Gleanings in

JULY 1979

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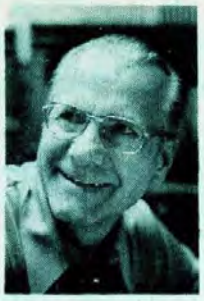

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THE A. I. ROOT CO., PUBLISHERS
P. O. BOX 706
MEDINA, OHIO 44256

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Subscription Rates: United States subscribers, one year, $8.00; two years, $15.70. Single copy $1.00. Other countries including Canada, Pan American countries and Spain (U. S. Currency only) $1.50 per year additional for postage. Published monthly. Discontinuance: Subscription stopped on expiration. Change of Address: Give your old as well as the new and write the name to which the journal has heretofore been addressed. Remittance should be sent by post office money order, bank draft, express money order or check.

Articles are solicited. Stamps should be enclosed to insure return of manuscript to author if not printed.

Opinions expressed by the writers in these columns are not necessarily the opinions of the editors.

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COVER STORY

The stately Parliment buildings of Canada's capital, Ottawa, Ontario, are a sight-seeing "must" on the itinerary of visitors to the 25th Annual Eastern Apicultural Society meeting August 8th to 11th. The meeting will be at Carleton University. The program will be found under **News & Events.**

Gleanings in Bee Culture

July 1979 **(ISSN-114X)** **Vol. 107, No. 7**

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CONTENTS

The perfect food made better

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British nutritionist Dr. Neil Lyall says, "The super stars of the athletic world and the entertainment world are now taking bee pollen or they are not super stars."

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British Olympic athletics coach Tom McNab says, "I conclude that bee pollen is the most effective revitalizing food supplement available to athletes today of all the food supplements which I have tested."

McNab says of the track and field athletes he trained for the Olympics, "At least 90% of our athletes are taking bee pollen tablets daily. Most claim that it improves their performance, and gives them greater stamina and more energy."

Cancer specialist Dr. Sigmund Schmidt of the Natural Health Clinic, Bad Bothenfelde, Germany, recommends the eating of pollen. He describes pollen as containing all the essential elements — vitamins and minerals — for healthy tissue and is therefore cancer preventive.

Swedish dermatologist Dr. Lars-Erik Essen has found pollen to prevent premature aging of the cells and to actually stimulate growth of new skin tissue. The skin can become younger-looking, less vulnerable to wrinkles, smoother and healthier with the use of bee pollen. Bee pollen is an important skin rejuvenator because it contains a high concentration of the nucleic acids, RNA and DNA.

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Monthly HONEY Report

LAWRENCE GOLTZ

June 10, 1979

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

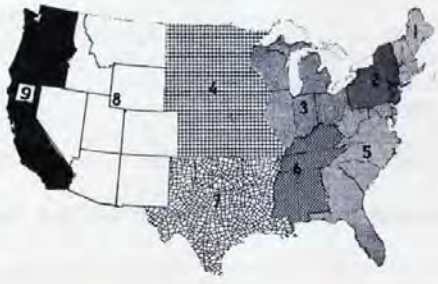
Wholesale Extracted — **Reporting Regions**

Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	9
60 Lbs. (per can) White	34.00	33.50	32.50	31.20		34.70	30.60	27.00	31.20
60 Lbs. (per can) Amber	33.50	32.50	30.50	30.00		31.70	27.60	25.80	28.80
55 Gal. Drum (per Lb.) White	.53	.53	.54	.53		.51	.52	.47	.52
55 Gal. Drum (per Lb.) Amber	.49	.51	.52	.50		.48	.49	.45	.48
1 lb. jar (case 24)			21.50	18.75	25.50	20.50	20.35	23.40	21.95
2 lb. jar (case 12)			19.50	17.50	24.00	19.75	19.95	23.00	19.95
5 Lb. (per case 6)			22.70	20.50		22.50	21.25	19.40	23.50
Retail Honey Prices									
½ Lb.			.69	.59		.61	.62	.69	.75
12 Oz. Squeeze Bottle				.92	1.33	1.05	1.19	1.19	1.20
1 Lb.	1.25	1.20	1.22	1.05	1.35	1.03	1.09	1.09	1.30
2 Lb.		2.30	2.25	1.94	2.52	1.96	1.92	2.10	2.35
2½ Lb. Cut Comb						2.60			
3 Lb.			3.52			3.25		2.98	3.32
4 Lb.				3.72		3.75	3.79	3.98	3.95
5 Lb.	5.50	5.25	5.00	4.50		4.75	4.59	4.98	5.45
1 Lb. Creamed			1.19		1.25		1.39	1.29	1.40
1 Lb. Comb			1.89	1.75	1.40	1.35	1.45		1.75
Round Plastic Comb			1.89	1.75		1.50	1.60		
Beeswax (Light)			1.95	1.70	1.70	1.75	1.75		1.85
Beeswax (Dark)			1.90	1.60	1.60	1.65	1.70		1.80

Region 1

Clover is looking good for honey flow. Bees in excellent condition, built up strong during the spring. Very little honey available locally. Retail honey sales rather slow. Imported honey prices are now comparable with domestic table grade honey.

Adulteration of honey is a continuing problem in trade channels.



Region 2

One of the most favorable springs for bees in years. Buildup has been excellent, swarming has been at a minimum. Locust honey yield has been moderate with some reduction due to rainy weather. A good clover honey flow should be starting in June.

Retail honey sales somewhat off. Wholesale honey sales will pick up with new crop being extracted.

Region 3

Winter losses averaged about 30% in northern Indiana. Slightly less in southern Indiana, about 40% in northern Illinois, normal or slightly below normal in Ohio. In Indiana some hobbyists report losing nearly all of their colonies. Heavy feeding prevented losses by commercial beekeepers from being much higher.

Dandelions and other early nectar flows were fair to good in Indiana and central Illinois, excellent in Ohio. Wild cherry has produced additional nectar which is usually not experienced in Illinois because of cool weather.

Colony buildup has been good but hampered by changeable spring weather in Ohio. Strength of colonies has been quite variable. Swarming has been moderate to heavy.

Beekeepers in Illinois are attending their bees better and feeding packages diligently. Keen interest in beekeeping is evident as four new local associations have been started in Illinois, bringing the total to 16 besides the state association.

Wax demand is good with some sale at $2.00 per pound. Gasoline prices are the number one concern in all of the commercial beekeepers' minds; this is causing a very large increase in operating costs. It will surely affect all of our other costs, utilities, containers, etc.

Honey is scarce and selling at higher prices. Retail sales are down a bit.

Moisture conditions are excellent, but more clear days are needed to allow bees to forage. Honey plants such as sweet clover are two weeks ahead of normal.

Region 4

Bees in good condition after a severe winter and are finally gaining strength in early June. Spring was cold and backward in Minnesota causing plant growth to be an estimated ten days to three weeks behind in this region. Honey plants are reported to be plentiful in Iowa, moisture conditions good and prospects for a normal crop are good in Iowa at the end of May.

Honey sales are reported very good in Minnesota, although some slow down evident in early June. Bulk supplies of honey are nearly non-existent. Retail sales and demand for honey is high in Iowa.

The clover honey flow due to start about June 15-20. Observers feel southern Iowa should have a good crop,

(Continued on page 373)

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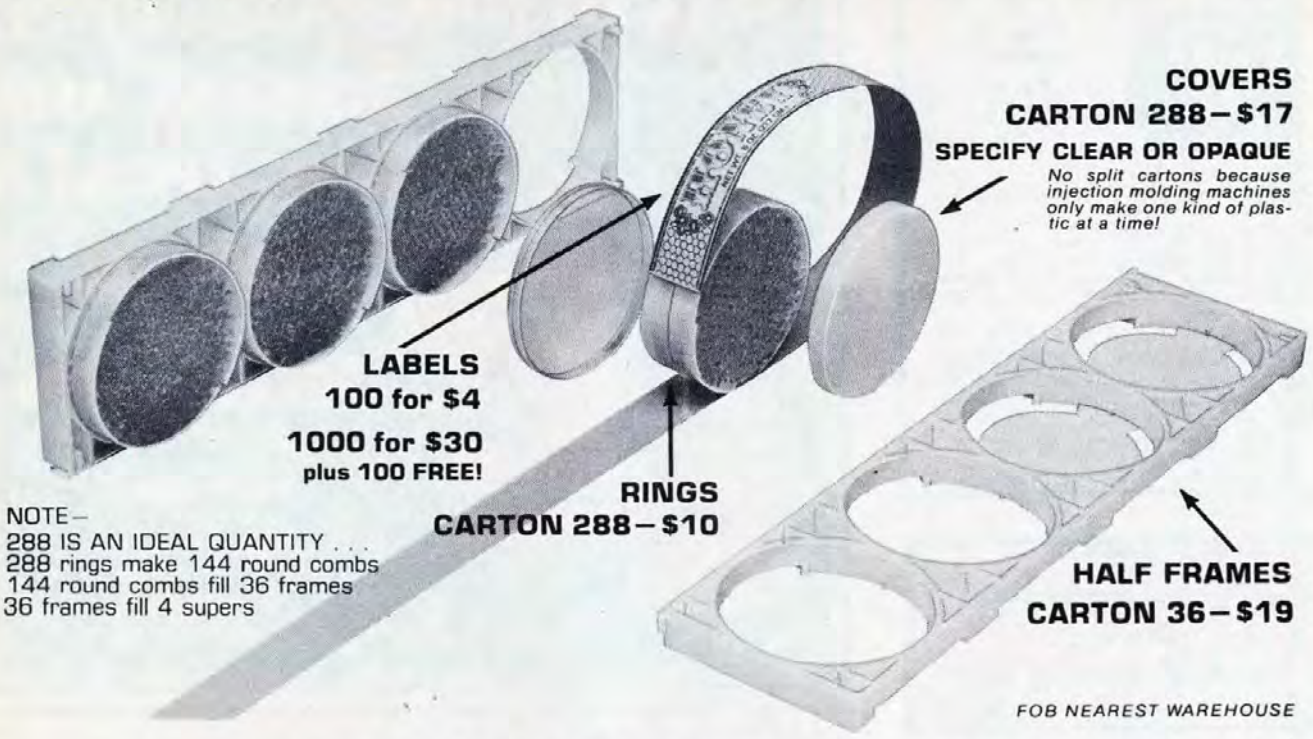

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Gleanings Mail Box

Dear Editor:

I would like to make just a brief comment about Dr. David Crowson's article, "In the Bag".

While bagging supers does have some virtue, that is keeping the dripping honey contained and covered, there is a disadvantage which I feel should also be noted. If the bagged supers are left in the open for any length of time they will definitely become infested with wax moths. Two years ago I too tried the bagging method, but only to find that after two nights the bags were full of holes and throughly invaded by wax moths. I had to tear off all the bags and completely go through the supers, frame by frame, before I finally got rid of the pests. So my advice is: if the supers are to be bagged—do not leave them exposed to the outside.

My experience occurred in 1977 while we live in the Scranton, PA area before coming to the Buffalo, NY region.—Rev. William Willis, Holland, NY.

Dear Editor:

I have read with interest D. William Buck's experience with plastic excluders designed as he says similarly to the old fashioned zinc excluders, with as many holes as the solid piece of zinc would permit.

Recently a "pupil" of mine purchased a many holed excluder which resembled the old zinc excluder, except that it was made of a material resembling stainless steel with the same quantity of holes, or could this be the plastic excluder to which he refers?

I put this excluder over a standard hive and shallow super, which in this area affords adequate storage and queen-laying space. Over the excluder I placed two shallow supers for surplus storage. When the two supers were ready for extracting, I removed the top super and blew the bees out of it.

But when I attempted to remove the next super I couldn't get it off by normal means. I finally determined that a lot of burr comb connected the supers separated by the excluder. By a series of prying operations I finally separated the supers and found burr comb filled with honey that connected the supers on either side of the excluder as if it were not there. In other words, the excluder was just a part of the burr comb operation.

All I could do was take my hive tool and scrape the whole mess in front of the hive and insert a standard wood-wire excluder, which solved the whole problem.

In view of this experience I doubt that Mr. Buck's experience was caused by plastic but just by the plain fact that his bees were puzzled by the multi-holed excluder rather than the standard wood-wire excluder.

I belong to the excluder group of beekeepers. I have a friend who maintains that "a queen excluder is a honey excluder". I cannot agree with him. I don't want brood mixed up with my honey, nor do I want to lose a queen by blowing her away. I once found a queen laying in a top super after she had gone through two empty supers. If bees will not go through an excluder, they need all the honey below. It is possible that excluders may induce some swarming, but I have never found them a problem in that respect.—Clarence Kolwyck, Chattanooga, TN.

Dear Editor:

A couple of comments on the Basil Adams article on butterfly weed in the April issue.

(Continued on page 374)

A New Hive Tool

"I find this hive tool to be an advantage in lifting the frames from the hive and also for cleaning the brace comb from between frames."

By WALTER CRAWFORD
Massillon, Ohio

THE STANDARD hive tool in use today by all beekeepers has not to my knowledge been changed in the last fifty years and probably was in use much longer, but my experience in beekeeping doesn't go back much further than that. It has served the purpose admirably for which it was intended. It is such a handy tool to use on other odd jobs that it is often borrowed from the beekeeper's tool box and not replaced, and unless two or three are available, time is lost in the search for it. There is nothing better for separating supers and frames after the bees have glued everything together. The scraper on the other end is well adapted for cleaning burr comb and propolis from flat surfaces.

Brace comb between top bars is always a nuisance and some colonies seem more inclined to use it than others. When using ten frames in the hive, very little space is left, making it difficult to remove the first frame, and just as hard to replace it. The use of the nine frame separators are of much help in this respect, making it unnecessary to pry the frames apart and allowing more room to remove them. However, the spacing between top bars is a little wider and more brace comb will be built there. As the first frame is lifted out the bees are rolled against this accumulation injuring some and causing other bees to become irritated by the rough treatment. In replacing the frame, bees are often squeezed between the brace combs if they have not been removed.

The standard hive tool is not well adapted to cleaning between the frames. If you try to cut the comb away before the frame is removed, it is slow work and many scraps and bits of wax will drop down between the frames. In the attempt to develop a tool with which one can satisfactorily remove this material, I have made a hive tool which not only handles this problem fairly well but has some other advantages also. One end has the standard chisel point for separating the various parts of the hive. This must be formed with a hammer and anvil when white hot.

The other end of the tool is tapered to a blunt point, heated and bent at a right angle about 5/16 inch from the end. The material used for this tool was a piece of 1-1/8 inch strap iron, 5/32 inch thick and 10 inches long. A piece about 1/2 inch wide by 1-1/8 inch long was sawed off and one end welded onto the tool about 1-1/8 inch from the tapered end and opposite the right angle tip. This part was then heated up and the end given a slight curve toward the chisel end of the tool. As this is the part used to remove the burr comb from between the frames, it must be ground so that when pulled between them, it will cut the comb loose. The slight curve will gather and hold the accumulation so that it can easily be picked off and saved. The tool can also be hung on the edge of the hive while examining the frames. It will not fall off and is right there when needed again.

The hook at the tapered end is sharpened so that it will catch under the top bar when inserted between the frames. Using the brace comb scraper as a fulcrum bear down on the tool and the frame will be lifted straight up. It does not tend to press the frame against the next one as the standard hive tool does. The tapered end can be used to clean the propolis from the rabbeted ends of the hive.

It seems to me that these are obvious advantages and I believe the beekeeper would be well repaid for his time and expense in making one or having it made.

ECONOMIST SUGGESTS BEEKEEPERS PAY TAX

JOHN W. SIEBERT of the Department of Economics, Purdue University, West Lafayette, Indiana in an article in **Agrichemical Age** (April, 1979, Pg. 24, 46) suggests a novel solution to the "bee problem". After observing the alterations forced on chemical users in California to protect honeybees it is his suggestion that beekeepers pay a tax to locate their bees in Tulare County, California during citrus bloom. The intent of the tax would be to compensate growers who have adopted integrated pest management methods.

Mr. Siebert estimates that it costs growers roughly $8.00 per acre to implement the I.P.M. program, an estimated $255,080 extra that has to be paid by the citrus growers of Tulare County. This is equal to $1.51 per colony according to the economists figures. Siebert feels the tax plan would do several things. First, he claims it will bring a profitable cooperation between beekeepers and growers because growers would benefit financially (or at least not lose) from the presence of bees. Second, it would defuse a lot of hostility between beekeepers and growers.

Siebert states that for the past ten years there has been an increasing number of restrictions faced by the growers while there has been increasing protection and financial benefits for beekeepers. He acknowledges that for the most part these changes have been justified. It is stated in the article that the Tulare Bee Protection area brings such large benefits to beekeepers that it seems unfair for growers to foot the majority of the bill, who, he claims incur all the expenses of producing citrus and citrus nectar.

The author's research at the University of California-Berkeley brought out estimates of bee kill to be from $31.16 (outright kill) to losses of $20.77 and $10.39 per colony for severe and moderate damage respectively. He cites the several Government programs such as the EPA's pesticide use restrictions, the Indemnity Payment Program and California's Beekeeper Notification Program as contributing to "increasing financial benefits for beekeepers but adding to the ever-increasing number of restrictions faced by growers".

Queens and Queen Introduction

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

BEEKEEPERS USUALLY attempt to introduce a queen to a colony either because it is queenless, or to replace the present queen with a younger one.

Younger queens are desired because colonies headed by them swarm much less than those headed by older queens. Research shows that the frequency of swarming of a colony headed by a two-year old queen may be as much as three times as great as in colonies headed by queens one-year old or less.

Conditions Favorable to Introduction

There are several ways to introduce a queen to a colony. Success in making the introduction is most likely if the new queen is at about the same age as the one to be replaced. Workers tend to see less difference between queens of about the same age, weight, and productiveness.

But the beekeeper seldom has such similarities present when attempting to introduce a new queen. Usually the new queen to be introduced is younger. Accordingly, considerable care must be taken to give her opportunity to acquire the odor of the colony, and for the workers to become accustomed to her distinctive scent, if she is to have any chance whatsoever of acceptance.

If the queen to be introduced is about the same age as the one lost, or eliminated, a little sprinkling of sugar water on both queen and bees may enable the beekeeper to place her directly into the midst of the colony population and assure her acceptance, particularly during a honey flow, but caution is urged.

If the new queen is younger, as she usually is, she should be caged in the colony for as long as two to three days before being released. A typical mailing cage can be used. Such cages normally have wire screen on their surface too fine to permit any contact between the queen inside the cage and the workers outside. It is for this reason that some operators remove the closely woven screen and replace it with eight-mesh wire. At such a time the workers that accompanied the queen during the mail journey should be removed.

The candy in the exit hole of the cage should be of such consistency that the bees will consume it readily—but not before a minimum of two to three days have elapsed. If too much of the candy has been consumed when the cage arrives from the mail, it may need replenishment. Candy for this purpose can be made by mixing starch-free confectionary sugar with water that has been heated to 130-150 degrees F. After mixing, the candy should be soft, but not so liquid in nature as to run.

The colony should not be opened during the next 10-11 days else the workers, who are as yet uncertain about accepting the new queen, may ball her. Sometimes the queen may survive a balling but be injured sufficiently in the process as to have her functioning impaired. Often she is killed during the balling.

If no nectar flow of high yield is in progress, feeding the colony with sugar water is likely to make them more amenable to her acceptance.

Promptness in introducing the new queen after the loss of the previous one helps to assure acceptance; a matter of a few hours helps in this detail.

Push-in Cages

Research shows that the use of the push-in cage improves the likelihood of acceptance over the mailing cage method.

Such a cage should be made of eight-mesh wire with surface dimensions of approximately 4 by 2-1/2 inches. Its depth should be great enough to assure that it can be pushed into the comb far enough to anchor it securely, and still leave plenty of distance between comb surface and screen surface so that the queen may have mobility. Not only does the queen need room for mobility, but she must have enough space between the screen and the surface of the comb so that she may keep away from hostile workers that might sting her through the wire during the early hours of the introduction period. The cage should be pushed in far enough so that the bees cannot gnaw under it in less than approximately 2-3 days.

The cage should be placed over an area of a comb that contains some honey, a few open cells, and sealed brood of hatching age. Such conditions provide young bees native to the colony who will feed the queen, and afford cells in which she may lay eggs as soon as she is ready. Queens in such surroundings can provide minimal queen substance, and more readily be assured of contact with the workers.

Research shows that queens introduced by way of push-in cages lose less weight during the introductory period than those presented by way of mailing cages. Also, the percentage of acceptance is very considerably higher.

But not every beginner has the dexterity or the temerity to employ this method. Its use requires considerable skill in manipulation. Employing it should be considered, however, since introduction by way of mailing cages often yields considerable loss of queens.

Still another type of cage is a homemade one constructed totally of eight-mesh wire (the shape is not important) with an escape hole filled with candy from which the workers can let out the queen not earlier than 2-3 days of confinement. No attendants should be in the cage.

All of the ingredients for favorable acceptance are weighed toward the push-in cage method. It should work better than other cage methods if deftly manipulated.

Conditions Favorable to Acceptance

There are several conditions in the colony that the introducer of a queen should check before attempting to give a unit a queen.

First, is there a queen already present? Often the beekeeper, particularly the beginner, does not know. The chief cause of this lack of certainty is that the unit may have a virgin queen. A virgin queen may remain unmated for as long as sixteen days (usually the period is shorter); also, it may be as long as six days or so after mating before she lays eggs. This period, too, is usually shorter.

But if the operator does not actually see the virgin queen (and they are not easy to detect sometimes), a colony with a perfectly good queen-to-be may not have any eggs in evidence for as long as three weeks.

In the above facts we have one good reason for marking, or clipping, introduced queens. Otherwise, the operator may never know whether the queen he finds in the colony a month after an attempted introduction is the one he paid for, or the virgin the colony furnished.

