Drowning Creek Road, Dacula, Ga. 30211.

## BEES & QUEENS FOR SALE

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

PACKAGE Bees and Queens. Hives of bees with or without supers. Ramsey Jewelry, Pardeeville, WI 53954. 608-429-3045.

WILL CONTRACT truckload or smaller lots of 3 or 4-frame nucs. For delivery April to May in South Texas. Call T.E. Dougherty for details. 713-376-1323.

280 single story migratory hives all or part. Nine-frame 1980 queens. Paul Anderson, R.R. 1 Box 96, Northfield, Minn. 55057, 507-645-8477

Eight colonies for sale double brood chambers, plenty of honey to carry over winter. 1-215-357-5530, Trevose, PA

MICHIGAN beekeepers will be hauling package bees from Georgia again this spring. For prices, dates and information call Don Reimer, PH: 517-695-9031, Hemlock, Michigan.

PACKAGE BEES delivered to Wisconsin near Green Bay, Eau Claire and at my home. Ronald Hazard, Route 2, Poynette, Wis. 53955, phone: 414-992-3217.

FIVE FRAME NUCS. April-May pickup in Belmont, N.Y. Placed in your equipment. $35.00 — $5.00 deposit per nuc when ordered. DICK'S Bees, Upper South Street, Belmont, N.Y. 14814 — 716-268-7684

PACKAGE BEES. Pick up in St. Paul, Minnesota. Mid April. Now booking 1980 orders. Write for brochure. J. B. Apiaries, P.O Box 6626, St. Paul, Minn. 55106.

MARYLAND BEEKEEPERS (and adjacent states): Package Italian bees for pickup April 12-13 near Frederick, MD (queens fed Fumadil-B). 2-lb. pkg. $20.25; 3-lb. $24.25 $3.00 per pkg. books order. Ernie's Apiaries, 9933 Kelly Rd., Walkersville, MD 21793. 301-898-9746.

NORTHERN BRED CARNIOLAN-queen bees. $5.00 each, Post paid. Now booking with shipment to start May 15, 1980. Glenmont Woods Honey Farm, John Caulk, 6137 Ely Road, Wooster, Ohio 44691.

Two lb. packages — Italians with queen. Order early — pick up Owatonna Mid-April. 507-451-7713 Gene Karaus, RT.2, Owatonna, MN

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**NORTHERN CALIFORNIA** Italian Queens, shipped airmail, postpaid and insured. April 1st to May 15th. 1-25 $5.00; 26-99 $4.75; 100 or more $4.50. After May 15th, 1-25 $4.50; 26-99 $4.25; 100 or more $4.00. Live delivery guaranteed. Ken Bachman (Bachman Apiaries), 1801 Calin Lane, Anderson, Calif. 96007. Phone: 916-365-4029.

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**BULK BEES** — minimum order 200 lbs. $5.00/lb. your containers or $4.00/lb. and you shake with your equipment.

Single story colonies available April 15th with 1980 Queens $45.00 each, 300 or more $42.00 each. Pickup California or Nevada locations. Dappen Honey Farms, P.O. Box 657, El Dorado, CA 95623, Phone: 916-622-8522.

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Strong southern nucs delievered to West-Central Illinois last of April. 1980 laying queens. Richard Davis, RR #2, Dallas City, Ill. 62330, (217) 659-3342.

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Italian bees, State inspected. Four frame nucs in your equipment frames exchanged. Pick up April. G.M.C. truck, new motor, Kelley loader, good condition. D.M. Brister, Rt. 1, Caddo, Okla. 74729, Ph: (405) 367-2570.

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ITALIAN QUEENS and package bees. Shipment begins April 1st. QUEENS 1-5, $6.00; 6-24 $5.50; 25-99, $5.25; 100-499, $5.00; 500 or more $4.50. 20% discount on queens after May 15th. 2-lb. package w/q $15.00 plus package. RICKARD APIARIES, Rt. 1, Box 2241, ANDERSON, CA 96007 PHONE: (916) 365-5551 or (916) 365-6556.

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NUCS and PACKAGES — Deposit w/order $24 to $44 F.O.B. "Bees" Fayette, MS 39069. Delivery available.

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SIX TWO STORY ten frame colonies, $50.00 each. Twenty shallow supers. All drawn combs, $12.00 each. Wm. Halter, 1552 Canter Ave., Camarillo, Calif. 93010.