A second condition to check in the colony is: Are there laying workers present? Colonies that lose their queen and are not able to replace her, will soon produce laying workers, as a rule. These are unfertilized workers whose ovaries have developed as a consequence of the lack of the restraining influence of queen substance. Such laying workers (except for those of the South Africa capensis race) are unable to produce eggs that will become workers or queens.

The operator can usually tell whether an egg in a cell is the product of a laying worker. Laying workers often lay in a more scattered pattern over the comb, deposit more than one egg in a cell, and attach the egg to the side, rather than to the base of the cell, as a good queen does.

If laying workers are present, the colony can usually be induced to accept a new queen by placing one or more frames of unsealed worker brood with adhering young bees into the brood nest and placing the introduction cage on one of these frames. Personally, I prefer not to try to requeen a colony that harbors a well established laying worker. I usually donate the assets of such a colony to queenright units that can use the frames, honey, bees, or brood such a colony possesses.

Why Is the Rate of Queen Rejection So High?

Queens approach being so individually different from others that workers from within a colony can usually distinguish their own queen from all others. Some of the factors that contribute to this individuality are: age, degree of productiveness; race, color and colony odor.

Much has been written and discussed about individual colony odor. There is probably no such thing in toto. It's doubtless only partial. The shade of distinctiveness must in many cases become mighty thin. This is especially true when the queens of two colonies are of the same age, the combs are of the same age, and the nectar and pollen sources are practically the same.

To be sure, the nectar and pollen sources of any two colonies are never identical, the reason being that no two colonies ever accumulate stores from sources that are totally duplicated. There is always a small percentage of difference, but it is often minute.

But from observation and experience we definitely know that in most cases there is enough difference between the body odor and the pheromonal scent of a young queen from that of an older one so that the workers of a colony can distinguish between the two. This is doubtless another wise provision of Nature under which the workers are given a power of discernment adequate to protect them from the intrusion of a young mated queen just returned from her nuptial flight and erring in her location of the alighting board from which she recently took wing.

The Queen Substance Glands of the Queen

It is definitely known that the pheromonal secretions of the queen are effective in keeping the members of a colony "happy". Also, they inhibit the development of the ovaries of workers some of whom experience a stimulation toward such development when the cohesive force of the queen's glandular secretions are absent.

The best known glands of the queen are her mandibular glands. Two of the compounds in queen substance are: 9-oxodec-2enoic acid and 9-hydroxydec-2-enoic acid.

In addition to these two substances, the queen emits secretions from glands located on the top portion of her abdomen. The colony workers lick the queen to obtain these substances, and in some manner (not too clear) distribute them to other members of the colony.

Finding the Queen

There are a few occasions when it is highly desirable to find the colony queen. Usually this need not be too great a chore. She will usually be discovered on a comb in the brood nest that contains some empty cells, and near the frames holding sealed brood.

It's much easier to find the queen if the colony is not disturbed very much with smoke, jarring, and violent, sudden movements by the operator. In fact, until some bees become agitated, it is amazing how freely even the inhabitants of a strong colony will permit manipulations by an operator without stinging.

Some of us forget this. Some of us are a bit violent by nature.

If you fail to find the queen after looking carefully in the right places, if it is not essential that you find her immediately, it may be best to close the hive and come back later. But if it is imperative to locate her, one can always run the population of the colony through a queen excluder. I have never yet had to do this, though a few occasions I did not find the queen.

How to Recognize Queenlessness

The absence of newly laid eggs in any cells is rather clear evidence that a laying queen is not present. It does not prove, of course, that an unmated, or recently mated, queen is absent.

Usually, between the time a colony becomes queenless and the development of one or more laying workers, the bees produce a sound that is commonly called roaring. This sound is caused by the workers exposing their scent glands and fanning currents of air over them.

Sometimes when the workers have only recently discovered their queenlessness, one will see pairs of them crossing their antennae.

Probably more beginners arrive at a wrong conclusion about queenlessness by inferring that the absence of eggs indicates such a condition, than from any other cause.

Balling the Queen

I well remember the first time I saw a young queen I had recently installed being balled. I had opened the hive too soon after placing her and her mailing cage within the center of the brood nest. I sprinkled water over her and the workers balling her, and extricated her.

Sometimes a quick closing of the hive may save her, but there is little certainty of it. Usually when balling occurs it is because the workers regard the newly introduced queen as an intruder. One or two bees will seize her firmly, and then other workers of "like mind" will form a ball over them. Often a bee that thus acquires a bit of the scent of the intruder will be balled in turn. This was true when I first observed a case of balling. At the time I could not fathom the reason for three balls appearing almost simultaneously.

Usually there is some hesitation about a worker's immediately stinging a balled queen. At other times a death sting is dealt almost immediately. At best, the queen is often injured from such balling, provided she survives it. Submission by the strange queen sometimes saves her life, as it does that of an intruding worker that has been seized by a guard.

The More Certain Methods of Introduction

It is easiest to introduce a queen to young worker bees rather than the older, more experienced ones that have established an identity with their own queen.

Accordingly, most experienced beekeepers employ nuclei as the best way to introduce a queen. A nucleus is usually defined as a small colony of bees, normally consisting of five or fewer frames, with the customary number of bees for that size unit, plus a queen.

Such nuclei are readily united with colonies needing a new queen, or a boost in strength, by placing the nucleus over the larger unit, a sheet of newspaper with a few small holes in it being placed between the two to prevent immediate conflict. Such a unit if not disturbed will soon adjust to the new situation. If there are two queens, one in each unit, the stronger and younger one will usually destroy the other. If there is no queen below, the queen above will soon be accepted by the workers below.

In a similar way a queen can be introduced to a strong colony by placing a hive body above the old unit unto which the operator places two or three frames of honey, pollen, brood, and young bees. The almost exclusive presence of young bees can be assured by gently shaking each frame in front of the alighting board before it is placed above. In that process the older ones tend to be shaken off.

Then an inner cover with its center escape hole screened above and below the hole is placed between the two hive bodies. Of course, an exit hole must be provided. After approximately ten days it can be united with the old colony below. A mailing cage or some other type of introducing unit can be used to house the queen in the topmost hive body where the young bees will almost invariably accept her. This method obviates the need of maintaining nuclei. Introduction by way of the usual type of nucleus is, however, a very fine way to requeen, and to strengthen a colony.

Do Swarms Ever Lose Their Queens?

Probably no one knows the answer to the question how frequently a swarm becomes separated from its queen, but it doubtless occurs often. We do know that artificial swarms (swarms shaken from hives and given a queen) in which the queen has been caged in the midst of the workers, will repeatedly take flight in an attempt to reach a new nesting site. Those in which the queen has been, and is currently, caged will seldom go more than 200 yards before finding that their queen is not with them. In such instances they will return to their departure point. They may make repeated efforts to complete the trip but invariably stop enroute and return if the queen is not with them. This I regard as an amazing fact.

Swarms from which the caged queen has been removed a short distance, say 20 feet, will usually discover her location through the searching efforts of some of their more enterprising members.

In such cases how can the searcher that has discovered the queen's location inform her co-workers? One might guess that she would employ the dance method of communication. For some reason she does not do so. Instead, she exposes her scent gland and fans with her wings thus helping other searchers to locate the queen.

Some of the bees that have located the queen alight on the swarm, burrow within it for a short distance, then act as a breaker in thrusting the quiescent bees aside and into action and movement. Continued scenting, fanning of scent, and breaking on the swarm surface usually induce a goodly number of workers to find the queen. Eventually, when a considerable number have found her, the rest take momentary flight in regular swarm fashion and alight on the area where the queen is.

Many beekeepers have reported that swarms often temporarily lose their queen enroute to the new nesting site, and must search until they find her, if they can.

One reason given for a swarm's clustering prior to flight to a new nesting site is to provide an opportunity to feed the queen enough food to enable her to make the trip.

Such feeding may be necessary because workers usually put their laying queen through a slimming process prior to swarming. During this time they may even resort to pummeling her a bit to make her more active physically, meanwhile refusing her food.

Queens that have been prepared for flight may not be able without pause to make the entire trip to a new site if it is somewhat distant, and consequently must stop to rest again on the journey and be fed once more. I have known of swarms stopping enroute to their new site but at the time did not know the likely explanation. That is one reason we often find swarms clustered far from apiaries.

Although the honeybee queen is not intellectually a significant creature, in terms of being totally essential to the welfare of the colony she, or her successor, is uniquely necessary. The beekeeper needs always to be aware of her age and condition. Also, he must know how to replace her.

British Bee Hives

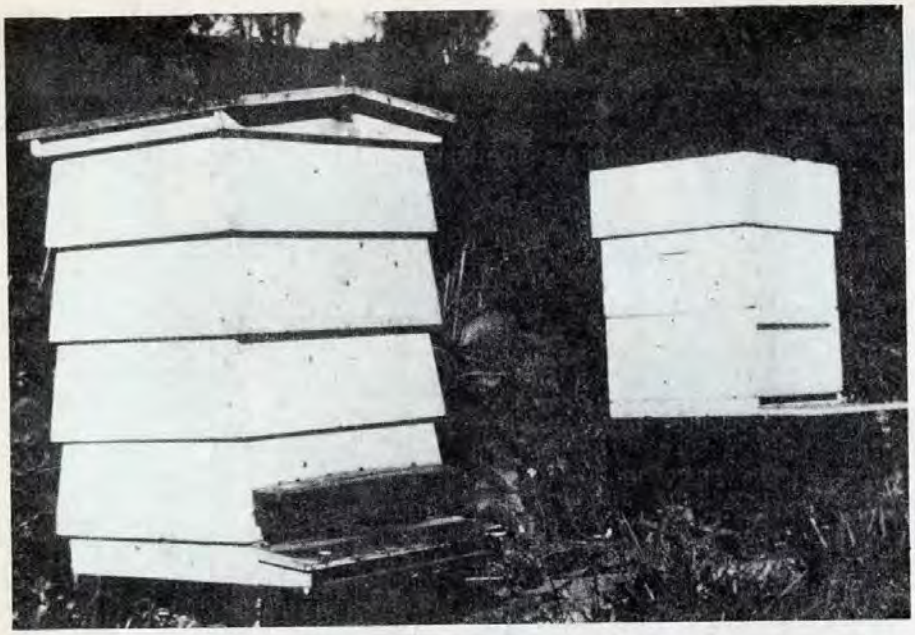
By KEN STEVENS
Devon, England

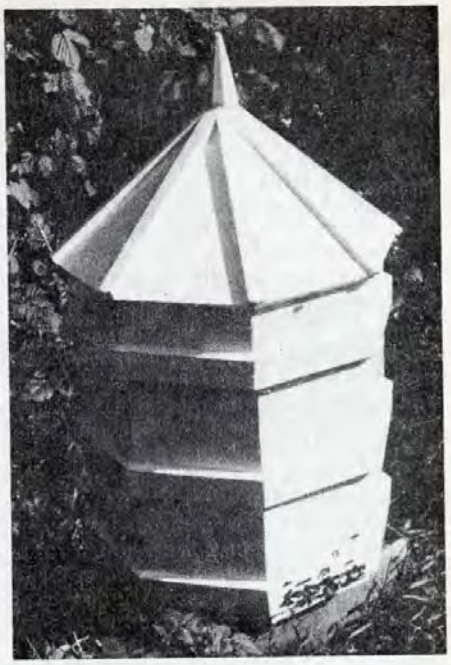
"It is a long way from the standardization that the Woodbury Committee had hoped for."

IN A LAND where straw or rush hives had been in use for hundreds of years it could not have been easy converting the cottager to wooden movable frame hives. After all, the new ones were comparatively costly while the traditional ones could be made in odd moments with little skill. What is more, a strain of bee that swarmed quite regularly had also been propagated over the years. Although we know that it was Langstroth, the "father of modern beekeeping" who tried to patent the idea of bee space and the movable frame hive, in the fullness of time, nation after nation has harkened back to far off days when a movable frame hive was used in their country—the Greeks, Russians, Scots.... There are some odd explanations that explain why this or that size, or shape of frame was selected. Going back to what must have been an early British movable-framer, we find that a Scottish cabinet maker, Robert Kerr, made a beautiful octagonal hive in the 18th century. This had proved to be a popular shape for hives and for bee houses but the eight sided shape resulted in a variable frame size within each chamber. Nevertheless, the skilled and economic carpentry of the Scots made this a much sought after hive in many parts of Britain.

Slowly however, more and more leading beekeepers came under the influence of Langstroth's writings, but as always, there were devotees of enormous hives for prolific bees and smaller hives for the superlative British black. This was a bee whose white cappings, quietness and ability to cope with our variable, (though invariably wet) winters, made it a tough and useful bee. Unfortunately it was practically wiped out around the turn of the century by the Isle of Wight disease. Thomas White Woodbury was quoted by Neighbour as saying "The advantages arising from the unlimited interchangeability of every comb in every hive and super in the apiary ...." It was Woodbury who finally chaired a decision making a committee from the British Beekeepers Association for the express purpose of deciding on the dimensions of a standard frame. A fairly lengthy airing of views took place. "In our climate we need a frame that the bees will draw from top to bottom even in a fickle spring", someone might have said, though it was well known that shallow horizontal combs six feet long were found under floorboards and longer vertical ones taken from church steeples where bees had found their way into the shelter of buildings.

Woodbury was a good practical beekeeper and despite some opposition finally secured agreement at that meeting in 1882 for a frame remarkably similar to one that he had been using for many years. This standard British frame, 14 x 8-1/2 inches deep and 14 x 5-1/2 inches for the shallow, still brought anything but standardization into the realm of British beekeeping. Lugs were lengthened to a wasteful 1-1/2 inches and many are the beekeepers who to this day state that frames cannot be handled easily with short lugs. For some obscure reason, perhaps to be different, two hives came into widespread use both with bee space under the frames. Some stalwart supporters of the British frame cast aspersions on the larger American frame, saying that it





only came into being because there were a lot of spare champagne cases available for hive making. Just the same, the tales of the derivation of the National hive do not inspire one with confidence in the apicultural ability of its designers. Strange, though, that the Langstroth is four sections long, and the British three. The 4-1/4 inch section was popular, ubiquitous and influential. It does not take much of a mathematician to link the British 8-1/2 inch deep frame with the section.

The W.B.C. Hive

This sloping walled, gable roofed hive is as widely used as a symbol of beekeeping as the skep itself. It is a pretty hive and looks grand on a green lawn. Its maker, William Broughton Carr, also designed other items including the ingenious metal frame spacers. During World War II an adviser to the Minister of Agriculture would hear of no other! With its attractive roof, dainty porch and entrance slides that could offer from one bee-way to a fully open entrance, they certainly did much to win folks over from the fixed comb hives and certainly had amateur beekeeping appeal. They were double-walled, the light inner boxes (more manageable by the "weaker" sex) being surrounded by outer walls that looked as if they could be telescoped over one another, but could not. The floor was integral with a stand having four splayed legs and an alighting board that allowed any musing apiarist to pass the time of day in watching his bees perform their pre-flight checks, or, in seeing their heavy landings as laden foragers touched down inches from the flight hole.

The National hive was designed with slightly more consideration for economy, but though box-like, it still had to accommodate two extra inches of lug and this required six walls per chamber, two acting as supports for the runners at each end, and it still had bottom spacing. Theoretically, does it matter whether hives have top or bottom spacing; what's the difference? Only that in both the W.B.C. and National hives the frames of a box tend to become glued to the one above and beginners especially have great fun getting them unstuck while trying hard not to upset the bees. Their inner covers, too, need strips of wood, bee space thick, underneath them. Flimsy zinc excluders can lie flat because the frame tops and hive edges are all flush whereas such an excluder would sag if used on a hive with top spacing. The snag is, though, that the slotted zinc sheets become so firmly propolized that removing them also infuriates the bees and tends to distort the accuracy of the slots. Framed excluders help and these are quite efficient when the framing is on one side only and bee space deep.

The next move was to make the National boxes easier to carry. Although they are only 18-1/8 inches square, when carried they stick out nearly two inches further from the body than a Langstroth and one needs a good grip. When Hoffman frames are used boxes can of course be turned through 90° and become even easier to handle. The National was therefore modified to give handholds like the inner portions of the W.B.C. hive. This brought it down to a single walled hive but it required eight pieces of lumber to make each chamber, all requiring to be machined to size. The prime western red cedar that is almost invariably specified is also a very costly material.

One fairly sound compromise still enabling the British frame to be used, albeit with short lugs, was the Smith hive. Back in Scotland, the late Willie Smith, a great beekeeper, made what was to all intents and purposes a baby Langstroth. It was single walled, short lugged, even top spaced. People buying and selling bees, foundation, extractors, etc., wanted to stay with the British size and found this a very useful type if they could tear themselves away from the well established W.B.C. or modified national hives. Its oblong shape also made storage and carrying easier. Considering the very reasonable size and shape of the Langstroth frames it is almost laughable to find that, although this was not adopted by the Woodbury Committee as it was too big for our climate, the next move was made by beekeepers who decided that the British frame was too small. "Why", said some, "ten deep frames in a W.B.C. don't give enough scope to our queens." So an extra chamber in the form of a box of shallow frames was added, or a double deep brood chamber was used. By this time one supposes that it would have been sacrilege to revert to a 17-5/8 x 11-1/4 inches (9-1/8). Then hugging the notion that whatever its faults the National was **the hive**, a short-lugged frame was put into a deeper box with the same periphery as the National hive. This 16 x 10 inch framed hive is called the modified commercial and is almost identical in capacity to the Langstroth.

Several other tricks to vary (usually to enlarge) the size of the National have been employed and recent surveys suggest that 90% of British beekeepers use hives of the National pattern. Provided the same 18-1/8 inch square periphery is not violated, variable depths do not cause too much trouble within the bee yard, but they are a real headache to the equipment manufacturers. By putting longer side bars on the standard British frame, yet sticking to the square dimensions of the National, a 14 x 12 inch and 14 x 7 inch, have been brought in. Although a few enlightened beekeepers use the same single size of frame throughout their operations, methods of spacing vary, as do the widths of top bar, design of the bottom bar and to further complicate things wax foundation with a drone base and extra wide spacing is sometimes used in the supers. It is, of course, a real pleasure to uncap and extract honey from wide-spaced drone comb, but just stop to think, the British standard frame is no longer a frame but a spectrum of frames. My math won't go all the way, but Hoffman or W.B.C. ends give a factor of two, deep or shallow brings it to four, wide or narrow top bars to eight, short or long lugs to sixteen, single or double bottom bar, 32. This does not take into account grooved or non-grooved side bars, split or wedged top .... It is a long way from the standarization that the Woodbury Committee had hoped for. That it makes beekeeping here more expensive, goes without saying and it may well hamper the advance to plastics, and don't mention metrication.

One Year Bee Course Proposed in N.C.

WITH THE concurrence of the North Carolina State Board of Education Montgomery Technical Institute, Troy, N.C., proposes to establish a one-year course in practical beekeeping.

Plans are for the twelve-month diploma program to be a combination of class study and hands-on experience. Instruction will include every significant aspect of beekeeping.

Short courses on beekeeping have been offered at Montgomery Technical Institute for the past year.

Primary research indicates that there is a need for trained beekeepers and that jobs are available.

This program would cover not only the care and keeping of honeybees, but also a study of honey plants, honey production on a commercial scale, hive management through the four seasons, and records keeping.

Students will also learn to build bee equipment and will design a commercial honey house.

Montgomery County is uniquely situated in the rolling clay hills and sandhills of Piedmont North Carolina. Students would have active bee colonies most of the year.

The North Carolina Honey Producers Co-op, the N.C. State Beekeepers Association, and the Department of Entomology at NC State University have indicated their support of the proposed program.

The Board of Directors of the N.C. State Beekeepers Association has voted unanimously to support the program if it is established.

Montgomery Technical Institute would like to hear from anyone who might like to take a course in practical beekeeping; from anyone who has seasonal or fulltime jobs available for trained beekeepers; and from anyone who would like to offer suggestions or express an opinion on the proposed apiculture course.

Please address correspondence to: Beekeeping, Montgomery Technical Institute, P.O. Drawer 487, Troy, N.C. 27371.

Getting Caucasianized

By TAEDE W. VISSERMAN
Hazelton, B.C.

IN THE SUMMER of '74 I got hooked on bees and fell under the influence of an eccentric English beekeeper. Because I knew nothing about bees when I came to see him, we sat down first and had a little chat before driving up to look at his "apiary". (I winced at trying to remember the new word.) Because, he explained, our area had no wild bees nor other beekeepers, he'd been able to keep his bees pure for the years of his experiment. They were, he said, mountain grey Caucasians with not so much as a yellow segment in the apiary and the gentlest bees on earth. This latter fact perked up my ears. I'd long been interested in bees but the idea of getting stung never sat too well. He was, he told me gravely, trying to develop a new strain that was suited to our climate. "You see, if you want to do any serious work with bees you have to start with purebreds." His own he'd gotten sometime in the previous decade from a bee breeder. These he was now refining by a process of "natural selection". I listened with great awe to his telling me all the problems this experiment placed on his work. Here was this man, in the middle of nowhere, doing important work and nobody was paying any attention to him. Well, I would be different!

And he seemed to take kindly to my interest, for within an hour I was told I had the "right attitude" to be a worthy beekeeper. Most people who came to him had interest only in honey, not bees, which irritated him severely. It was a pity, he admitted, but he couldn't spare me a hive, as he was still trying to rebuild his hive numbers after a bear attack. But, he held out confidently, we'd make some pure queens next year if I got the bees. "You know bees are the easiest animals to change over. You simply replace the queen and within a couple of months all thousands have changed over too". All I needed to do was buy myself some packages of any old Italians next spring and we'd convert them.

After our chat we got into his car and drove the four miles to his apiary. We took along a "hive tool". The name sounded a trifle overblown for such a simple gadget. It was, I remember, a very fine day and we were both in very fine fettle. I could already picture the tidy rows of hives, all numbered and given charts—that sort of thing. I could also picture these millions of dangerous missiles flying around. Hadn't we forgotten veils?, I asked discreetly. "Veils", Mr. Thomas said with a shock, "for my gentle Caucasians?"

"Here was this man, in the middle of nowhere, doing important work and nobody was paying any attention to him."

The experimental apiary consisted of six hives set in the weedy corner of a garden.

My admiration soon recovered however. There I was, not ten minutes later, lifting "supers" like an old pro and over any fear of bees. Hundreds were buzzing around my head too. "Gentle, aren't they?" he said proudly, "A lot of people you know used to those nasty Italians don't realize this fact." In one he showed me Her Majesty herself. He explained all those things like brood and honey cells, drone brood, pollen circles and so on. I remember especially well the smell of nectar and propolis and at being amazed how warm it was inside a hive. I even managed to get stung by one bee pushed clumsily into a corner and being surprised how little it actually hurt. Clearly I was cut out to be a beekeeper. I fell hopelessly in love with the idea.

In the winter that followed I read all I could lay my hands on—and waited. I got to know all the bee terminology like my own name. For spring I ordered five packages of Caucasian bees—and waited. I made all my own equipment and had it sitting out a month before they arrived.

I also visited Thomas several times and we discussed bees by the hour. From the literature I soon saw all sorts of mistakes in his methods and told him so. Most of my suggestions he dismissed as "rubbish". He was, I decided, a stubborn man—or I had a lot more to learn. In March we found one of his hives dead. Thomas seemed pleased another set of inferior genes had been erased. With just five hives left I saw in it the beginning of the end.

Suddenly the wait was over and I had five hives of my own to look after. Most of them were yellow. I made the mistake of telling Thomas that I rather fancied their color over grey. "Hybrids!" said Thomas, taking one look at them,"you can't breed with those!" I protested that they were rather tame. "Just wait til they're stronger" Thomas said with absolute self confidence. And he didn't have to wait long. Within the month one flew up and zapped me under the eye. I would, I told Thomas, come to see him with one eye completely out of sight and settle for his Caucasians.

He seemed rather happy I'd seen the light again and mentioned that he was having problems. A strong hive he'd split early on had refused to make queen cells. He needed new queens "right now" to rebuild his stocks. It was already June. However, the prospects of making me five queens "a little later on" were very good, he assured me.

By July things were still going less than good. It was a bad season, said Thomas, which forced the bees to do things they normally wouldn't. Meantime I'd made a veil and took ever larger doses of venom in my hands. But mine were putting in a lot of honey and one even managed to swarm, producing a whole catch of queen cells I didn't use. "Hybrid vigor, that's all," said Thomas, "you'll come unstuck next year." I said it didn't matter because I was getting pure Caucasians anyway, right?

By mid-July Thomas was muttering that it looked like it might be next year before he could make me the queens what with the abnormal year and all. "Well", I said, "how might it be if I got a frame of brood and some drones from you and made queens myself?" "Well, I suppose", he mused, "suppose those nasty Italians of yours would be good for something. But you'll need lots of isolation from their nasty drones!" I took them home that very day.

On the frame my bees made eight queen cells (I'd had visions of dozens, like grapes). Of the six that hatched four survived the introduction to nucs. I ran them about a mile up the road, three got mated. Mated alright, but to my drones. Nearly all their workers were the common yellow.

I went into that winter with eight queens. The three nucs placed over the large hives. "Don't expect these hybrids of yours to do very well", Thomas counseled quietly, and then, seeing the nucs: "You can't do that!" Well it was worth a try, I said meekly, not wanting to be offensive, but determined I would have some extra queens for those early spring splits he had all the trouble making queens for. He shook his head. I was getting rather too interested in the honey aspect he warned, I'd best get a proper strain first, didn't I think?

In fact they did very well. They all lived. I felt a little guilty for my good fortune. "You certainly were lucky", allowed Thomas, suggesting in an unspoken way that next winter I would come "unstuck". It also meant that I would now have to make eight pure queens that

summer. Worse, another of Thomas' colonies had died, leaving him just four.

Well, I thought, there was little danger of extinction because this year, having learned from the last, I'd make all the queens he or I needed. I had a perfect place in mind. Four miles up the road was a large meadow completely engulfed in dark evergreen forest. In it, early on, I set a Caucasian drone-producing stock. I also made a dozen nuc boxes and got frames of brood from Thomas' two best queens. I soon had all dozen nucs hanging in the trees, complete with pure virgins. The trouble was, the summer was the wettest in a decade and, being in the shade, most of the queens simply disappeared. Of the dozen only two got mated.

The other trouble was they both got mated to my drones again.

At home my hybrids—by now more properly mongrels—were doing fine. For the first time I actually sold a bit of honey and rather liked this part of it too. I got quite used to stings too. I never was sure though if my stoic attitude wasn't rooted in the certain knowledge that someday I would have all gentle Caucasians. I told Thomas, frankly, that I was no longer so sure about them, but was committed to giving them an honest try. He listened silently to my explanation. For one thing, I said, I was worried about in-breeding what with him having so few left. "Oh you don't understand!" said Thomas, impatiently, "It doesn't matter two hoots so long as the undesirable elements are constantly being weeded out."

Over the winter 76/77 I kept 10 queens, several of them again in nucs. I urged Thomas to do the same but he said darkly that such was an invitation to disease. By now I was only too well aware that he was very stubborn, so I didn't push the idea too hard. Again I had very good luck though I did lose one nuc. Thomas offered no explanations for my loss, nor any excuses for the fact he lost half his stocks that winter. Now he had two left.

Queen rearing during the summer of '77 was a disaster. With so few left him it was out of the question that he would make me some. I took what seemed the only option and made some queens on the one frame he could spare me and set them at his place to mate. One queen resulted from all of this and she was gone by fall. The fact was, my heart wasn't in it. I was weary of the whole thing. My mongrels were doing fine. Why, I asked myself, should I try making Caucasians when I had no guarantee they'd be producers and they wintered no better? My mongrels were making enough surplus to sell and that paid expenses. For the spring of '78 I put 18 queens up that fall. The demand for honey was always exceeding supply and I was bound and determined to keep the numbers going up; if only to show Thomas it could be done. "They'll be quite a number to requeen", remarked Thomas profoundly. I didn't tell him I had no more intentions of doing so.

Spring '78 arrived with a lesson. I lost three to carelessness. Spring brought too the first bad sting in months and the memory of that first summer came into sharp focus. Spring also brought Thomas down to a single stock. It was, I realized with a start, my last chance. A surge of determination swept over me. I knew of a farm some ten miles from any other and asked the people if I could keep some bees there. They agreed and I set up a drone-producing stock. I wondered why I hadn't used this isolated place from the first. "Much better", said Thomas inspecting the premises, "We'll have to make you some queens this year I think". The problem though, Thomas explained, was that he had very few to play with. Perhaps, he suggested, he could make the queen cells and I could supply the nucs. Fine. By mid-June he had a comb with some thirty very fine queen cells. The best of these I set up in nucs on the new site. Two weeks later they were all gone. "Perhaps a lethal gene", said Thomas calmly, but gave me a look like I was not above suspicion.

(Continued on page 374)

Janice Walker

HONEY PRINCESS GAINS SCHOLASTIC HONORS

THE 1979 American Honey Princess, Janice Walker, is the 19 year-old daughter of Mr. & Mrs. G. C. Walker, Jr., of Rogers, Texas. Since 1970 when Janice was ten years old, she has worked extracting and packing honey in the honey plant of her father, who has been a honey producer for over forty years in South and Central Texas. Janice has been officially promoting honey since November, 1978, when she was crowned Texas Honey Queen.

Currently enrolled at Bethany Nazarene College, in Bethany, Oklahoma, Janice has completed her freshman year with honors and has been selected as a member of the National Honor Society, Alpha Lambda Delta, and a member of the Presidents Honor Roll at her college. During her second year she will be serving her class as the elected Sophomore representative to the Student Council. She is majoring in English and tentatively planning for a career in secondary education.

Janice is a member of the First Church of the Nazarene in Temple, Texas, where she has been active in music and youth ministries for several years.

What's New With Buckwheat

By DR. ROGER A. MORSE
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BUCKWHEAT HONEY was once produced in great quantity in the northeastern United States. Beekeepers from Ohio, Pensylvania and New York were especially strong in their praise of buckwheat as a honey plant. Every year I still receive inquiries about where beekeepers may purchase seed. Others ask where to market their buckwheat honey to the greatest advantage. A few ask why the buckwheat they planted did not produce them a great crop of honey.

One can still find some buckwheat honey on the market. It is usually dark amber in color and quite different from the coal-black buckwheat honey of the 1930's and earlier. I estimate that most of today's buckwheat honey contains only ten to fifteen percent buckwheat nectar.

The only pure, dark buckwheat honey I have seen in recent years was some imported from the People's Republic of China in the mid 1960's. I was asked how to blend it for our modern market. The result of our efforts contained one part buckwheat to seven parts goldenrod. It still had a strong buckwheat flavor and was said to be buckwheat by all those who tasted it; there was no goldenrod flavor. Since bees gather nectar from many floral sources, and no honey is pure, honey is traditionally sold and labelled according to its predominant flavor. I think the buckwheat honey of many years ago was too strong. Our present blends are much more acceptable to the majority of honey users.

Ithaca, in the center of the Southern Tier of New York State, was said to have been the honey capital of the world for many decades. More honey was shipped in rail cars from Ithaca than from any other city in the country; the majority of that honey was buckwheat. One beekeeper, W. L. Coggshall, kept about 4,000 colonies in the area.

One of the reasons there was so much buckwheat honey was that buckwheat was the only grain that could mature even when sown late in the year on the heavy, wet soils of the area. Buckwheat grain is harvested about ten to twelve weeks after the seed is planted.

Buckwheat (Fagopyrum Esculentum).

No one has ever studied nectar secretion from buckwheat in detail. However, beekeepers agree that the plants grow best on heavy soil, often on soil that most farmers would say was poor. It also grows well on soil that is too wet early in the spring for other crops. Most of the old-time beekeepers with whom I have talked think that liming hurts nectar production; however, there are no data on the subject.

Weather and Nectar Production

Weather affects production of nectar from all plants. Despite glowing reports from old-timers, I am certain that in some years not all fields of buckwheat produced good crops of nectar, any more than fields of goldenrod do today. The reason so much buckwheat honey was produced was simply that there was so much buckwheat grown. Farmers started planting buckwheat in late May; it could be planted as late as July 10. The recommended (best) planting dates have always been June 25-July 10 in most of

New York State. The result was that flowering buckwheat was common from about August 1 to late September. The same is true of goldenrod today. Goldenrod plants now cover many of the fields in the southern tier of New York that were once heavily farmed but have been more or less abandoned. There are many species of goldenrod, all of which can yield nectar, but only if conditions are right. Fields may be golden in color, but bees cannot harvest a surplus unless we get the right weather. Even after the flowers start yielding, inclement weather can stop a goldenrod nectar flow today just as it could a buckwheat nectar flow many years ago.

Weather and Seed Production

Warm weather has an adverse effect on seed production in buckwheat. This is why late June—early July planting dates are preferred in our area. Sowing seeds between these dates will bring the buckwheat into flower after the warm summer weather. On the other hand, buckwheat cannot tolerate cold, and the early frosts that may come as early as September 20 in central New York State can also hurt the crop.

Harvesting buckwheat in the late fall can be a serious problem if there are early fall rains. In years past, when the buckwheat was cut by hand or with horse-drawn machinery, it was easier to harvest a late crop on wet land than it is today. The possibility of adverse fall weather is another reason why some growers are reluctant to plant buckwheat.

Acreage Last Year

It is estimated that there were 15,000 to 20,000 acres planted to buckwheat in New York State in 1978. The acreage in Pennsylvania and Ohio was much less. The acreage of buckwheat is controlled largely by the amount of grain that can find its way into the breakfast-food market. At the present time that market is small. Today there is only one major buyer in New York State.

The buckwheat cereal I found on the market locally is called "Buc Wheats"—"With buckwheat and artificial maple flavor". The ingredients are listed as: "whole wheat, buckwheat, sugar, brown sugar syrup, salt", etc. I could taste only a slight buckwheat grain flavor (and no maple flavor at all!). However, buckwheat flour, like buckwheat honey, has a strong flavor and I suspect those responsible for making up the formulation aimed for a blander taste. I don't know if this buckwheat cereal is the only one on the market or not; it is made by General Mills.

Growing Buckwheat Outside of the Northeast

I often receive letters from beekeepers in Georgia, Tennessee, Kentucky, Virginia and the surrounding states asking about how buckwheat might fare in their areas. I talked with Professor Wayne Knapp from the Agronomy Department at Cornell University about this. He said it is possible that buckwheat might grow in the mountainous areas of those states, especially if it is planted early in the year so that flowering can take place before the hot summer. However, it would be futile insofar as both nectar and seed yields are concerned to plant buckwheat in the lowlands of those states or any states further south. One must not plant too early because the seedlings are frost sensitive in the spring, as the mature plants are in the fall.

Seed Varieties

We are also often asked what type of seed to buy. I discussed this question with Professor Knapp too. He showed me a handful of seed he had obtained from a local distributor. The grains varied greatly in size, shape and color; this indicates the seed was not one variety but represented a great mixture of varieties. I was told there was no pure seed available anywhere in the United States. Professor Knapp was not sure if this was the case in western Canada or not.

Many years ago beekeepers had certain buckwheat varieties that they thought yielded more nectar than others. We have no data on the subject and it might be true. In any event, in today's market it appears one must accept what is available and hope for the best. It is illegal to ship seed into this country from abroad. Legislation on this question was enacted because there is great danger of introducing foreign insect pests in this manner.

Research on Buckwheat

Currently, there is no major research project on buckwheat anywhere in the U.S.D.A. or at any state college. Minnesota is testing some varieties but has gone no further. The research program once

Buckwheat field near Medina, Ohio.

underway in Pennsylvania is no longer active. Our program at Cornell is very limited and there are no prospects for its expansion in the near future. Most of what is being done at Cornell is to determine how soil fertility levels affect seed production.

Where is Buckwheat Produced

Russia is still the number-one producer of buckwheat in the world. A small amount is grown in Turkey and certain of the other Balkan States. We are aware that some buckwheat is grown in China, since they export some buckwheat honey. A small amount of buckwheat is grown in Japan, where the grain is used to make noodles. In Canada there is some production in Alberta and Manitoba, with the latter province being the major producer in that country. I presume a small amount of buckwheat is still grown in eastern Canada where it was once as popular as it was in the eastern United States.

The Future

As readers are probably aware, the U.S. Federal Government is financing some research under what is called the small farms program. This program is aimed at encouraging the development of small farms, and, while it would not have a major effect on the mainstream of agriculture in the U.S., could increase the number of farms that provide limited quantities of food for relatively few people. It is still too early to see the results of this new program. Most of the research money available so far is for the production of vegetables and small animals.

Insofar as practical agriculture is concerned, everyone with whom I have talked agrees that buckwheat has no great future. Grain crops such as corn, wheat and rye are generally preferred, and the research being done today focuses on these crops. Professor Knapp told me he still gets a number of inquiries about how to produce buckwheat, but many of the requests come from beekeepers who are interested in producing both honey and grain. It is possible for a person who owns land to do both, but I urge anyone interested in doing so to first determine where the grain might be sold; the market is limited. At the present time there is good demand for buckwheat honey just as there is for many other varietal honeys. I suspect that this demand, too, is limited, but probably a slight increase in buckwheat honey production would have no effect on the market price.

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Iowa Places Restrictions on Penncap-M

THE IOWA Department of Agriculture moved to invoke a partial ban on the use of an insecticide that has been linked to the deaths of honeybees.

The decision, announced by Iowa Secretary of Agriculture Robert Lounsberry, would outlaw the insecticide Penncap-M from use on corn while the crop is shedding pollen.

Officials said the action is aimed at protecting the state's honeybee population, which suffered losses from aerial applications of Penncap-M last August.

The bees mistook the tiny granules of Penncap-M for pollen grains and carried the insecticide back to the hive where it poisoned large numbers of bees, officials said.

The agriculture decision drew quick responses from representatives of both honey producers and the agricultural chemical industry.

"I'm very disappointed with the decision," said Keith Boyer, a representative of the Midwest Agricultural Chemicals Association, an industry trade group. "It's not a workable solution. I think it's being a little hard on one product."

But Ellsworth Gustafson, a board member of the Iowa Honey Producers Association, said he was "delighted and pleased that Penncap-M has been banned in Iowa from use on corn."

Honey producers and agrichemical spokesmen square off in Des Moines at a hearing in response to a request by Representative Philip Davitt (Dem., St. Charles) to ban Penncap-M.

At the hearing, Davitt said "the uncontrolled use of Penncap-M threatens not just a few beekeepers but all of Iowa's agriculture. Without bees, there would be no crops."

Reached for comment Monday, Davitt said, "I'm surprised and very pleased with the agriculture department's decision. I think it's an excellent move."

Lounsberry said the agriculture department's action is not a total ban on Penncap-M, which is used on corn primarily to combat corn borers.

The encapsulated insecticide will still be permitted for use on alfalfa, peas, wheat and other agricultural products.

But it will not be permitted for use on corn when the crop is pollinating because of the threat to bees, Lounsberry said.

"The beekeepers have some right to protection. They need more than lip service," he added.

Lounsberry said that the manufacturer of Penncap-M, Pennwalt Corp., of Fresno, Calif., would be permitted to protest the decision.

However, he said he could foresee nothing that would cause the department to reverse the decision for a partial ban.

Officials from Pennwalt Corp. could not be reached for comment. At the public hearing last month, James Lowell, manager of the Pennwalt's technical department, said any restriction on the use of Penncap-M would be "an unwarranted intrusion upon the right of the Iowa farmer to choose the best insecticide for protecting his crop."

The Iowa Agriculture Department Monday also ruled on Sevin, another popular corn rootworm insecticide linked to the deaths of bees. The department had added Sevin to Davitt's petition calling for a ban on Penncap-M.

However, on Monday the department announced that after studying data and comments from concerned parties, a ban on Sevin was not warranted.

Instead, the agriculture department opted to invoke a new program to monitor both the locations of beehives and spraying patterns during pollination time.

Here's how Lounsberry said the system will work.

Honey producers will report the locations of their hives to state apiarist Glen Stanley, who will then report the data to county extension agents.

When an applicator decides to spray Sevin or any other pesticide possibly hazardous to bees, the applicator will be required to contact the county extension agent to make sure no beehives are within two miles of the spraying area.

If beehives are nearby, the applicator will have to notify the honey producers at least 48 hours before applying the insecticide. Lounsberry said 48 hours should be enough time for the honey producers to take steps to protect the bees.—Taken from an article by Tom Knudson, **Des Moines Register** 4/10/79.

Honey Plants

BASSWOOD (TILIA) THE UNIVERSAL BEE TREE

By BERNIE HAYES
121 Miller St.
Wellsvile, NY 14895

THE ECONOMICS of honey in the market place and honey's unique position in nutrition as a natural food has increased the desirability of more floral sources for nectar, especially in the western states.

In many of the letters which I receive from beekeepers it is often repeated that the honey flows are few in number after the spring flows and that the writers feel that they should do something for the later flow problem.

It is doubtful that it is commonly known that the Tilia family of trees has great adaptability to such contrasting climates as California, or the province of Ontario, or providing most of the honey crop for some areas of Russia.

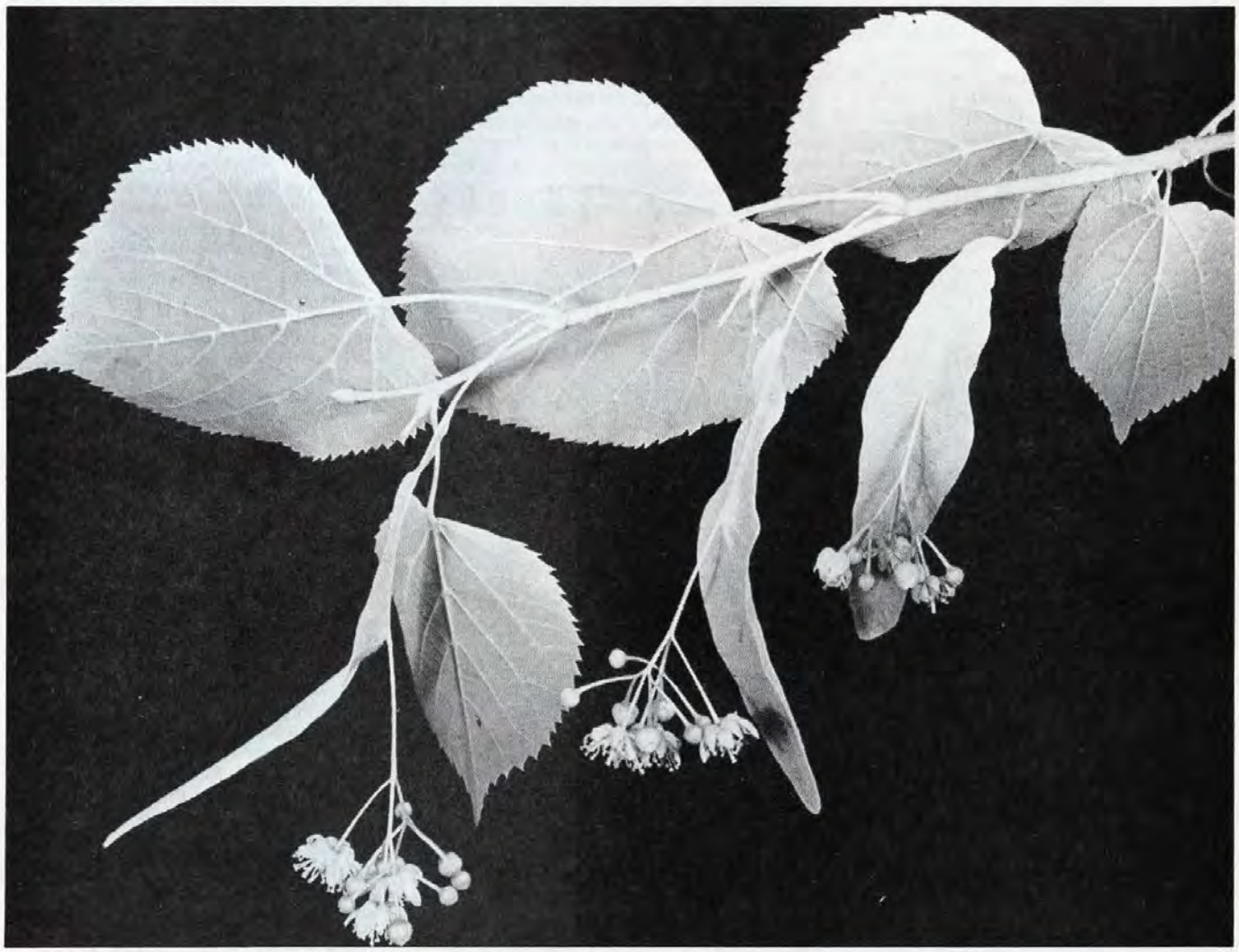
Worldwide, the basswood, as it is commonly named, is found wherever the deciduous forest grows and it is represented from the Russian Crimean (**T. euchlora**) to China (**T. oliveri**) to Australia (**T. australs**) to USA with such variants as Florida's (**T. floridana**), among a few, and of course England's widely planted varieties of silver (**T. tomentosa**), little leaf (**T. cordata**) - some exotic and some native.