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FOR SALE 300 hives of bees. Two story standard 10 frame. Inner cover and tin lids. Several hundred 10 frame supers and other new and used bee supplies. Norman Ellis, 1509 Orr Rd., Caro, Michigan 48723, Phone (517) 673-3647.

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EIGHTY STANDARD 10 frame colonies, heavy with stores, double deeps and plenty of extra supers $80 each. P.O. Box 14, Merino, Colo. 80741. Phone: 1-303-522-0193.

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PACKAGE BEES. Now booking for April delivery. Contact R.J. Leu Apiaries, Box 173, RR 3, Hudson, Wisc. 54016, (715) 386-9162.

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PACKAGE BEES 20 dollars — April 24 — Larry Bergmann, Mellen, Wisconsin 54546 — 715-274-7501.

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ITALIANS QUEENS $4.00 each.Threeframe nucs with queen $25.00, shipped frieght collect. Three frame, nucs, your box,frame exchange and wax pick up only $18.00, 10% to book all orders. Write: Dixie Bee Supply, 1711 Ricardo St., Valdosta, GA 31601.

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FOR SALE 27 Hives of Bees ready for winter and extra equipment. Wayne Cooper, Phone: 419-428-3603.

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ITALIAN PACKAGE Bees and Queens. Nucs Fumadil-B Fed. Morgan Apiaries, Rt. 2, Box 34-C, Oklawaha, Fla. 32679, 904-288-2735.

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HONEY PRODUCTION HIVES. Injured back — Must sell before spring. Hives and extra equipment. Some hives have honey on. (408) 842-0784.

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ONE HUNDRED colonies with new queens. 1 deep and 1 shallow — $60.00 per colony. Disease Free. All or Part. 1-513-593-7355.

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PRODUCTION INCREASE 2,000 4 or 5 frame nucs. Your boxes or ours. Italian queens this spring. Northern or Southern stock. Northern breeders wintered in St. Lawrence River Valley. Carpenter's Apiaries, Inc., 813-635-3381, Rt. 1, Box 71-C, Frostproof, Fla. 33843.

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SIX - 3 story hives. New equipment with 3 standard deep supers, for each hive. East Jefferson, N.Y. Tel. 516-486-3992.

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PACKAGE Bees and Queens. Hives of bees with or without supers. Ramsey Jewelry, Pardeeville, WI 53954. 608-429-3045.

## FOR SALE

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**SQUEEZE BOTTLE**—24 ounce size with snip top spout and cap. 100 bottles 22¢ each, 200 bottles 20¢ each. U.P.S. Shipping weights 11 pounds and 22 pounds respectively. Samples $1.25. Hollowville Products, Hollowville, NY 12530.

PACKAGE Bees and Queens. Hives of bees with or without supers. Ramsey Jewelry, Pardeeville, WI. 53954. 608-429-3045.

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CLOVER, BUCKWHEAT, WILDFLOWER, ORANGE, AND TUPELO HONEY. ROYAL JELLY 6/5# — 30# HONEY P.PD, 2nd ZONE, $28.00, ASK FOR LARGE LOT PRICE. HUBBARD APIARIES, INC., BELLEVIEW, FLA. 32620. 245-2461.

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All the extractors have V shaped sloping bottoms with large center drains. The extractor tank and reel are made of heavy 16-gauge 304 qulity stainless steel. Note the continuous weld and reinforced construction on reel and tank.

Note the easy to use controls. The top dial is the speed control; the bottom dial sets the acceleration time.

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|---|---|---|---|
| Frame Capacity | 24 D/44 Shal | 44 D/60 Shal | 80 Frames |
| Voltage Required | 110 volts | 110 volts | 110 volts |
| Motor Type | ¼ Hp. | ½ Hp. | ¾ Hp. |
| Drain Diameter | 2" FPT | 3" FPT | 3" FPT |
| Tank Height | 34" | 36" | 38" |
| Tank Diameter | 30" | 38" | 55" |
| Reel Diameter | 28" | 35" | 52" |
| Shaft Diameter | 1¼" | 1¼" | 1½" |
| Brake Type | | Electric Disc | Electric Disc |
| Warranty | One Year Complete | One Year Complete | One Year Complete |
| **Catalog Number** | **HO 61050** | **HO61070** | **HO 61040** |
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| 1-24 Queens | $7.25 ea. |
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| 5 | 6⅝ Shallow Bodies, 6¼, Commercial Grade | | | 22.00 |
| 50 | 6⅝ Shallow Bodies, 6¼, Commercial Grade | | | 200.00 |
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