All the basswoods, however, are susceptible to a common cultural fault, namely, the summer aphid infestation. These "plant lice", which seem to thrive everywhere and on most plants, feed on the leaves, usually blackening them with a sooty sticky residue which drips off the leaves, to the dismay of homeowners. The mild but cool climate of England seems to encourage this pest on the basswood, "limes" by name in that country.

With one exception, all Tilia are suitable for flora planting but it has been reported that the Crimean (**T. euchlora**) will attract bees in swarms but at the same time offering a narcotic which kills them.

Certainly the honeydew problem must be seriously considered by beekeepers contemplating flora plantings for unfortunately it is collected during the early part of the day, before nectar has begun to flow and later when other sources are available, the bees often then work both sources. Honeydew is a sweet solution secreted by the aphids feeding on the foliage, leaves or needles. In our country, the honeydew bee forage is rare in some parts. In my part of New York State I have observed this taking place only once in twenty years, however, my bees did not store it in the supers.

Tillia (Spp.), Still an important honey plant.



For those considering a succession of nectar from basswood, we find that trees from nurseries are usually only one variety, the little leaf (**T. cordata**), therefore, raising trees from seed seems to be the only alternative.

Currently the choice of seed available is the **T. americana, T. cordata, T. dasystyle** (Caucasian), **T. europaea** (European), **T. platyphyllos**, big leaf and **T. tomentosa**, silver.

It is reasonable to believe that in the cool northeast the varieties will blossom in the following order from data available in **ABJ**, May 1977. Silver—June 5th to 25th; American and big leaf—June 10th to 25th; **T. cordata**, little leaf—June 20th to 30th; **T europaea**—June 30th to July 25th; end of honey flow. (No data available on the Caucasian.) It is significant to mention that if the Japanese (**T. japonica**) is included that the flowering period would be extended to August 22nd!

The Japanese basswood is regarded by botanists as a flowering variant since it often has as many as 40 blossom cymes per cluster, while the average for all Tilia is about 15. Also, the Orient is noted for having a few trees that blossom over a long period of time, the Japanese locust, the pagoda, is one of these.

In a normal season, using the foregoing data as a guide, we come up with a possible nectar flow over a period of 45 days—of choice minty honey. Flowering in Tilia, however, is part of its seed production cycle and usually for most trees this event is not yearly but often every other year. It has been recorded that the wide spreading trees in uncrowded locations tend to flower yearly. Also, yearly applications of fertilizer, especially phosphorous, stimulates trees to flower.

The average sugar concentration of Tilia nectar is 33.6%, about one-half way between the highest, black locust at 63.2% and the domestic pear at 4%, the lowest. (It is possible that the fragrance and the abundant nectar flow attracts the honeybee rather than the sugar content.)

For ornamental purposes, the floweriferous **T. japonica (simonk)** would be the best selection, with the silver a possible second choice though **T. cordata** is commonly stocked by nurseries as an all purpose medium variety. While the linden is rated as a soft wood, it has a certain toughness and rarely becomes damaged by storms.

As some beekeepers are no doubt aware, the seed of the basswood germinates poorly—from 5 to 50% in two years. Commercially, seed is run through a scarifying machine or the seed hull is given a softening treatment with acid, usually sulfuric.

Scarifying (abrasive) treatment thins the seed hull so that the moisture may reach the seed kernel, it then swells and germinates in one year.

T. americana seed is about the size of garden peas, **T. cordata** about one-half smaller, 4,500 per pound, usually gathered in September or October.

The true seed is the kernel within the nut-hard outer hull. (I have cracked these hulls with a hammer just enough to extract the seed with a pocketknife and this is practical for a small amount of seed.)

To scarify with power, a common electric wood sander can be used. A wooden box, at least as large as a sheet of garnet paper, with sides 2 by 4 inches high is required. Cement with adhesive a sheet of medium or coarse paper to the bottom of the box. Add enough seed to cover the bottom and sand until the hulls start to disintegrate.

It is best to plant immediately, one-half inch deep, scattering thickly. Since the kernel is edible to wildlife, protect the seed bed with a screen over the top of a wooden form. Mice commonly travel in winter and the chipmunks often attack a seed bed in late fall.

Growth the first year will be slow, averaging from three inches to six inches. If the seedlings are too crowded it is best to transplant out some of them. If seedlings are started in a hot climate a slat or suitable fabric sunshade should be used.

After the second year the seedlings should be at least 1-1/2 foot tall and suitable for field setting. The basswood has a lateral root system and therefore transplants well, either spring or fall, after the leaves have dropped. It is advisable to prune off some lower limbs as the tree grows in cool climates but in hot areas the low limbs will shade and increase available moisture.

The writer will appreciate hearing from beekeepers that may have problems with the culture of this species, or surplus viable seed, or any information on the **T. japonica (simonk)**, flowering basswood which is listed as one of the trees of Alabama, USA.

I am indebted to David Griffith of Dadeville, Alabama, a specialist in southern basswood, for pointing out the possibilities of **T. japonica** for it now appears to be a very valuable bee tree, within the species, of our best known and unique flora.

Seed Sources: F. W. Schumacher Co., Sandwich, MA 02563; Herbst Bros., Seedsmen, 1000 N. Main Street, Brewster, NY 10509; Mellingers Nursery, 2310 West South Range Rd., North Lima, OH 44452.

For some time, I have been puzzled and concerned over published reports of flowering trees poisoning the honeybees for it is something that repeats itself in nectar bee literature.

Recently it was my good fortune to read an article on this subject in the **ABJ** December 1977 issue of Research Digest by Dr. F.B. Wells, briefly as follows: Poison pollen or nectar coincides with periods of severe drought and linden nectar and pollen contain sugars of smannose, galactose and rhamnose in abnormally high concentrations in dry years. These sugars disturb the carbohydrate metabolism in honeybees and many other species. After bloom has ended, honeydew if present, will also be toxic.

Thus the mystery of poisonous nectar and pollen in tree nectar has been solved and it behooves apiary owners to be aware of such probable losses during severe drought in which honey flows seem abnormal and dead bees are found, especially under the trees.

Oddly, one basswood nectar report stated that the nectar flow is in the early morning before daylight and it stops about sunrise. Bees work the blossoms using their highly developed time sense.

NEBRASKA STATE APIARIST RETIRES

LOUIS C. SHANEK retired on May 1st after 22 years and 11 months of dedicated service to beekeepers and their industry in Nebraska. Mr. Shanek will continue working his bees, the first love of his long career.

DENTAL NEWS SAYS HONEY CAUSES CARIES

Block Digest, published bi-monthly by Professional Relations Division, Block Drug Company, Inc., (April, 1979, Vol. 19, No. 2) had the following information regarding the cariogenicity of honey.

Analysis of eight honey samples revealed that sucrose ranged from 0% to 3.0%, glucose from 33.1% to 41.5%, fructose from 42.8% to 50.7% and total sugar from 78.7% to 85.2%. **When four groups of rats were fed either a sugar-free control diet, a diet with 18% sucrose, 18% honey or 18% mixed sugars** (sucrose, glucose and fructose as found in honey) **the controls exhibited significantly less caries in first and second molars than the other 3 groups.** There were no significant differences among the 3 sugar groups in either caries incidence or extent. Honey is at least as **cariogenic as sucrose**, and when eaten **in combination with starchy foods is highly cariogenic.**—Ref.: Shannon, I.L., Edmonds, E. J., Madsen, K.O., Honey: Sugar Content and Cariogenicity, J. Dent. Child. 46:29, 1979.

Siftings

By CHARLES MRAZ
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IT HAS NOW been officially announced that the pure venom allergins are now available to doctors for treating people hypersensitive to stinging insects. To prepare these allergins, the pure venom from these different stinging insects is needed in fairly large amounts. For the honeybee, this is no problem, one person with proper equipment can collect all the venom needed for treating all hypersensitive people there may be in the U.S. This is because honeybees are available almost everywhere in large numbers and their numbers can be controlled.

When it comes to the other stinging insects, this is a different problem. These insects are not domesticated and their life cycle do not adapt themselves to making available large numbers of insects except at the end of the summer season. With wasps, yellow jackets and hornets, only the fertile queen bee lives through the winter. This one queen must start the nest making it with wood pulp, lay the eggs and feed the larvae all alone until the first young worker insects hatch some weeks later.

When the workers start hatching the colony builds up rather fast and can be a sizable bunch of bees by fall, especially in warmer parts of the country. Then, with coming of cold weather virgin queens and drones are produced, they mate and the mated queen lives over winter, hiding in crevices for protection to survive. All the workers die with the coming of cold weather ending the life cycle of these insects.

To collect venom from these vespoid wasps is much more difficult. First you must collect the insects and that can be a job as you have to hunt for their nests. Recently a laboratory has started collecting and producing hymenoptera venoms and is buying these insects by the pound at a good price, something like $350.00 per lb. A nice way to make some extra money if you live in an area with lots of nests and know how to collect them.

It would seem to me it might be possible to "control" the propogation of these insects to some extent by those that would like to go into the "business". In the spring when the queen thaws out, she starts looking for a nest site, a place to build her nest. I have always noticed that they like to build their nests where there is overhead protection, one reason why they like to build nests near houses, barns, etc., where people live.

It would be worthwhile to see if supplying such shelters might induce these queens in the spring to make their nest in shelters that you supply for them. Such a shelter may need to be only a sheet of plywood, boards, old hive covers, etc. These could be placed in the woodlots or wherever they prefer to build nests, up in trees or other elevated places, out of reach of skunks and animals that might molest them. It might even be possible to look for small nests just being started by a queen and "transplant them" to a place where you can keep watch on them. Will they return to their old location or will they stay with the nest? An interesting question to work with for anyone with the time and interest. With enough nests available in late summer at the height of the population of these nests, quite a few pounds of these insects could be collected. At $350.00 per lb., that makes them even more valuable than beefsteak.

Anyone seriously considering doing this must contact the buyer first to learn how they must be treated and handled so as to preserve intact the venom in their sting glands. One advertiser for wasps and yellow jackets is Vespa Laboratories, R.D.1, Spring Mills, PA. 16875. There may be others that I don't know about. I am sure, with experience, a person could greatly increase the production of these insects for good profit. We have always had beekeepers, perhaps one of these days we will have "waspkeepers". That should raise a few eyebrows.

The North American Apiotherapy Association is finally being organized with plans to hold our next meeting November 10, on a Saturday. The meeting is open to everyone interested in apitherapy, the theraputic use of all bee products which includes honey, wax, pollen, royal jelly, propolis and bee venom. At the present our main interest is in the use of bee venom for the treatment of rheumatic and related degenerative diseases. More and more people are becoming interested in this important field of research and some of you may be interested in attending this meeting. It is held at the University of Maryland, College Park, Maryland, near the beekeeping building (near Washington, D.C.) with Dr. Dewey Caron as our host.

To become a member and receive notices of our meetings and program write to Harry Froehlich, 1201 Georgetown Drive, Bel Air, Maryland 21014. Much of the research in bee venom therapy is with our group at Walter Reed Army Institute of Research. The purpose of the organization is to disseminate information on bee venom and apitherapy, the results of our reseach and to help finance such research. Send $10.00 for the annual dues and make checks payable to: North American Apiotherapy Society. Mail checks to Mr. Froehlich. To members there will be available summaries of the papers presented at the meetings.

A summary of the papers given at the previous meetings is under preparation and will be available at the time of the next meeting in November at cost price.

Bee poisoning is still in the news and well it should be. Only those that go through the horrible experience of going to a bee yard that was once full of strong colonies of bees ready to produce a crop of honey, suddenly find everything is as still as death. And it is death; the bees are almost all killed. Hives are left with hardly any bees and it is a big question if they will even recover sufficiently to at least keep the wax worms from destroying the hives. I am convinced that almost all poisonous insecticides are unnecessary. There are many other biological and other forms of insect pest control that would do even a better job at much less cost. The use of pathogens against insect diseases is an especially effective method of control, such as the virus disease of gypsy moth. Five gypsy moth larvae, dead of virus disease and full of spores, mixed in water, is enough to infest an acre of forest with gypsy moth larvae. I know, the entomologists will give a big argument of how and why it doesn't work. Of course it works, better than poisonous insecticides, but how can insecticide companies make any money selling "dead caterpillars"? Actually they could sell spores of virus disease used against insect pests, but it would not be profitable and also, it is self perpetuating. That is, when you once spread the predator or predator disease it will usually spread itself. However, much loss can be prevented by spreading the predator by spraying it on. This is faster than it would spread naturally.

This is only one method of biological control. There are many, many others, but much more research is needed along these lines. Again, the main reason appears to be "there is no money in it". Eventually, if insect pests become immune to all insecticides, it may then be necessary to "go back to Mother Nature"; that is, if these poisonous insecticides don't kill us first.

BEE TALK-----

By DR. RICHARD TAYLOR
R.D. 3, P.O. Box 549
Trumansburg, N.Y. 14886

THIS IS THE time of year when, every chance I get, I go toodling off to the bee yards. I don't know where I got that silly expression, but what it means is that I get into my ancient vehicle, which is always filled with beekeeping stuff, my faithful dog at my side, with a bag of lunch and a thermos of tea, and go off to spend the happy hours with the bees. The going and the coming are almost as good as being there. Everything in that old car smells good. My beat up smoker that's seen years of use and has about an inch of carbon inside smells good. It is so battered that about as much smoke comes out the sides as out the snout, and sometimes I have to clear the snout with a stick, or all the smoke would be coming out the sides. The bag of baler twine I use for smoker fuel smells good. The bottom boards, inner covers and old combs piled in the back smell good. The propolis smells good. Even my dog smells good. My friend Don gave me a bottle of mead, and on a hot day it blew its cork in the back of the car, so I didn't get to drink much of the mead, but I got to smell it for a week or so, and that really smelled good. Just about all the smells associated with beekeeping are good ones. There are not many branches of husbandry you can say that about. So it's a pretty good think, toodling off to the bee yards. And it gives me a chance, riding along with my dog, who doesn't bother me with a lot of talk, to get my thoughts together, get everything figured out, and just sort of bask in this beautiful creation.

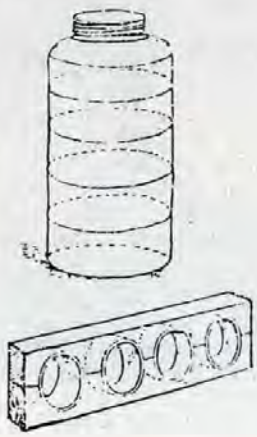
But now I want to talk about something else, and that is something I got in the mail the other day. It was a big envelope from my friend Tom Ross, who is in the business of manufacturing round comb honey equipment, and when I opened it I nearly fell off my chair. Here he had sent me an article from **Gleanings in Bee Culture**, dated 1889, and described and pictured there, clear as day, is the basic idea for round comb honey sections! That's ninety years ago. In fact two people got much the same idea at about the same time. One of them, who signed himself simply as "The Rambler", had tried making little round sections by drilling holes in a board, lining each of these with a wood shaving, and inducing the bees to put comb honey in them. That was a very primitive idea, and not worth much. But an Englishman by the name of T. Booner Chambers had come a lot closer. He made the round rings by cutting up a round glass jar, crosswise. These he fitted into a block of wood having round openings of the right size. Two such blocks placed together, with four glass rings in each and foundation between, gave him just what he wanted—the world's first genuine round sections, produced on the very principle that has become so widely used today! The only real difference is that today the frames and rings are made of plastic rather than of wood or glass.

Mr. A.I. Root did not think much of this invention, for he thought glass would be a dangerous container for comb honey, and he noted also the waste of space between the sections. What he failed to note was how much faster and easier it is for the bees to make round combs, with no corners to fill.

We'll never know whether the late Dr. Zbikowski, inventor of round sections, got his idea from this old article. I'm fairly sure he did not, though. I believe he thought it up himself. I think he would have mentioned the old article to me, had he seen it. Dr. Zbikowski started experimenting by slicing up plastic tubing to make rings, then went on from there. But certainly this coincidence of ideas, nearly a century apart, is an interesting one.

All this got me thinking again of the vicissitudes of this invention over the last 20 years or so. I'm not sure when I started raising round comb honey sections, but I know I was doing it in 1956. That's the year I remember taking some of them with me when I went to visit a lady who, a few years later, I managed to talk into marrying me. So that date stands out in my memory. For years I was going around telling everyone that this is the beekeeping invention of the century. And for years I was going to bee meetings and finding beekeepers who had still never heard of it. Now everyone seems to want to raise round comb honey sections. And no wonder! But I've said all that before, and will restrain myself from getting carried away again now. A while ago there seemed to be three companies manufacturing this equipment, but now I think there are at least four, and all of a sudden the largest bee supply companies, from whom you couldn't even buy this equipment a year ago, are promoting round sections with full-page ads. Sometimes it all makes me feel a little left out in the cold. How come I didn't go into the manufacture of this equipment ten or twenty years ago, when I seemed to be about the only prophet? I would probably be rich now. But I know the answer to that one, and that is, that I'm a lot better day dreamer than I am businessman. My dear wife, alas! knows that, and so does my friend Tom, who sent me this old article, and so do I.

Mr. Chambers' drawing of his method of making round comb honey sections, from Gleanings in Bee Culture, January 1889. Glass rings were cut from a jar and fitted into a wood frame.



Book Review

Mastering The Art of Beekeeping by Ormond and Harry Aebi, Unity Press, 113 New Street, Santa Cruz, CA 95060. 224 pages, 20 illustrations, $7.95.

Author Ormond Aebi and co-author Harry Aebi have a rare ability to combine literary and beekeeping skills. The action flows easily, from the hiving of a first swarm on through the business of beekeeping to answering questions at the end of the book.

This is not merely a compendium of the beginners' experiences. **Mastering The Art of Beekeeping** is an erudite handbook of the complex art of beekeeping. It is a sequel to **Art and Adventure of Beekeeping** the first book by this father-son authorship which was so enthusiastically received.

Mastering The Art of Beekeeping marks a high in beekeeping literature. There are few facets of the beekeeping experience that are not touched upon. People, bees and experiences are woven into a delightful tale of what beekeeping is all about.

From the West

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

HIVE STANDS

WHEN I started keeping bees the first thing I made after assembling hives were hive stands. There was so much scrap lumber lying around from houses being built near me, which was going to be burned anyway, that it provided me with all the lumber I needed for my hive stands. That was 35 years ago. We were wasteful with lumber then and we still are. Just look around you, you will find what you need. Use hot-dipped zinc-coated nails. They won't rust and they will keep your hive stands tightly together so they won't wobble. I coated mine with a brown coal tar product called Carbolinium Avinarius. I wonder whether it is still available for I don't see it advertised anymore. If you do buy it be careful. For the stains won't ever come out of your clothes no matter what. Termites detest it and won't build their mud-tunnels onto it. Even so I set my hive stands on tiles or broken pieces of cement slab. Those too you will find lying around. Do a little exploring and you will be surprised what you will come up with. We Americans are a wasteful lot. You don't have to spend money for things like that. The only thing you will have to buy are the hot-dipped zinc-coated nails, the carbolinium and the cheapest wheel-bearing grease you can find. Automotive supply stores stock it, or try your garage. Get a pound in a plastic cup for a little goes a long way. Smear it on the legs of your hive stands as high as you can so the rain won't splash it and cover it with mud. Ants won't cross it for months on end. I didn't replenish mine for over a year and still no ants cross it. But let a weed touch the hive stands and they are right there to invade your hives.

Having done that your worries are over as far as enemies of your bees are concerned except for bears, birds and the two-legged kind which is the worst one of them all. As for the bears and the two-legged kind, luck has been with me through the years for I have not suffered from their depredations. But skunks, opossums, and here in Hawaii, buffo toads, tried and got nowhere thanks to the hive stands. In fact I had a skunk make his den near my hives when they were in the mountains and I caught him time and again getting his breakfast eating the dead bees which had accumulated on the ground in front of my hives.

But the blue jays and mocking birds were something else again. They drove me nuts until I read, that for John Kennedy's Presidential Inauguration, they sprayed the elms along the parade route with some sticky substance to prevent the black birds from roosting overhead in the trees and doing their dirty business while the parade was in progress. This gave me an idea how to deal with the blue jays and mocking birds. They would perch on the hive cover looking down over the edge to dive down on a drone, or a virgin queen going out to mate. I actually had a hive become queenless that way. So I smeared a stickum on the front edge of my hive cover. Ever heard of Tanglefoot? It's sold to keep creeping insects out of trees. It's a resin product that stays tacky and doesn't dry out. Try it and see what happens. Your bird will land on it, gets smeared up on its feet, and gets to going, and won't be back. Shooting does no good for another one will take its place and claim that rich food supply as his territory.

When you have your bees on hive stands you don't worry about weeds in front of the hive entrance. How often I have stood watching other people's bees trying to get into their hives through the tall weeds in front of the entrance? What a waste of time and energy. It's so easy to avoid with a piece of old roofing paper that's no good for anything else. Or a left over piece of linoleum. Again, just look around.

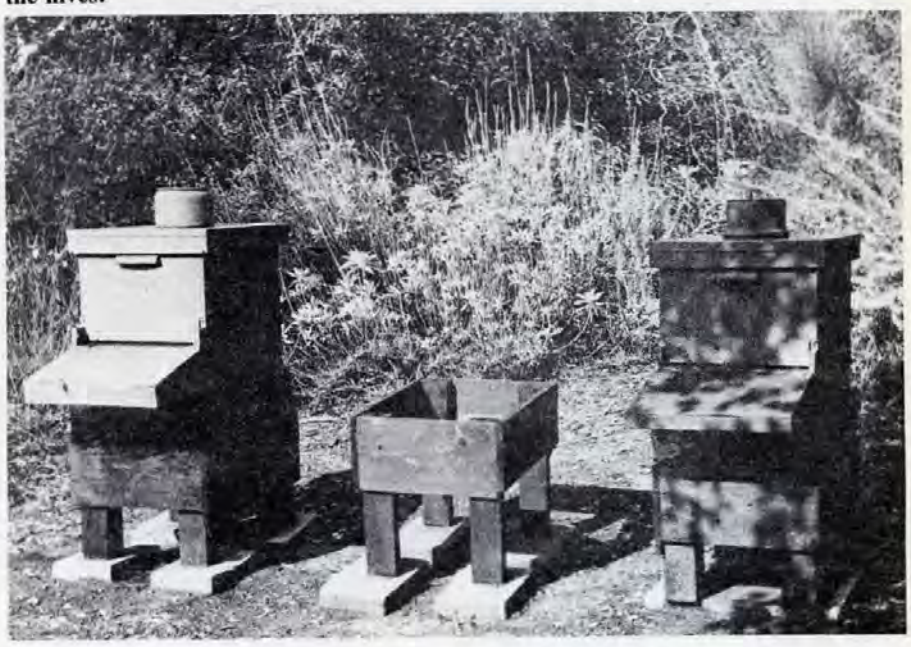
Back in May 1966 I wrote an article for **Gleanings** entitled, "The Necessity of Hive Stands". That was thirteen years ago and what I said then still holds good today. Beekeepers come and go and most of you probably never read it so I give you the important part of it. "**Apis mellifera**, our domesticated honeybee, when swarming out of a hive, if at all possible, will take to the trees and will try to find a new nest high above the ground to get away from its natural enemies. Yet most beekeepers insist on placing their hives right on the ground, which is the most unsuitable place for bees in many ways. Air condition is poor at ground level, dampness causes unhealthy conditions within the hive, ants can walk right in and harass the bees, skunks and opossums can disturb them during nocturnal raids and many bees fall victim when they come out to investigate the disturbance. Toads can catch them without much effort and mocking birds create annoyance by snatching drones at the entrance, which irritates the guard bees to no end.

"Damage to the hives is considerable due to termites, ants and the rotting of the floor boards. But what beekeepers should consider most but don't seem to, is the uncomfortable position of having to bend over a low brood chamber to examine it.

"It is impractical for migratory beekeepers to use hive stands, but the

(Continued on page 374)

These brood chambers are at a comfortable working height for examination. It adds to the pleasures of keeping bees. Notice white sage (salvia apiana) in back of the hives.



Research Review

Some British Vote to Ban Queen Imports

THE MAJORITY of the beekeepers attending the Annual Delegates Meeting of the British Beekeepers Association this spring voted to ban the importation of bees into Britain in view of varroa disease on the continent. I agree that this is a wise precaution, because of our current lack of knowledge about this devastating bee disease; however, unless it is done immediately there would probably be little value in such a move. It is estimated that 10,000 to 12,000 queens are imported into Britain annually.

Presumably this ban, if enacted, would pertain only to queens from continental Europe and other varroa-infested areas. Since North America may be the only continent uninfested, it is possible that queen imports from the United States will increase. Some of our queen breeders have told me they are now shipping queens to England. Until recently, Australia was believed to be free of varroa, but since they have begun to import queens from Europe, the disease may have spread there, too.

Editorial
British Bee Journal 107:41. 1979.

Learning By Bees

It is increasingly apparent that honeybees can learn. They use this ability to obtain pollen and nectar in the easiest way. Plant breeders have been primarily concerned with crop productivity; they have paid little attention to factors such as nectar secretion or flower structure in their selection programs. Nature, on the other hand, weeds out those plants which are not suited to compete in the evolutionary scheme.

A paper from France indicates that in the case of certain cabbage varieties the worker honeybees may alight on the outside of the flower and take nectar by pushing the bases of the flower petals apart. This is learned behavior. Bees approaching a flower in this manner do not come into contact with the sexual parts and do not bring about cross pollination. While plants which have flower structures of this type may be considered good by the plant breeder because of the flavor, productivity, etc. of the final product, it is clear there will be low seed production from such varieties.

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

All this is a reminder that one can not outwit natural processes. Plant breeders must be reminded that they must consider pollination, and the problems it might pose, in their selection of new varieties.

Mesquida, J.
Observations on entomophilous pollination of a few pairs of single hybrids of fodder kale in isolation for the production of double hybrid seed. **Apidologie** 9:321-339. 1978.

Brood Warming

Honeybees have distinct preference as to which brood they prefer to warm and protect. Capped brood is preferred over open brood. Two capped queen cells are as attractive as 350 cells of worker brood. What I found especially interesting in the paper cited below is that capped drone is five times more attractive than capped worker brood.

This kind of information is of special interest to those studying honeybee evolution and control in social animals. The full implications are not thoroughly understood insofar as practical beekeeping is concerned. It is apparent that queens may lay worker and drone eggs in a certain ratio; however, workers may abandon or eat eggs in a different ratio depending upon the stress brought upon the colony.

Underlying what bees do, and how they react in different circumstances, is the question of colony survival. Honeybees survived remarkably well without man for many millions of years; however, all the data we are accumulating indicates clearly that successful beekeepers work to remove stress and to enhance colony growth if they are to secure good crops.

Koeniger, N.
The warming of honeybee brood. **Apidologie** 9:305-320. 1978.

A New Honey Laboratory

Dr. J. W. White, recently retired from the U.S. Department of Agriculture Laboratory in Philadelphia has opened his own, private laboratory for the express purpose of examining honey samples suspected of adulteration. Dr. White's pioneering research on honey adulteration makes him the best qualified individual in the country to act in this capacity. The laboratory's address is Honeytech, Inc., P.O. Box 1059, Navasota, TX 77868.

DR. E. C. (BERT) MARTIN RETIRES

AFTER retiring from Michigan State University and coming to the National Program Staff, Beltsville, in September 1975, Bert and Mrs. Martin have decided that it is time to retire again.

Bert has had a major interest in bees and beekeeping since high school days in Canada, and his professional life has been involved with crop pollination, bees and honey, with some periods of responsibility for general and economic entomology.

Bert was born in England, raised in Canada, and spent a good part of his life in the United States. His Bachelor's Degree was from the University of Guelph; his M.S. and Ph.D. were from Cornell University. In Canada he was on the staffs of the Universities of Guelph and Manitoba. From 1950-1975, he was in the Entomology Department of Michigan State University. Since coming to Beltsville, he has been Staff Scientist for Crop Pollination, Bees, and Honey.

Fundamentals for All

"EXCELLENT WINTERING IN BLACK-FRONTED HIVES"

By W. A. STEPHEN
Professor Emeritus
The Ohio State University

FEBRUARY 20th was the day! I had been waiting for a bright day to check my bees to see how they were wintering in my black-fronted hives. February 20th dawned bright and clear, with a promise of a day of sunshine and above freezing temperatures, so I went out in early afternoon. The high temperature for the day was 37°F. (3°C.)

You may remember that I told in an earlier "**Fundamentals**" how I had closed all lower hive entrances, but had put a 7/8 inch auger hole in each double brood chamber. I also had put strips of shingles on each side under the inner cover, giving an opening about 3/8 inch deep across the front of the hive. The telescoping cover was slid forward as far as it would go, so as not to stop this opening. My reasoning was that this arrangement would allow ample exit for moist air from the top of the hive, yet air flow would be limited by the small amount admitted through the auger-hole entrances. In some cases, there would be additional air coming in through the small slot in the entrance reducers, but where there was a slot on only one side of the entrance reducer, it was turned to completely close off the entrance.

When I saw the situation on February 20th, I was happy about those auger-hole entrances because snow and ice completely covered the lower entrances. The hives were sitting in about a foot of snow.

I am convinced now that **ample** upward ventilation is necessary. For years, I had put a nail, or a small piece of wood over each front corner of the inner cover, under the telescoping outer cover. In that case, air could come up through the escape hole in the center of the inner cover and out the front. There is about the same area of opening in the escape hole in the inner cover and the 3/8 by 14-1/2 inch opening created by the shingle-supported inner cover. However, the greater circumference of the latter, as well as the more direct route, facilitates the rate of air movement and the air moves directly up the inside of the front of the hive.

I had been taught, and had read about the need for upward ventilation, but assumed that a "cracked" inner cover, or one propped up a little bit, was about all that was necessary. Farrar (1) had quoted Langstroth, that Master Beekeeper, many times. Langstroth had learned, 125 years ago by trial and error experiments, that upward ventilation was a prime necessity for successful wintering. Somehow, Langstroth's teachings, although accepted in theory, have not been followed by beekeepers and some have been lost sight of by authorities. It is like the recommendation to have a population or physiologically young bees going into winter. What beekeeper does anything about this? And how many beekeepers in snow country prepare their bees for winter by giving adequate ventilation?

The trouble in getting the story of adequate ventilation across is that provision for upward ventilation was never defined.* Farrar assumed that auger-hole entrances provided sufficient ventilation, even though Langstroth pointed out that the opening should be at the **top** of the hive. In fact, Langstroth wrote (2) "I find, by experience, that in very cold climates, unless the dampness is allowed to escape **from above** it is almost impossible to prevent such fatalities (such as caused by cold starvation) in hives standing in the opening air."

Much of our thinking about bees is based on our knowledge of ourselves. We think of bees as being more comfortable in wrapped, or packed hives. Because we are more comfortable in heated rooms, we think that bees should be more comfortable in well-insulated hives. Experiments with electrically-heated hives have shown that heating the air surrounding the winter cluster is not economically feasible and, little by little, beekeepers are finding out that packing, maybe even wrapping, is not necessary. But upward ventilation is.

One thing I did to facilitate upward ventilation was to paint the front of the hives black. These would absorb the heat of the sun, heat the air immediately inside the hive, causing it to expand and be pushed upwards by the cooler lower air. As the warmer air expands, it absorbs more moisture. Remember, for each gram of honey consumed, there is a gram of water given off as water vapor. If this damp air is confined to the area surrounding the bees, they suffer. If it can be gotten rid of, the bees remain quiescent. Upward, adequate ventilation is the answer.

On February 20, I was elated to find no signs of dysentery inside the hives, nor around the flight holes. Spottings were evident on the fresh snow and, of course, there were bees which had died on cleansing flights, but I was agreeably surprised how many would light on the snow, even on their backs, and rise again, fly around, and return to their hives.

I looked into all the hives, chiefly to observe the location of the cluster. Where the cluster only covered four to five combs, and was to one side of the hive, I removed a couple of combs of honey from the other side and pushed over the frames containing the bee-covered combs. Now there are two or three combs quite well filled with honey on each side of the brood nest. On the other hand, if the cluster covered six, or seven combs, I did not disturb them, rationalizing that, according to the number of combs of honey found in other colonies, these bees should have no difficulty making contact with stores.

In all cases where it was necessary to move frames, I examined them for brood. I found brood in all stages, but mostly sealed brood and eggs—very few larvae. There was probably as much brood, perhaps more, a month ago, in two or three combs. What few larvae there were appeared to be poorly fed—and no wonder. I saw no cells of pollen.

Increasing temperatures had been predicted for the next few days. This would mean that pollen would soon be available. I realize that it takes six weeks to two months to build up a good force of field bees from each colony that I have, so I had to help provide protein for the nurse bees by feeding a pollen substitute. That meant a trip to the bee yard by mid-March. By then, the soft and red maples had made their contributions—maybe there will be some willow pollen, too.

Meanwhile, the snow had melted and I feel that my bees, having come through seven weeks of confinement in excellent condition, will make good colonies if I play my part.

(1) Farrar, C.L. **The Hive and the Honeybee**, Chap. 13, edited by Roy A. Grout, Dadant & Sons, Hamilton, Ill. 1963.

(2) Langstroth, L.L. **A Practical Treatise on the Hive and the Honeybee**, Saxton and Co., New York, 1857. p. 472.

*As of now, I suggest that the upper entrance **at the top of the hive** be at least five square inches in area. This can be

(Continued on page 374)

Notes from the Straw Skep

By BESS CLARKE
Canton, PA

ONE OF THE rewards of writing this column is the contact it gives me with interesting people. Sometimes I wonder if anyone reads it, and then I receive a letter from, for example, Rowena Stockwin, in Sussex, England or a man in South Africa who wants to know what a stick of margarine is. Those letters make me an international author. WOW!

This month's recipe comes from Minnie Sellens at Willow Springs, Missouri, who included a story about it. The recipe is an ethnic one from a collection made by Laura Ingalls Wilder. You remember that Mrs. Wilder was the author of **The Little House on the Prairie** from which the popular television series has been made.

In 1915, while she was a correspondent for the **Missouri Ruralist** magazine, Mrs. Ingalls visited the Panama-Pacific Exposition in San Francisco. Foods were being prepared and sold at the show to acquaint the public with dietary customs from other countries and she sent a series of the recipes for publication in her paper.

This one is of special interest because it is a cake made without eggs, shortening, or liquid.

Mrs. Sellens says she didn't test it, but I did, and was pleasantly surprised at the results. I must admit that I approached the project in a negative frame of mind which was not improved when I caught the rubber spatula in the electric beater.

It's called German Honey Cake but really it is a flat bar cookie reminiscent of the old time Christmas cookies which were made in great quantity and stored for a long time.

German Honey Cake: Blend together 1 cup honey and 1/2 cup sugar and beat for 20 minutes. (Watch that spatula.) Blend in 1 teaspoon cinnamon, 1/2 teaspoon cloves, 1/2 teaspoon ginger, and 2 teaspoons baking powder. Add 2 cups flour and mix thoroughly. This is a very stiff dough. Spread it in a greased shallow pan, 9 x 13 inches, and bake at 350°F. for 15 minutes. The recipe recommends chocolate icing but I used 1/2 cup confectioners sugar moistened with enough lemon juice, about 2 tablespoons, to make a thick glaze. Spread over the warm cake. Cut into 2 inch squares.

This turned out to be a thin chewy cookie with good flavor and texture. It disappeared quickly when we served it at a beekeepers meeting.

Questions and Answers

Q. What kind of sensitivity do animals such as horses, sheep, pigs and goats have to bee stings?—J.C., Guatemala, C.A.

A. There is no doubt that domesticated animals are sometimes attacked and stung by bees but very few deaths result. Their tolerance, I would assume, is on a level comparable with the average human. I have observed horses around my hives and I noted they keep at a respectful distance, evidently having experienced a sting or two in the past. Some animals may not be physically insensitive to stinging but others may be, at least in vulnerable and sensitive areas such as the ears and nose. All of this is speculation as I am sure no extensive tests have been made on the subject.

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Q. Does honey produced by all strains of bees taste the same if gathered from the same types of flowers?

My hobby hive is a strain of Caucasian bees which work on local wild flowers. The honey is very good.

I would like to convert to golden Italian bees but did not know if I would like the honey as well.—L.H., Texas.

A. From our experience honey produced by either Caucasian or Italian bees has the same flavor. If there is any difference, it would be difficult for the average person to distinguish the difference.

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Q. I have read about bees working willows. The kind of willows we have around here I have never seen a bee on. The first of this month (April) I had to take my wife to Cleveland Clinic and I noticed what looked like our weeping willows. They looked to be full of yellow bloom. This put me to wondering. Could you give me some light on this?—H.C., W.Va.

A. There are an enormous number of willows and it is as you say, some of them are unattractive to bees, having very little pollen or nectar to offer. As a general rule, I find that those with large catkins are the most attractive to bees and only some of the willows fall within this category.

The following is from **Canadian Beekeeping** by John Gruszka; reprinted from Saskatchewan **Beelines**, June, 1978. "Willows provide the earliest pollen and nectar sources to honeybees. There are more than 40 species found on the prairies and nine of these are common and widespread. These trees are unusual in that they have separate male and female trees. Both trees produce catkins which contain many very small flowers....Both male and female flowers secrete nectar....During warm springs strong wintered colonies (in Saskatchewan) have been known to store surplus willow honey, which is reported to be yellow in color and somewhat bitter. The staminate (male) flowers are the pollen producers".

"The possibility of planting willows in established year-round apiaries also exists. Just be sure that you take your cuttings from staminate, pollen-producing trees. This can only be done with certainty in the spring when the flowers are out."

Q. My wife and I took three frames of brood (plus bees) from a strong hive for a nuc and introduced a new queen to the nuc. Exactly one week later we examined the original hive thoroughly and discovered many queen cells. Anticipating a swarm (the hive was quite strong), we cut out every cell we found. We noticed unsealed larva in the combs at that time.

Nine days later (16 days from taking the three frames) we examined this hive again. There were no new queen cells, no visible larva and there still seemed to be about the same number of bees (i.e. we don't think they swarmed). We have concluded that when we took those three frames either (a) we killed the queen or (b) put her by mistake into the nuc (horrors!) We have ordered a new queen for that hive.

Since that last inspection we have frequently been attacked by "angry" bees at very substantial distances from that hive (we only have it and the new nuc) and completely out of its view, around the house from where it is located. This has been going on for two days so far. My questions:

(1) Is this aggressiveness typical of workers from queenless colonies?

(2) What is the best course of action when you are not protected (veil, suit, etc.) and are attacked by such bees—particularly around the head and open-neck shirt?

(3) If we put the old queen into the nuc (with some of her bees on the frames), is the old queen or the young introduced queen more likely to be the survivor?

(4) How can a caged queen be kept until she can be introduced?—N.S., North Carolina.

A. You failed to give information regarding the status of the nuc which is really the key to what happened to the queen. If the nuc refused to accept the introduced queen, it is a good possibility that the queen from the parent hive was transferred with the three frames of brood. Otherwise, it may be just coincidence that the colony is superseding the queen at this period. This, of course, can lead to discontented and possibly angry bees.

Occasionally everyone who keeps bees will encounter a colony that is disagreeable and of course the best policy is to close the hive when they are persistent in their attack if you are working with them. If simply being around them draws their ire the best thing is to move slowly away and bring bushes or some other object between you and the attacking bees.

If an old queen is put into a nuc, there is unlikely to be any contact between her and the introduced queen; simply because the nuc will not accept the introduced queen. An attempted introduction of the new queen will fail because the new queen is simply not released from the cage.

You request information on keeping queens for several days until they can be introduced. The best way is to place the cage with the new queen in the top part of a regular hive, but do not remove any of the corks stopping both ends of the queen cage. In this manner the queen will be confined and yet she will be cared for by the hive bees. Usually no harm comes to the queen but if you wish to be extra safe, you may place a queen excluder between the brood chamber and a super and place the queen in the cage between the frames of this super thus separated from the other queen.

Strictly Backlot

By CARL CALLENBACH
135 College Avenue
Elizabethtown, PA 17022

AT ANOTHER TIME and place my good friend Jesse and I would seek out the worst possible movies in town, take them in and then later, back in our dorm, rescript and recast them. This dubious conduct usually surfaced around mid-semester and final examination periods during our undergraduate days at Penn State. Human beings respond to stress with a myriad of behaviors, some productive, some self-destructive, and most like ours, a harmless catharsis of sorts. Neither of us liked very much what we were doing at Penn State, but we weren't terribly attracted to that other option: the Korean War. I don't remember any of the movies we saw nor do I recall much of what we did to them later. We weren't, as I remember, enamored with Doris Day, but who, in their early twenties, then, was? I slept better following our film escapades, and more often than not, I passed the examination the following day.

Now, almost 25 years later, Jesse and his family were providing us with a place to stay during our brief evacuation from the Three Mile Island area: our home stands a bit more than seven miles, as the bee flies, from the site of the crippled reactor. Thanks to Jesse I could escape the geograpical locale but not the hard fact that from now on it would be even harder for me to pretend I was in control of my life. There had been much anger the day before and I would share that with Jesse before we returned home. But tonight, lounging comfortably on stuffed chairs in Jesse's study, we would repress the despair, just like old times:

Carl: Jesse, would you care to describe yourself for our readers in one or two succinct sentences?

Jesse: I'm an ornamental horticulturist by trade, and on those evenings when there's a full moon, I give batwings to collosal horror film failures, a resuscitator of sorts, you might say, breathing ghastliness into anemic pretenders.

C: Not too succinct but it will suffice. You might have added you're a grower of exotic rhododendron and a keeper of a hive or two of bees.

J: Only in the daytime.

C: Which brings us around, I guess, to **The Swarm**. I'm curious. How could any movie with twenty million bees not to mention Michael Caine, Henry Fonda, Katherine Ross, Olivia de Havilland, Fred MacMurray, Jose Ferrer, Richard Widmark, with technical assistance and advice from the Department of Defense and the United States Air Force go wrong?

J: I have given that much thought. I believe **The Swarm** was poorly conceived, written and casted, from the start. It should have been staged as a musical comedy.

C: Very interesting. I mean with all those little buzzing Mary Poppins flying around....

J: You make sport of me! Trust me. Although I'm not sure how I'll choreograph 20 million bees in the dance and song finale I have in mind, but we'll come to that. I think I have a solution, if the Pittsburg Steeler defensive team is available.

C: Twenty million bees could certainly hum a lot. But how do you plan to begin the story?

J: Remember the part in the movie where you're led to believe the bees will return

to avenge any harm dealt them by the military-scientific complex?

C: You mean...**Return of the Swarm!**

J: It's a start. Although the revenge motive is probably overused. Did you happen to catch **Frankenstein's Average Nephew**? But I digress. One of the problems with **The Swarm** is that the bees are just not believable as villains. They're not ferocious enough, not repulsive enough! For instance, remember the scene in which the scientists are inside some sort of research room and bees are clustered here and there on the laboratory clothing. I mean were **you** terrified? And those silly 16 rpm death scenes!

C: I got the feeling the bees were unwilling participants in a disaster film they knew was going to bomb. You're right. We've got to do something about the bees.

J: I want to make them more **man-like**. Give them faces like Jack Palance or Boris Karloff. Twenty million winged Jack Palances laying seige to America would be something to reckon with.

C: I know Boris Karloff can read children's stories magnificently. But can Palance sing?

J: We'll dub in Andy Williams' voice.

C: What we'll have, if I understand you, are twenty million bees with the bodies of the Pittsburgh Steelers unit, the faces of Jack Palance, all of them singing 'Moon River'.

J: A strange set of circumstances, I admit. But you must understand the phenomenon of chemically caused mutations. Think of all the poisons, pellets and gases launched against the bees in **The Swarm**. And now, fifty-five years later, those monsterous mutants are ready to wreck havoc on America from their planet hive high in the sky.

C: And who's to stop them? Who's to stop the diabolical queen played and sung by Phyllis Diller in the pre-battle scenes, by Marie Osmond following supersedure?

J: Is that a rhetorical question? The good guys, of course!

C: You'd better explain.

J: I'd like to keep Henry Fonda in the show. After all, he is a bit of a backlotter himself in real life, and he should be punished for his indiscretion, his participation in **The Swarm.** We'll take him out of his wheelchair and place him on a gallant white stallion. Most immunologists would like that. Maybe we'll have him talk faster, too. Then, somewhere in the middle of the movie, Phyllis Diller, the queen, will sing a torrid aria to him and sentence him to six years of doggie-paddling in a giant vat of his own antigen.

C: Justice served. Now about the love triangle. I'm not sure how Fonda or the love triangle will cope with the forces of evil.

J: That was another problem with the original movie. I couldn't see any reason for the triangle. I didn't see how it was connected to what was going on in any meaningful way.

C: You're going to correct that flaw?

J: No, I kind of liked it. In fact I'm thinking of adding two or three more irrelevant romances. But first we must replace Caine and the others. I have a feeling that Larry Czonka, New York Giant fullback and deodorant poet, would more than fill the entomologist's shoes. And his net, for that matter.

C: And Katherine Ross, the doctor in love with Caine?

J: Supposedly in love with Caine. For Ross, now Farrah Fawcett in **our** movie is, in reality, an espionage agent sent from the huge hive in the sky to infiltrate the scientists' inner, most secret thoughts. The truth is she's infatuated with a drone back home.

C: It seems to me we're left pretty much with the general. May I suggest Woody Allen as Richard Widmark's replacement?

J: Allen's chest would not stand the wear and tear of all those medals. And if it could, the weight would limit his physical dexterity. I think Jonathan Winters is our man. He could handle 10 or 15 pounds of medals and still move nimbly enough to trap, handcuff, and lock up Czonka and Fawcett in the laboratory.

C: A crazy, bemedaled general has Czonka and Fawcett locked up? Not much of an imposing force is left to do battle with twenty million bees with the bodies of the Pittsburgh Steelers defensive unit, the faces of Jack Palance, all of them singing 'Moon River'.

J: The general incarcerated them because they refused to unleash the giant, pastel-colored wax moths against the bees.

C: Of course. How stupid of me!

J: So in the final scene I mentioned earlier we have an enormous staging problem, no doubt about it. On the one hand we have twenty million terribly repugnant man-like bees, whipped into a frenzy by a fiendish, jilted queen, preparing to take flight for America from their hive high in the sky. On the other hand we have half a million giant, rainbow colored wax moths floating upward into space led by a lunatic general in an old Piper Cub airplane. And in the background the Philadelphia Symphony and six thousand voices....

Enter my daughter, sleeping bag in hand. "Dad, the eleven o'clock news is on in case you want to see it. Something about evacuating pregnant women and preschool children within a five-mile radius of Three Mile Island." She leaves for a bedroom, upstairs.

We're living in a diaster movie," I said to Jesse. "We're in the cast whether we want to be or not. And too many of our lines have already been written."

Jesse said: "You know what's really wierd? We're in the audience, too. Watching a horror picture and being in it at the same time. This time we can't rewrite it. I mean it's for real, and it stinks!"

"The ultimate horror show. We can't leave early and there's no refund."

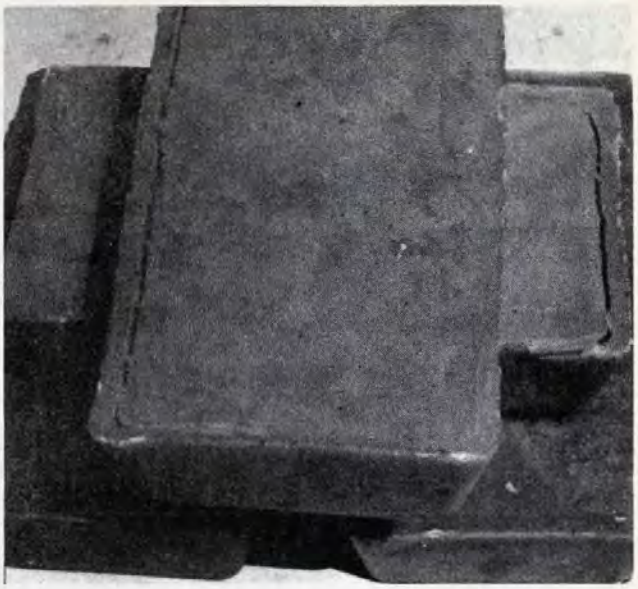
SWARM CALLERS

THIS honeybee swarm not only found a "homesite" but even the front entrance.—Photo by Alfonse Avitabile, University of Connecticut.

Beeswax

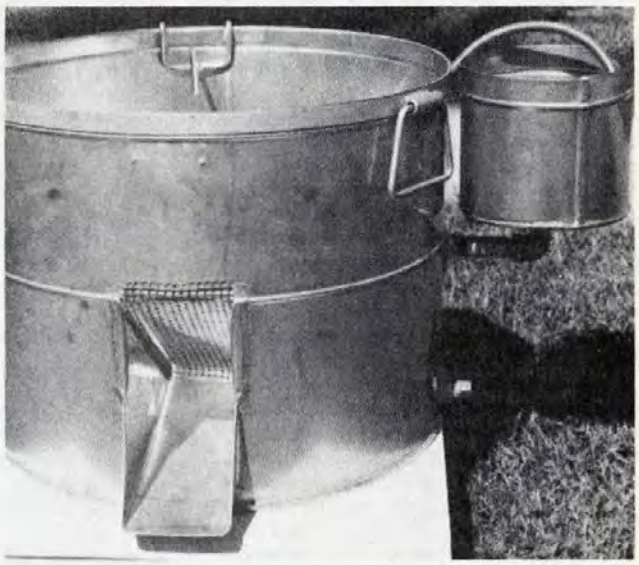
By LARRY GOLTZ
Medina, Ohio

ICARUS, OF GREEK mythology, son of Daedalus, attempted to flee Crete by flying with wings made by Daedalus. Whether by reason of a faulty altimeter reading of possibly failing to note the melting point of the beeswax used to attach his wings, Icarus came to an ignoble end by falling into the sea when his wings became unstuck. So was recorded the fate of what may have been man's first attempt at becoming an aeronaught. Had not the beeswax failed to pass the thermal barrier test and winged flight proven to be aerodynamically possible for man, beeswax, not titanium, may now be selling at near the price of gold!



Cakes of clean, light colored wax that will bring a premium price.

Despite this legendary failure beeswax has an admirable record during its long history. Early in history it was used for such unusual purposes as embalming the dead of the upper castes of the ancient Egyptians. Beeswax was used to cast images used in the magical ceremonies among the citizens of Babylonia, India, Greece, Rome and the Maya of Central America. The early Christians used candles of beeswax. The use of candles, which originated with the Romans, soon became closely associated with church rites. The burning of beeswax candles came to symbolize Christ, an idea derived in part from the example of the life of the honeybee which was believed to live an exemplary life of purity and unselfishness. The "lost wax" method of using beeswax to cast metal was a forerunner of the bronze age. In this process the object to be duplicated was first fashioned of wax, enclosed in a clay shell and the whole placed in a kiln. The wax melted and escaped through a hole in the clay shell. Left was a mold with the perfect likeness of the object within the clay shell.

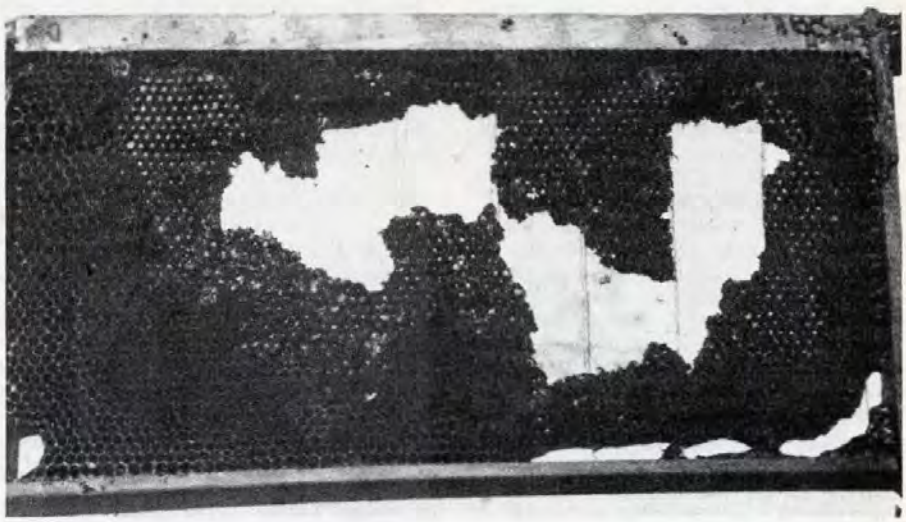


A cappings melter that has a hot water reservoir in the base. The melted wax and honey drains into a wax and honey separator.

Beeswax, containing coloring pigments was the basic material of encaustic painting first developed by the Egyptians and later used by the Romans to decorate their homes and public buildings. This art was practiced until the middle ages in Europe.

Beeswax, always esteemed as an article of commerce, served as currency during the middle ages. Taxes and tributes were paid in beeswax. The IRS may frown on your attempt to unload a consignment of your lemon beeswax at their regional office but converted to acceptable tender it could help to ease the burden of this eternal levy. The "beemasters" of the middle ages rated highly in the employ of the Kings who appointed them to take charge of the royal apiaries. Frequently such beemasters were exempt from military service, a stratagem largely ignored, it seems, by those little inclined to

Old, dark combs should be rendered apart from cappings.



martialism during the eras of enforced service of the past decades. Beeswax was so valuable in the period of Queen Elizabeth of England that it was sometimes adulterated. To prevent such fraudulant commerce each block of beeswax marketed had to be inscribed with the initial of the wax merchant (apparently even then middlemen were taking their bite out of the producer's share). Those caught adultering their wax were fined heavily; half of the penalty being paid to the Queen and the other half went to the person who was defrauded. Present day justice, only now beginning to recognize some responsibility to the victim could have taken this example as a precedent.

The present day use of beeswax, especially in North America and Europe often outstrips the supply. Large quantities have been improved yearly, especially from Africa where wax is produced in greater proportion to honey than in the agriculturally developed countries. Quantities of wax are obtained from their hollow log hives (see "New Observations on Bait hives", **Gleanings**, June 1979). Kenya, a developing country exports a considerable tonnage of beeswax although countries such as Angola, due to political upheaval, has virtually dropped out of the export market. Despite a steady increase in demand only a small proportion of the world production of beeswax enters the commercial market. West Germany and the USA are the principal importers, taking almost half the total exports. Discounting the percentage of beeswax that is "recycled" into foundation, large quantities are used in industrial products: Cosmetics, adhesives, art supplies, dental wax, electronic equipment, foods, lubricants and many kinds of coatings and finishes for wood, metal, textiles and paper. Candle making is often associated with the manufacture of beekeeping supplies. The volume of wax used in making beeswax candles assures a steady, profitable market for domestic beeswax. The churches are discriminating buyers of high quality candles that can only be supplied by those who use beeswax in the formula. A candle with approximately 50% beeswax composition has most of the outstanding burning qualities of a 100% beeswax candle, vastly superior to a candle made entirely of paraffin, a product of refining lubricating petroleum.

While candle making takes up to 20% of the imported beeswax the manufacture of cosmetics takes up to 35 to 40% of the imports in Britain. No doubt this is true in America as well. Most beeswax finds its way into skin creams, including cold cream for the face, emulsions and tinting material such as rouge and lipstick. The pharmaceutical industry is probably the second biggest user of wax with 25 to 30% of the imports. It is used in ointments and to coat pills. An interesting new market has opened up in the Middle East where, due to improved living standards, the demand for cosmetics is on the increase.

Candle makers use quantities of beeswax.

Beeswax is a natural product of nature. It is produced from four pair of glands on the underside of the abdomen of the worker bee. As wax is secreted it hardens into flakes which are plucked off by the bee, worked with the mandibles and deposited on the perimeter of the cells. Other wax working bees shape the new wax into cell walls and cappings. The production of wax by a colony of honeybees is reflected in the consumption of honey but whether having to build comb detracts from the colony's ability to store a fixed quota of surplus honey during a season is a point that is often debated. There are those who feel that the necessity to build comb to store honey does not diminish the amount of the total honey crop.

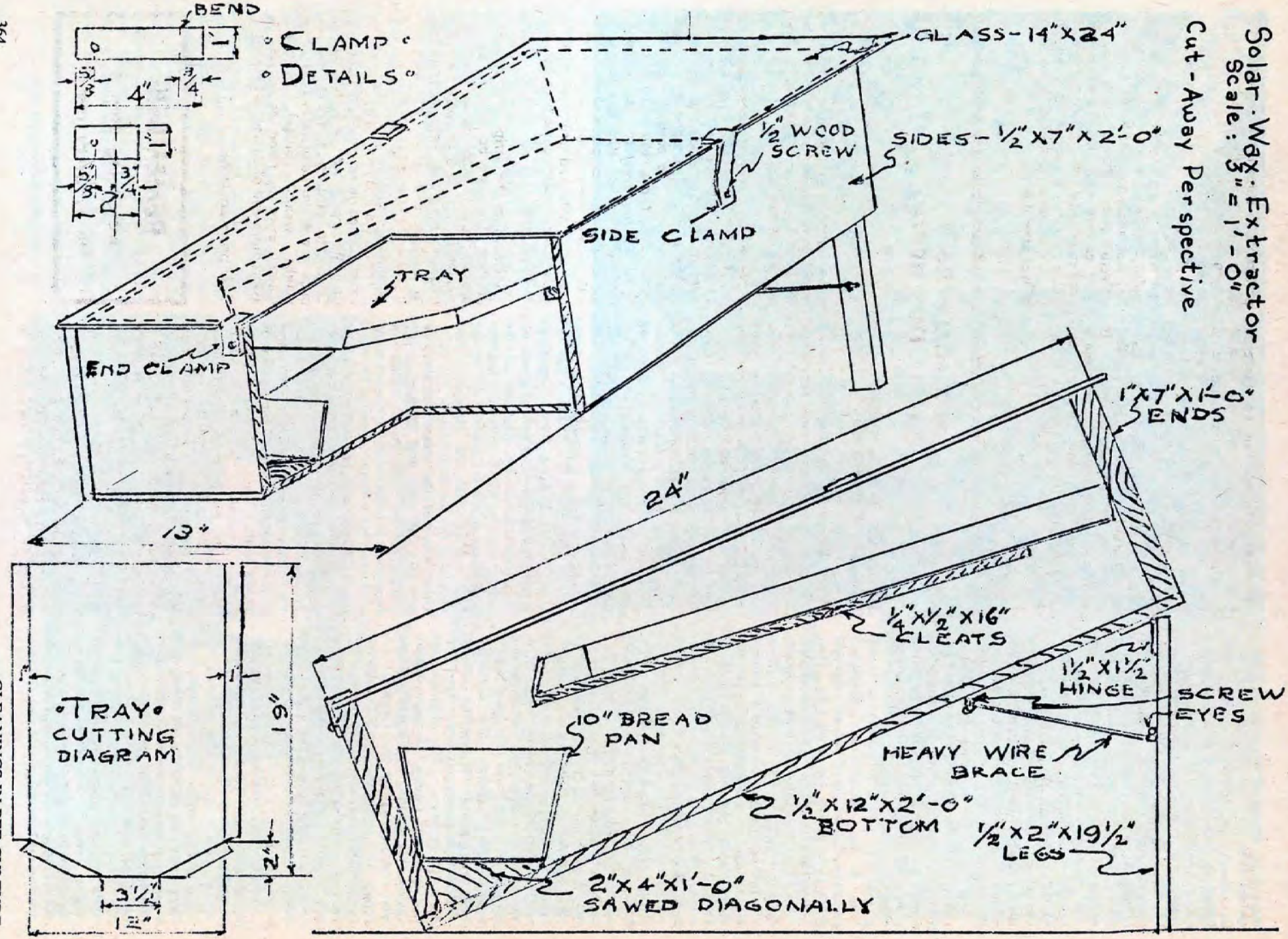
Perhaps of greatest concern to the beekeeper is the monetary value of beeswax. Cappings yield the highest quality of beeswax, a light lemon color with few impurities. Usually much lower in grade due to darker color and impurities is the wax derived from rendering old combs. Refiners can bleach and filter the darker crude waxes to an extent but the quality can never be made to match the wax obtained from cappings and new comb. The beekeeper is advised to keep wax rendered from cappings separate from that obtained by melting old combs. Propolis, residue of honey or foreign material remaining in rendered wax will lower the grade and price paid to the producer. Discoloring caused by rendering wax in containers of iron, copper, zinc or brass is nearly impossible to remove.

Rendering Cappings

Honey which is removed with the cappings during the uncapping process may be separated from the cappings by one of several methods; draining by gravity, whirling in the extractor basket or squeezing in a press. The dry cappings are then melted in some form of capping melter or a solar extractor. New combs, light colored bits of brace and burr combs accumulated during the season while working in the hives may be rendered along with the cappings. The solar wax melter, a glass covered, wooden box lined with a metal tray is simple and economical to construct. The size of the solar wax extractor may vary according to the beekeepers' needs.

There are various devices on the market

(Continued on page 365)



Solar Wax Extractor
Scale: 3" = 1'-0"
Cut-Away Perspective

BEESWAX

(Continued from page 363)

for melting the cappings during or after the uncapping process. Combs may be uncapped directly into a capping melter and wax separator. Hot water, steam or electric heating elements supply the heat. A solid cake of wax is obtained from this process which is nearly ready for the market. More often the beekeeper with only a few hives will uncap into a box or tub with a screened bottom which allows the honey to drain away into a separate container. The gravity-drained cappings can be further dried by spinning in an extractor, washing with a water bath or placed above a strong colony of bees. When placing the wet cappings on a hive make certain that access can be gained by the bees of that colony alone as any other entrances will allow robber bees to enter, a very difficult situation that can get out of hand.

The dry cappings may be rendered by using one of several wax rendering devices available from bee supply manufacturers or distributors. One of the most popular consists of a tank heated by an enclosed hot water jacket at the bottom. Molten wax and warmed honey run out of a spout into a separator, the wax rising to the top and the honey draining from a spout in the side of the separator.

Rendering Old Combs

Old combs, along with darker pieces of brace and burr combs should be processed separately from cappings. Clean the combs and scraps of wax of all propolis an dirt, even if it is necessary to soak in warm water for a day or two. This will allow the water to absorb much of the waste material in the combs before they are melted. After drying, place the compacted combs in a burlap sack. Submerge the filled sack in a large tub of water over a heater. Weight the sack of comb by placing several stones or bricks inside before tying the top. Be certain there are at least several inches of water covering the sack. This will allow the melted wax to gather at the top of the water. As the contents of the sack heats up the melted wax will rise to the top of the water. The debris will remain in the sack. Occasional stirring of the sack with a stick will help release the wax. After cooling down, the solid cake of wax can be lifted from the surface of the water. This method may not secure all of the wax but it does not require any elaborate equipment.

Where many combs have to be rendered a wax press may be profitably employed. A wax press uses hot water or steam with pressure on the melted combs to remove the melted wax.

For beekeepers with large quantities of wax to render, commercial extraction plants will provide this service. The bee journals usually carry information in their ads about these services.

If additional refining of rendered beeswax is desired, for making candles at home for instance, the cakes of rendered crude wax can be put into a tub of water and melted. The wax can be ladled from the top of the hot water into molds of plastic, well tinned or stainless steel containers. **Caution: Beeswax is flammable. Do not let the water rise to boiling temperature when melting wax. If beeswax should boil over it can cause a serious fire. Use slow heat and pay careful attention to the progress of the melting.**

If you are using a lot of beeswax it is preferable to construct a container that allows a reservoir of melted beeswax to accumulate and then float from the surface off into collecting pans. This is most easily accomplished by adding hot water to the container after a large reservoir of wax is melted. As the water is added, the melted wax surface rises and it can then be drained from a top spout into collecting pans. Plastic coated milk or juice cartons make good wax molds. Foreign material will settle to the bottom of the container as the wax cools and can be trimmed from the bottom of the block of wax after it cools.

NEW BULLETINS & INSTRUCTION MEDIA

DIRECTORY OF THE WORLD'S BEEKEEPING MUSEUMS

THIS Directory, by Dr. Eva Crane, provides information not previously available on seventy-one museums with interesting beekeeping collections and gives rise to many exciting ideas for tours and holidays. Twenty-two countries have beekeeping museums and United States is on page 14. Addresses, telephone numbers, opening hours, facilities and indications of the types of material on view, if photographs, etc. are for sale, are given in the entries. An introduction points out some outstanding features, and offers suggestions for the future.

The Directory is available from International Bee Research Association, Hill House, Gerrards Cross, Bucks SL9 ONR, England, price 50 p or $1.20.

SLIDE SETS

Slide Set #450 Honeybee Behavior & Biology, Slide Set #451 Beekeeping & Some Of Its Problems by Kenneth Lorenzen.

Prepared by Educational Images, PO Box 367, Lyons Falls, N.Y. 13368, Charles R. Belinky, Ph.D., Executive Director.

EACH SET has twenty color slides and an accompanying script. The quality of the slides and the accuracy and excellence of the descriptive material is vastly superior to much of the educational material available on bees and beekeeping. The length of the written material, though not excessive in consideration of the scope of the subject, may make it desirable to show each set at separate times and perhaps in multiple sessions for each set.

The level of instruction in set #450, Honeybee Behavior and Biology is a little inclined toward those who have had some training in the natural sciences but with some introductory teaching both sets would serve admirably as teaching aids for both beginning and advanced beekeeping instruction.

The title of set #451 Beekeeping and Some of Its Problems may lead the unknowing reviewer to forejudge the direction of the discussion as being unduly inclined to emphasize the problems and not the positive aspects of apiculture. There need be no concern. Quite to the contrary, the script is thoroughly factual (the references are listed) the manner of presentation is clear and the language is non-technical. These two sets of slides and scripts could be the basis of a complete course of instruction in beekeeping.

Included in the script are suggested projects that can be undertaken to provide the initial contacts with bees and equipment, a phase of instruction which is frequently neglected. Suggestions on how to organize and direct field trips are included in the script of set #451.

The author and photographer are to be congratulated on an outstanding publication. We hope to see a wide distribution. Creditable instruction media as these will make a welcome addition to libraries of middle schools, colleges, vocational schools, extension resources, beekeeping associations and of course, individuals.

No prices are given.

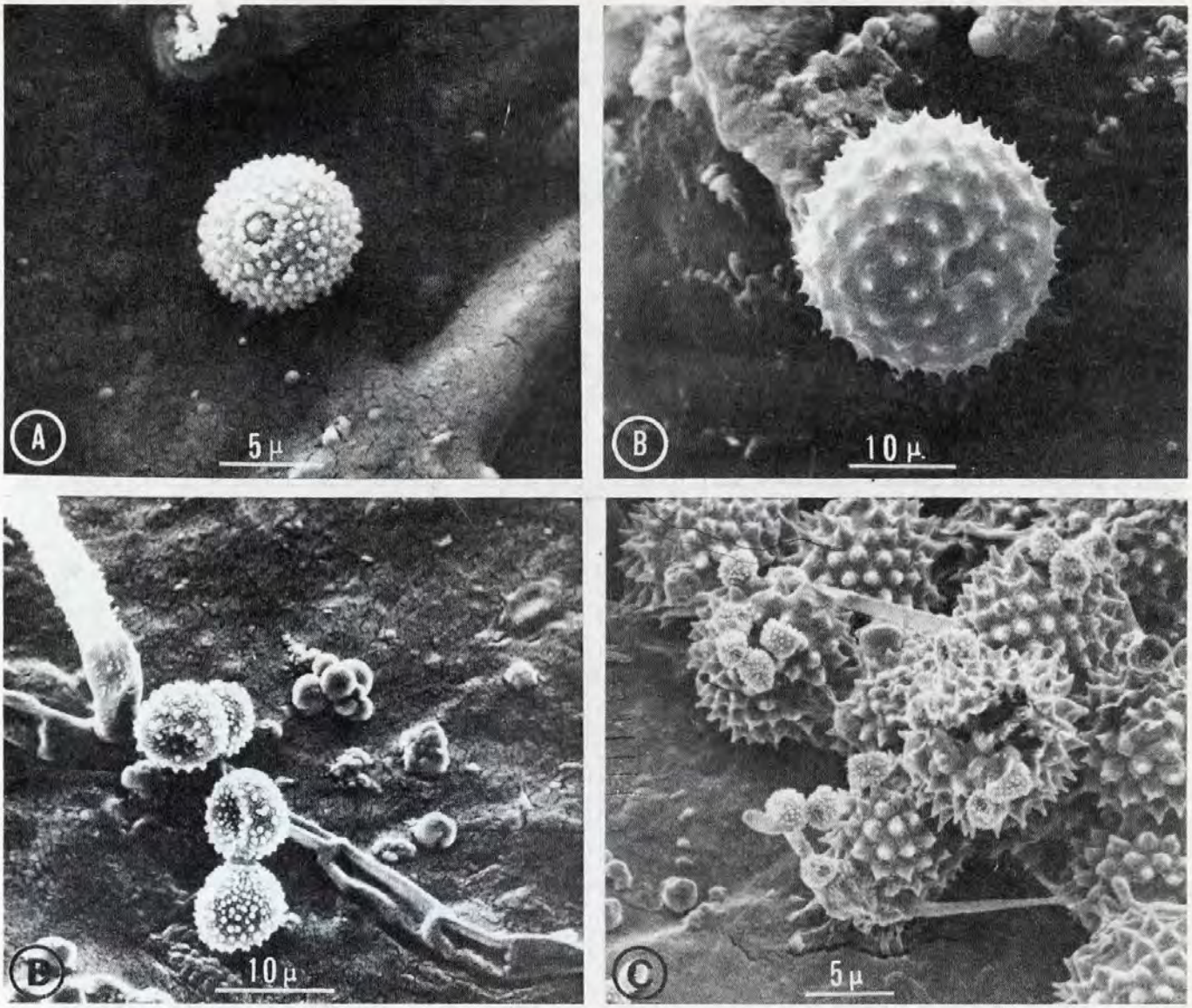


Fig. 1. Micrographs of various unidentified pollen grains taken with the scanning electron microscope.

Pollen and Honeybee Nutrition

By A. DIETZ
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Athens, GA. 30602

POLLEN, THE male germ plasm of plants, is the major protein source for honeybees. It has been shown that the weight and nitrogen content of emerging bees is directly influenced by the pollen consumption of nurse bees and the fluctuation in the pollen income of the colonies (Haydack, 1935; Anderson and Dietz, 1976). The amount of pollen collected by an average colony of honeybees in the U.S. is about 125 pounds (Eckert, 1942). Estimates in Germany range from 44 to 110 pounds of pollen a year by average colonies. The largest daily collection recorded in Germany was 1.7 pound. Daily collections of pollen were as high as 2.2 pounds per colony in the southern part of France and in some instances were as high as 4.4 pounds of pollen in the case of strong colonies.

The size of pollen grains varies roughly from four to six microns found in the forget-me-not (**Hyrosotis sylvatica**) to plants with pollen grains as large as 350-microns but the average size is in the 25 to 50 micron range (McGregor, 1976). Pollen grains from different plant species have their own distinctive shape and sculpturing which can be used in the identification of both pollen and nectar sources (Fig. 1). Grasses produce a pollen which is light and dry to facilitate wind pollination. The pollen of other plants is usually sticky and must be moved by a honeybee or some other pollinator.

Pollen collection of honeybees is influenced by many factors (Dietz, 1975). However, no clear evidence to date has been produced to show that honeybees prefer a specific kind of pollen and make

a qualitative selection. Apparently the manner in which the plant makes the pollen available is important in the pollen collection of bees. Taber (1963) was able to show that pollen collection by bees is stimulated by some attractive compounds present in the pollen. When these compounds are extracted from pollen and added in small amounts to cellulose powder, honeybees no longer will collect the extracted pollen but rather the cellulose powder. If bees are given a choice of collecting an attractive pollen, a nutritionally worthless substance or a pollen substitute, they will collect the worthless substance as fast as the pollen substitute (Wahl, 1966). Also, when bees were offered a choice of pollens, 20% collected a mixture of 2-year-old pollen but only 3% collected fresh **Eucalyptus goniocalyx** pollen (Doull, 1966). This again indicates that honeybees are unable to differentiate between a fresh and presumably adequate pollen or a stored and nutritionally deteriorated pollen.

Barker (1971) reported that the degree of pollen collecting activity is related to the amount of unsealed brood present in a hive and confirmed the fact that the stimulant for egg laying is derived from nectar or honey. Colonies without queens and brood also collected pollen but not as much as queenright colonies with large amounts of unsealed brood. An artificial decrease in the pollen provisions of a honeybee colony, and the resultant shortage in protein, will result in an increase in the pollen collection activity (van Laere and Martens, 1971).

Moeller (1972) found that feeding pollen inside the hive during the tasseling period of corn, **Zea mays L.**, essentially eliminated pollen collection from corn and considerably reduced total pollen collection by foraging bees. Bees feeding on pollen cakes placed inside the hive collected 4.3% corn pollen as compared to 40% for bees receiving pollen-soybean flour supplement and 53.4% for the control. The combination of pollen cakes inside the hive and a pollen trap at the hive entrance virtually prevented any mortality of bees due to pesticide poisoning.

Pollen is consumed by bees until they reach the age of 15 to 18 days. During spring brood rearing, the largest amount of pollen is used by 3 to 6-day-old nurse bees. In the summer, however, the largest amount of pollen is consumed by nurse bees at an age of nine days. Nurse bees consume more pollen in the spring than bees rearing brood at other periods. This consumption parallels the greater activity of the digestive enzymes. Also, the activity of enzymes involved in pollen digestion is considerably higher in bees from a weak colony, which would indicate more extensive pollen consumption in weak colonies. Since the nurse bee to larvae ratio is generally higher in weak colonies, a more intensive and prolonged feeding on pollen is a necessity. Under such conditions, the period of brood rearing activity for nurse bees is considerably longer and thus the change to field work occurs much later. These nurse bees age more quickly and their field activity is considerably shortened, resulting in the lower productivity associated with weak colonies.

In a normal colony, growth of newly emerged bees begins as soon as they start feeding on pollen, with a subsequent development of their brood food glands, fat bodies and other organs. Dietz (1969) showed that in a normal colony, bees initiate pollen consumption about two hours after emergence. On the other hand, some bees confined to 3-frame-nuclei boxes and maintained in an incubator began to feed on pollen almost immediately after emergence and two hours later about 25% of these bees had eaten pollen. Continuous pollen intake in about 85% of the bees begins about six hours after emergence under laboratory conditions and about ten hours under hive conditions. The percentage of bees feeding on pollen in these two groups was almost identical at the end of the 12-hour test period. Hagedorn and Moeller (1967) reported that of newly emerged bees allowed access to pollen combs and confined to small cages with a mated queen, 50% had consumed some pollen at the age of 12 hours and mass consumption was initiated when the bees were roughly 50 hours old. It is imperative in nutritional studies of honeybees that not only the age of the bee, but also the time of pollen consumption be known.

Pollens from different sources vary in their biological effects. Bees feeding on pollen with a high protein content will be able to nurse a larger number of larvae as compared to bees feeding on diets with a lower protein content. The protein content of pollen ranges from 8 to 40%. The difference between insect-pollinated and wind-pollinated plants in this connection is insignificant.

Maurizio (1960) classified the various types of pollen into four groups: (a) highly nutritive pollen, such as that from fruit trees, willows, corn and white clover **(Trifolium repens)** just to name a few; (b) somewhat less nutritive pollen, which includes pollen from elm trees, cottonwood, dandelions and others; (c) pollens with a fair nutritive value coming from such plants as alder and hazelnut; and (d) pollen of poor nutritional value as that from various species of pine trees.

The question as to what compounds in pollen are responsible for its nutritional values has not been completely answered. Investigations have shown, however, that some pollens are perhaps deficient in some amino acids. Amino acids are simple units, or building blocks which make up proteins. Some of these amino acids are essential for honeybees, as well as other animals, since they cannot be manufactured by bees and must be obtained in the food.

The amino acid requirements of adult honeybees were elucidated in an elegant experiment by De Grott (1953). He fed various amino acids in sugar solutions to bees and compared the change in nitrogen content and the increase in longevity with bees fed only sugar syrup. According to his findings, the amino acids arginine, histidine, leucine, isoleucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine are essential for the normal growth and development of bees. De Groot also found that the consumption of amino acid mixtures increased the longevity of honeybees, but not to the same extent as it was increased by casein, the principal protein component of milk. He concluded that this discrepancy may depend on the relative concentration of the single amino acids in the mixtures. The amino acids glycine, proline and serine are not essential for growth, but exert a stimulating effect at suboptimal growth levels.

The normal development and growth of colonies in the spring is often hampered by an insufficient pollen supply and in rare instances, pollen may contain compounds which are poisonous to bees. To correct these conditions, beekeepers feed their bees either pollen supplement (Schaefer and Farrar, 1941) or pollen substitute (Haydak, 1933; 1958).

In general, Haydak's pollen substitute mixture, commonly available at most bee supply houses, or some of the protein rations tested by Standifer et al., (1973) can be fed either in a powder form in the open out in the bee yard, or in the candy form inside the hive. However, for best results it is advisable to offer the dry pollen substitute first outside the hive so that nurse bees become familiar with the taste and the odor of the pollen substitutes brought in by foraging bees and deposited in the cells. As soon as the bees have become familiar with this new foodstuff, usually in a day or so, the candy form of the pollen substitute can be placed inside the hive.

The pollen substitute recommended by Haydak (1967) consists of soybean flour, dried brewer's yeast and dry skim milk in a 3:1:1 proportion. The addition of dried egg yolk will improve the nutritional value of the mixture. In preparing the candy form, the mixture must be incorporated into a sugar solution which is made by dissolving two parts of granulated sugar in one part of hot water by volume. Combine one pound of dry pollen substitute with one quart of cold syrup, mix it thoroughly and let it stand overnight for proper penetration of the liquid into the dry food particles. The consistency of the candy should be such that it will stay on top of the frames without running down. The candy patties of roughly one pound should be wrapped in waxpaper to prevent the material from drying out, punctured with a pointed object so that the bees have access to the food and placed on the top bar of the frames directly over the cluster

of bees. To avoid killing bees, use the smoke to make room in the center of the cluster.

Maurizio (1958) tested the effect of different drying methods on the nutritional value of pollen and found that various drying methods and storage in a refrigerator did not alter the biological effectiveness substantially. Studies by Haydak (1960, 1961) and others indicated that the nutritional value of pollen decreases in storage. Thus, Haydak (1961) showed that fresh pollen is 100% effective in stimulating the development of hypopharyngeal glands in worker bees. One-year-old pollen, however, was only 24% effective. Two-year-old pollen did not cause initiation of brood food gland development at all. Growth and increase in nitrogen content of bees fed fresh pollen were superior to that of stored pollen.

The changes which pollens undergo upon storage are of considerable interest to the beekeeper. The beekeeper is basically concerned with providing his bees with an effective pollen substitute which will supply his colonies with the necessary food for normal growth and development whenever the supply of pollen is inadequate. People involved in research on the nutrition of honeybees on the other hand, are interested in determining of the actual components of pollen responsible for its biological activity, or lack of it. Thus, by supplementing stored pollen with compounds thought to be destroyed or inactivated by storage, the quantitative nutritional requirements of honeybees can be determined.

This approach was used in a study by Dietz and Haydak (1965) to determine if the addition of various amino acid combinations to stored pollen would restore its nutritive value for honeybee growth and development. The results of this investigation showed that the nutritional values of stored pollen (3 years old) can be restored to the value of fresh pollen by the addition of two amino acids, L-lysine and L-arginine. However, pollen stored for much longer periods deteriorated to such an extent that fortification with various amino acids and a vitamin could no longer restore the nutritional value.

Dietz and Stephenson (1975) found that pollen stored at room temperature for eight years with or without sugar is nutritionally inadequate to support brood rearing. Haydak (1961) also showed that eight year old pollen was almost worthless for the development of young bees. The nutritional value of pollen subjected to different treatments and stored under refrigeration for several years is presently under investigation (Dietz and Stevenson, 1979).

A considerable amount of knowledge has been accumulated in regard to the role pollen plays in the biology of bees. However, much more work is needed to develop or substantiate other pertinent information on this topic.

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Bee Protection Task Force Meeting

AN Interdepartmental Bee Protection Task Force meeting was held May 1st, 1979. This meeting was held from 9:00 A.M., to 12:00 Noon, in Room 509-A, Washington, D.C., Administration Building, USDA. Dr. Bob Riley, Office of Environmental Quality Activities, Office of the Secretary, was Chairman. Others present were: Phil Gray and Allen Vaughan, Office of Pesticide Programs, EPA; Dick Cowden, APHIS; John Parks, ESCS (Economics); Harold Collins, National Association of Aerial Applicators (NAAA); George Allen, Integrated Pest Management Coordinator for SEA; H. Shimanuki and Bert Martin, SEA-AR, Beltsville; David Byrne, Pesticide Coordinator in the Entomology Department of the University of Arizona, visited for part of the meeting.

Bob Riley introduced Mr. Collins and asked that he review aerial applicators' activities, including progress in equipment, training, certification, night flying and electrostatic technology. Mr. Collins said he has furnished the board of directors of each state NAAA chapter with a set of Carl Johansen's slides and script. There is a need for continuing communication on the part of aerial applicators with growers, beekeepers, and those who make pesticide recommendations.

The NAAA official stated that fliers often do not meet with their customers. Jobs are booked and customers billed by other people, and the applicator flies from one job to another over quite extensive areas. It is thus very difficult for applicators to learn of apiary locations. The more information they can be provided on such locations, the greater the possibility that bee kills can be avoided by taking proper precautions.

Mr. Collins spent considerable time discussing the problem of avoiding drift. Manufacturers have continued to improve airplane performance, spray equipment people have improved nozzles, spray booms, etc., chemists and entomologists have greater knowledge of insects and how the spray affects them, but there is much need for greater coordination of effort among all parties with the primary objective of putting the right material only on the target crop and avoiding environmental contamination problems.

There is considerable potential in electrostatic control, whereby the spray is

attracted electrostatically to the crop. There are technological difficulties, but progress has been made, and the Task Force agreed that it would be highly desirable for an interagency group to work with the NAAA to improve present technology. Mr. Collins' preliminary estimate is that about $37 million and seven years of concentrated effort would be required to put it all together. In a summary of other developments in application technology, it was noted that NASA had worked for some years on remote sensing, and the technology was highly developed. Also, some progress has been made in the development of a laser beam device that can immediately measure particle size and where the particles go.

Dick Cowden then commented that APHIS had run some tests where they had controlled the electrostatic charge of the spray by chemical additives. The spray must contain water and the plane must fly at a low level, so that a tail of spray material constantly leads from the plane to the crop.

Mr. Collins said that he did not regard night flying as a universal answer to bee kill problems. In many parts of the country it was unsafe if the pilots were not totally familiar with all terrain features. Mr. Cowden said that APHIS was running tests of night application of **Nosema locustae**, and also, sterile pink bollworms for biological control projects. Night flying guidance systems were being used in the planes.

Mr. Collins noted that there were 8,600 planes flown by applicators belonging to the NAAA, and the number was increasing because growers can contract with applicators cheaper than they can do the job themselves with ground equipment. Mr. Collins also said that applicators were beginning to use electronic equipment which allows the pilot to lay a precise swath with no overlap. This reduces the amount of pesticide needed and avoids gaps in application where swaths don't meet.

George Allen then opened a discussion of Integrated Pest Management by indicating that the bee problem was not being adequately addressed in IPM programs at the present time, and there was a need to incorporate concern for bees into such programs. He pointed out that IPM programs must look at the total picture of farmland use, including rotations, fertilizer, insect control, etc. IPM will in some cases reduce sprays, but it is also concerned with the most judicious use of sprays. In addition to research, extension people are needed to provide predictive information, both historical from season to season and also current insect population trends.

Dr. Allen pointed out that apiculture is a specialty, and that many persons involved in development of IPM programs have little expertise in this area. There is currently a shortage of experts to provide reliable advice in this area. Considerable expertise is required, inasmuch as IPM requires a much higher level of sophistication than development of a spray calendar. Dr. Allen noted the need to expand our knowledge of bees' relationship to pesticide application as IPM programs are developed.

Dr. Allen suggested that USDA might be able to develop a series of workshops for economic entomologists designed to get bees plugged into State and Regional IPM planning. He suggested that Carl Johansen, with his experience both in IPM and apiculture, would be an ideal person to head up these sessions. He could use slides and movies already prepared, and could draw on other specialists. Such workshops could be held in selected locations around the country over a period of time.

Dr. Allen also stated that there were four regional IPM planning groups and

(Continued on page 373)

BEES NIP NECTAR, APPLE PROFITS

EXPLOITING A weakness in the structure of the Delicious apple blossom, a "side worker" bee shown on left in photo is able to nose through the stamens and steal nectar without pollinating the flower. That trick, according to a researcher at the N.Y. State College of Agriculture and Life Sciences at Cornell University, may explain the notoriously low yields of America's most popular, and profitable, apple variety. In contrast, the tightly-clustered stamens on other apple varieties force a bee such as the one at right to burrow in from above and pollinate the flower in return for a sip of nectar.

NEWS and EVENTS

NEW YORK
Empire State Honey Producers Assoc.

The annual picnic of the Empire State Honey Producers Assn. will be on Saturday, July 28th at Jon MacDonald's Honey House, Paris Hill Rd., Saquoit, N.Y. The activities begin at 10:00 A.M.

ILLINOIS
Illinois State Beekeepers Assn.

The Illinois State Beekeepers Association will hold its summer meeting at McHenry County College, Crystal Lake, Illinois, on Saturday, July 14, 1979. Northern Illinois beekeepers and McHenry County College will be the host.

The following program has been finalized:

A.M.	
9:00-10:00	Registration
10:00-10:30	Opening Remarks-Ron Fischer, Pres. Illinois State Beekeepers Assn., Larry Biesterfield, Pres., Northern Illinois Beekeepers Assn.
10:30-11:15	Dr. Walter Gojmerac, Univ. of Wis., Talk & Slides-"History of Bees & Beekeeping".
11:15-12:00	Dr. Eric Erickson, U.S.D.A., Madison, Wis. Talk & Slides, "Bees—Upclose".
P.M.	
12:00-1:30	Phil May, Commercial Beekeeper, Illinois, "Report on Ohio State Univ. Workshop".
2:00-2:45	Dr. Elbert R. Jaycox, Prof. of Apiculture, Univ. of Illinois, "Pollination of Fruits & Vegetables" (with slides).
2:45-3:00	Coffee Break
3:00-3:45	Eugene Killion, Illinois Dept. of Agric. "Some Problems with Beekeeping in Urban Areas".
3:45-4:30	Panel Discussion—Questions & Answers—Dr. E. R. Jaycox & Others.
4:30	Closing

Registration fee is $2.00 per person. McHenry County College will host the meal, consisting of soup, salad, roast beef, dessert and beverage. Cost is $5.00 per person (babes in arms—no charge). Plenty of room for parking on the college lot. For those of you arriving Friday night, the lounge facilities will be open all night.

To assist us in planning the lunch, coffee, etc., we would appreciate if you would send name, address and lunch money and number in your group to: Ms. Rebecca Strong, Co-ordinator of Seminars & Workshops, McHenry County College, Route 14 & Lucas Rd., Crystal Lake, IL 60014, Phone 815-455-3700.

McHenry County College, Crystal Lake is located on Route 14 just northwest of Route 176 between Crystal Lake and Woodstock, IL. (Just 50 miles N.W. of Chicago.) It is easily reached via the Illinois Tollway and Route 47. Overnight accommodations available in Crystal Lake and nearby Elgin.

All beekeepers and anyone interested in beekeeping are cordially invited to attend. For further information, please write to Ms. Rebecca Strong (address above) or contact Hoyt Taylor, Secretary, Illinois State Beekeepers Association, Route 2, Pleasant Plains, IL. 62677.

We plan on seeing you Saturday, July 14.

MARYLAND
Maryland State Beekeepers Assn.

The Maryland State Beekeepers Assn. will hold its summer meeting at the Hagerstown Junior College, Robinwood Drive just off Rt. 40, Hagerstown, MD on Saturday, July 21st. The meeting will begin at 9 A.M. with coffee and donuts. Featured speaker will be Dr. Dewey Caron, Extension Apiary Specialist, Dept. of Entomology, University of Maryland. Also on the speaker's list will be Norris Diefenderfer, County Extension Agent for Wash. Co. and Charles O. Smith, a commercial beekeeper.

A covered dish lunch will be served, each person bringing a dish sufficient to feed his own family. Meat and cheese will be provided by the MSBA. Rolls and dinnerware will be provided by the Hagerstown Valley Apian Society. Beverages will be available for a nominal fee.

Immediately following the meeting, a tour of Antietam Battlefield has been arranged.

Sunday, the 24th at 2 P.M. there will be a tour of C.O. Smith's honey house.

Campgrounds are available for those who wish to spend the weekend in the Hagerstown area.

Further information on tours and accommodations may be obtained from Gordon Davis, President, Hagerstown Valley Apian Society. 301-733-6500.

Everyone is welcome.

MISSOURI
Missouri Beekeepers Association

The Missouri State Beekeepers Association voted unanimously at their annual spring meeting to urge the Environmental Protection Agency's consideration of the beekeeping industry before licensing any new pesticide registrations.

They urged Missouri's elected representatives to actively support and vote for the continued funding of the soybean reseach program now provided for by the present law.

The Association also voted to urge their officials to vote for the continued funding of the Bee Indemnity Program.

MASSACHUSETTS
Middlesex County Beekeepers

The monthly meeting of the Middlesex County Beekeepers Association of Massachusetts will be held on Saturday, July 28, 1979 at 2 P.M. at the home of the President of the Mass. Federation of Beekeepers, Alfred Delicata, 46 Lowell Ave., Newtonville, MA. 02160; Phone 617-527-5995.

There will be a lecture and demonstration on extracting. All beekeepers who are members of other associations are welcome to attend.

NEW YORK
Northeast Beekeepers Assoc.

The spring meeting of the Northeast (New York) Beekeepers Association will be held at the Princetown Reformed Church meeting hall on Saturday, July 14th at 1 P.M. The hall is located on Route 20, five miles east of Duanesburg and 15 miles west of Albany, N.Y. Anyone interested in beekeeping is welcome.

ARKANSAS
Van Buren Co. Honey Producers Assn.

Van Buren County Honey Producers Association suffered a great loss when Tom and Lucille Doonan moved from Fairfield Bay to Heber Springs, Ark., because then they transferred their beekeepers membership from our association to the Cleburne County Beekeepers Ass'n.

Tom and Lucille were instrumental in getting our association organized and Tom became our first president, and Lucille served as our secretary.

Tom was very active in contacting and in corresponding with our legislators regarding favorable legislation for beekeeping. Tom and Lucille did our association and our whole community much good in this respect.

When the Doonans left our association, we decided to show them our appreciation for their faithful service. We presented them with a hand-tooled leather plaque, picturing a bee working some flowers and bringing the following message: To Tom and Lucille Doonan—in appreciation for outstanding and dedicated service to Van Buren County Honey Producers Association. The accompanying picture was taken in the dining room of Doonan's new home in Heber Springs.

Tom and Lucille Doonan

VIRGINIA
Virginia State Beekeepers Assn.

The summer meeting of the Virginia State Beekeepers Association will be held on Saturday, July 28, 1979 at "Woodman of the World Hall", Appomattox, VA. Directions to the hall and a program will be sent to each member later. Be sure to bring honey for exhibiting. Bring the whole family. Lunch will be a "picnic basket"—in it whatever you want. We're expecting a big crowd: See you there.

ALABAMA
Madison County Beekeepers Assn.

The Alabama Beekeepers Association will hold its annual meeting in Huntsville, Alabama on the 27th and 28th of July. Registration will begin at 9:00 A.M. on Friday, July 27th. The second day will be combined with the Madison County Beekeepers Association annual field day at attractive Monte Sano State Park on Monte Sano Mountain. For more information contact Madison County Beekeepers Association, P.O. Box 3069, Huntsville, AL 35810.

PENNSYLVANIA
Beekeeping Short Course

The annual beekeepers short course will be held on the main campus of the Pennsylvania State University from July 30 to August 4, 1979.

Registration fee is $40 for Pennsylvanians and $45 for non-Pennsylvania residents. Fee is payable at the time of registration on July 30.

In considering University housing, registration is from 2:00 to 3:00 P.M. Monday, July 30. Classes begin at 3:00 P.M. Housing reservations must be made before July 23.

To enroll in the short course for the registration form send to Office of Short Courses in Agriculture, 306 Ag. Admin. Bldg., The Pennsylvania State University, University Park, PA. 15802.

Please Note: Bring your own veil and gloves.

PENNSYLVANIA
Central Counties Beekeepers

The Central Counties Beekeepers Association held its second monthly meeting of the 1979 season in the Agricultural Extension Service room at the Portland Avenue Complex in Huntingdon, PA. on May 16, 1979 with President Dyson Fisher conducting the meeting. A film, "African Killer Bees", was shown and a most interesting discussion followed concerning several problems confronting local beekeepers.

A list of programs for the coming summer and fall meetings was presented to the group which will cover such timely topics as swarm control, bee predators, marketing of honey, and honey house design and management. A committee was appointed by President Fisher to draw up a set of by-laws to be acted on by the association at the next meeting to be held on June 20, 1979. The meeting adjourned around 9:00 P.M.

WESTERN APICULTURE SOCIETY
1979 Annual Meeting Program

The second annual meeting of the Western Apiculture Society will be held on the Oregon State University Campus, Corvallis, Oregon the week of August 20th through the 24th. A complete dining and housing package has been arranged through University facilities. Free parking for self-contained camper units is also available. A separate dining package is available to those who wish to make use of the camper parking. Registration begins at noon on the 20th.

Pre-registration forms and additional information concerning the meeting are available from Michael Burgett, Dept. of Entomology, O.S.U., Corvallis, OR 97331 (503) 754-4816.

Monday, August 20th, 1979

P.M.
12:00-
8:00 Registration. McNary Hall.
1:30-

3:00 Delegates Meeting. Memorial Union Board Room.
3:00-
4:30 Directors Meeting. Memorial Union Board Room.
7:30-
9:00 "Nectar & Pollen Plants of the Pacific Northwest". Lucien Alexander, Portland, Oregon. Memorial Union East, Forum.

Tuesday, August 21st, 1979

A.M.
9:30-
10:00 Call to order for the 2nd Annual W.A.S. program. Lucien Alexander, Pres. of W.A.S. Memorial Union East, Forum.
10:00-
11:00 "Activities of the International Bee Research Association". Dr. Eva Crane, Director of the I.B.R. A. London, England.
11:00-
12:00 "Research Advances from the Univ. of California at Davis". Dr. Norman Gary, Davis, CA.

P.M.
1:30-
2:30 "So You're About to Get a Beekeeping Ordinance". Ron Neese, Anaheim, CA.
2:30-
4:30 Apiary Demonstrations
"Beekeeping with Wild Bees-the, Alfalfa Leafcutting Bee". Dr. Glenn Fisher, Dept. of Entomology, O.S.U., Corvallis, OR.
"Establishing Package Honeybees". Dr. Eric Mussen, Dept. of Entomology, Univ. of California, Davis, CA.
6:30-
10:00 Cook-Out. Peavy Lodge.

Wednesday, August 22nd, 1979

A.M.
9:30-
10:00 Call to Order. Announcements. Drawings.
10:00-
11:00 "Honey-A New Image". Dr. Robert Meloy, Director of Research, Sioux Bee Honey Cooperative. Sioux City, Iowa.
11:00-
12:00 "Queen Bee Production on the Hawaiian Islands". James Powers, Parma, Idaho.
P.M.
1:00-
5:30 Tour Bus to Oregon State Univ. Marine Science Center, Newport, Oregon.
1:30-
2:30 "Beekeeping in the Peace River District of Western Canada". Dr. Ulf Soehgen, Alberta Agriculture, Brooks, Alberta.
2:30-
4:30 Apiary Demonstrations
"Introducing Queens", John Corner, British Columbia Agri., Vernon, B.C.

Thursday, August 23rd, 1979

A.M.
9:30-
10:00 Call to Order. Announcements. Drawings.
10:00-
11:00 "Beekeeping in North Carolina" and "Blue Honey". Dr. John Ambrose, Dept. of Entomology, North Carolina State Univ., Raleigh, N.C.
11:00-
12:00 "The Alkali Bee-A Commercial Wild Bee", Dr. W. P. Stephen, Dept. of Entomology, O.S.U., Corvallis, OR.
P.M.
1:30-
4:00 Western Apiculture Society Business Meeting.
6:30-
7:30 Social Hour. Nendels.
7:30-
10:00 W.A.S. Banquet. Nendels

Friday, August 24th, 1979

A.M.
9:00-
10:30 Directors Meeting. Memorial Union Board Room.

EASTERN APICULTURAL SOCIETY
25th Annual Conference
at Carleton Univ., Ottawa, Canada
August 8th to 11th, 1979

TENTATIVE PROGRAM
Wednesday, August 8th, 1979

P.M.
1:30-
4:30 Registration-Commons Foyer
5:00-
6:30 Dinner-Purple Room, Commons Bldg.
8:00 Entertainment-Commons Lounge
8:00-
9:00 Delegates' Meeting-Small Theatre, R.214
9:00-
10:00 Directors' Meeting-Small Theatre, R. 214

Thursday, August 9th, 1979

A.M.
7:30-
9:00 Breakfast-Purple Room
8:30-
9:00 Opening Ceremonies-Commons Lounge.
Call to Order-Ross Hopkins, EAS Pres.
Invocation-
Welcome-Mayor Dewar
Pres. Eastern Ontario Beekeepers' Association.
Dr. Prentice, Agri. Canada
9:00-
10:00 Roberta Glatz-Chairs Women's Panel.
9:15&
10:00 Buses leave Glengarry House for Rideau Hall, residence of the Governor-General of Canada.
10:00-
10:30 Coffee Break
10:30-
11:30 Dr. H. Shimanuki-chairs Panel Discussion-"Facing the Future: Bee Disease & Government Policy" with Homer P. Powers, Jacob C. Matthenius, Jr. & Francois Beauchesne.
11:30-
12:00 John Root-"Anatomy of the Honeybee".
P.M.
12:00-
1:30 Lunch-Purple Room
12:00-
2:00 Ladies' Luncheon-Lucy's, St. Patrick's College.
A group of Capital Chordettes will serenade you and members of the Diplomatic Corps will model their national costumes.
1:00-
1:30 Mark Hopkins-"Production & Transportation of Package Bees".
1:30-
4:30 Workshops
2:00-
3:00 Professional Apiculturists-Small Theatre, R.214.
5:30 Cash Bar-Commons Lounge
6:30 Canadian Dinner-Purple Room

Friday, August 10, 1979

A.M.
7:30-
9:00 Breakfast-Purple Room
8:30-
9:00 Lorne Crozier-"Beekeeping in Nova Scotia".
9:00-
9:30 Dr. McTaggart-Cowan-"Weather changes and Beekeeping".
9:30-
10:00 Francois Beauchesne-"Beekeeping in Quebec".
10:00-
10:30 Coffee Break
10:30-
11:00 Dr. Shuel-"Canadian Pesticide Research".
11:00-
12:00 EAS Annual General Meeting
P.M.
12:00-
1:00 Lunch-Purple Room
1:00-
5:00 Visit to Termeer's Apiaries, Finch-Workshops.
6:00 Cash Bar -Commons Lounge
7:00 Banquet-Purple Room

Saturday, August 11th, 1979

A.M.
7:30-
9:00 Breakfast-Purple Room
8:30-
9:00 Report from Beaverlodge Research Station, Alberta.
9:00-
9:30 Dr. James H. Day-"Bee Venom Allergies".
9:30-
10:00 Dr. H. V. Morley-Pesticides
10:00-
10:30 Coffee Break
10:30-
11:00 Hambleton Award Speaker

11:00-
11:30 Unconfirmed
11:30-
12:00 Unconfirmed
12:00-
1:30 Lunch-Purple Room

Registration forms may be obtained by writing to: Eastern Apicultural Society of North America, Inc., P.O. Box 9400, Ogdensburg, N.Y. 13669. Canadian citizens write to EAS, P.O. Box 490, North Gower, Ontario, Canada KOA2T0.

The deadline for advance registration is Sunday, July 15, 1979. After July 15th the registration fee will be increased by $5.00 for the full conference or by $2.00 per day. If you pay in advance (by July 15) your registration material will be ready for you at the EAS registration desk, Commons Lounge, Carleton University on arrival.

Your total cost for a full conference stay in an air-conditioned dormitory room (excluding the tour) should be for: a single person $124.75, or for two persons in a double room $220.00. (This includes registration, meals, lodging, conference costs and provincial sales tax.)

A breakdown on daily costs, if attendance is not planned for the full conference, will be outlined on the registration form.

NORTH CAROLINA
North Carolina Beekeepers Association

The N.C. State Beekeepers Association will conduct its summer meeting at Applachian State University in Boone, N.C. on August 9-11, 1979. The meeting will consist of speakers, numerous workshops, displays, an awards banquet, honey and honey cooking judging and much more. In order to take advantage of the local resources in the mountains of N.C., the meeting will also feature area entertainment groups, including a clogging team (dancing team). The complete cost consisting of two nights lodging, all meals, banquet on August 10 and registration will be approximately $30.00 for adults and substantially less for children. For complete details and a program of events contact: Dr. J.T. Ambrose, NCSBA Executive Secretary; 1403 Varsity Drive, Raleigh, NC 27606.

MONTHLY HONEY REPORT

(Continued from page 334)

but central and northern Iowa will probably need the soybean honey to produce a crop. New honey crop should be in good demand at higher prices.

Region 5

Honey flow from tulip poplar was spotted in North Carolina due to heavy rain showers after the flow started. Have had considerable cloudy, cool weather in early June, showers almost every day. The honey flow in the Piedmont of North Carolina will be about 1/3 to 1/2 off from last year.

Some supers of drawn comb which have been capped over are being extracted in early June. New foundation being drawn is not yet fully capped over and not ready to remove until the middle or late June in North Carolina.

In Virginia the colony buildup was good during May. The locust honey flow started well in southwest Virginia but cool weather slowed nectar collection from tulip poplar. Swarming started slowly early in the year and has been particularly bad this year.

Region 6

Bees are in good condition with plenty of stores. Alabama has had an excellent honey flow so far this year. Most commercial beekeepers are making 10% to 15% increase in their colonies.

In Kentucky the month of May was an active one for all phases of beekeeping. Beekeepers have been pressed to keep up with their work due to the best spring cro in up to 10 years. The weather has bee somewhat cooler and wetter than norma accompanied by above normal swarmin Bulk honey has been harder to obtai with prices increasing. Beeswax supplie are stable.

An excellent tulip poplar flow occurre with yards in the forest area averaging 50 to 75 lbs. per colony in Kentucky. Intermediate producing areas had from 25 to 50 lbs. of tulip poplar per colony. Black locust experienced an off year but colonies in the purely clover areas had made some surplus from wild mustard and dandelion. A heavy clover bloom is in prospect for most of Kentucky beginning in June. In Tennessee the white Dutch Clover is in better condition than in the past several years. If the clover flow continues for another two weeks as it has begun it will prove to be the best in years.

Beekeeping supplies have been received on a delayed basis with manufacturers running approximately two weeks behind in delivery.

Region 7

The brush crop of honey was poor in Texas due to the cool nights and rain during the honey flow. The average yield was 20 to 25 lbs. per hive. Horsemint was in full bloom early in June. Chinese tallow and ligustrum beginning to bloom the first week in June. Honey flow conditions look much better at the beginning of June in Texas with the mesquite due to bloom about June 10th. Excellent honey flow from wild blackberry and rattan in Arkansas during May. Some reports of 50-60 lb. average. Vetch is doing very well in Arkansas, but wet ground has cut cotton planting severely. Soybean planting will be late for the same reason. Swarming was above average due to the heavy population of bees.

Getting queens on time was a problem. Honey demand is excellent. Sales brisk at retail and wholesale supplies short. Producers are going to receive more for their honey this year.

Region 8

Moisture has been above normal through early June with below normal temperatures. Brood rearing has been held back. Feeding to stimulate has been necessary in the higher elevations. Most beekeepers have purchased package bees or nucs to make up the heavy winter loss. Dandelion flow was sparse due to inclement weather.

Region 9

California experiencing high summer temperatures although it appears to be about "par" as a honey season. Moisture conditions are at about normal levels, no significant rains since mid-April. No rainfall is expected until November. June and July showing heavy demand for bees for seed pollination in Fresno area and Imperial Valley, nearly a quarter million colonies. Almost 200,000 colonies of bees belonging to California commercial beekeepers will be used for honey production out-of-state in the producing areas of Montana and the Dakotas.

Honey prospects look good in Oregon. Most of the honey being packed is brought in; most locally produced honey sold retail.

People who use pesticides and beekeepers are beginning to cooperate. A lot less talk of spray damage.

Honey packer in Washington reports second price increase within 30 days.

Spring honey flows in Northwest were very good. Some hobbyists took off as much as three supers. Huckleberry honey coming off the hive in early June.

The year 1979 pollination income for the state of California will be near 10 million dollars.

BEE PROTECTION TASK FORCE

(Continued from page 369)

that an apiculturist should be included in each of these. He asked that we recommend a specific person to him for each of these regional planning groups. (This was subsequently done by Bert Martin).

Phil Gray commented that EPA was financing two student interns to work with Adair Stoner of the Laramie Bee Lab on a summer project.

It was agreed that members of the Task Force most concerned would meet in late May to review recommendations made by the American Honey Producers Association at its February 1979 meeting.

GLEANINGS MAIL BOX

(Continued from page 338)

Asclepias tuberosa is indeed a fine honey plant. A vacant field behind my home apiary has both sweet clover and butterfly weed in it and bees seem to work each about equally well. The butterfly weed blooms for a shorter period of time, however, so it would seem to be of slightly less value than the clover.

It should also be noted that it is on the preservation list in several states (Mo., Conn., Iowa, Md., N.Mex., N.Y., R.I. and Tx.) and is not to be dug up or the flowers picked. Anyway as Mr. Adams pointed out it's very difficult to transplant so anyone wanting to propagate it should collect the seeds and sow in a sunny location.—Paul Harvey, Eureka, MO.

Dear Editor:

Row upon row of daffodils are "immortalized" by a poet. To me a field of dandelion in bloom pleases the eye as much as the row upon row of daffodils. Not so, say our blind educators. Dandelion is an obnoxious weed to be destroyed even if we have to poison the food we eat to do so. The sale of broad leaf poisons is a thriving business.

One of the first "greens" of spring for the human body is dandelion. The nutritional value of dandelion I have never read. I will not hesitate to estimate that dandelion, weight for weight, will provide as much nutritional value to the human body as the most expensive of steaks.

The other day I passed an industrial building with an extensive lawn. A riding mower was cutting the lawn that was profuse with dandelion blossoms. It disturbed me no little to think of the many foraging bees that were ground up in the blades of the two legged animal's ignorance.—Merritt Newlin, Hellertown, PA.

FUNDAMENTALS FOR ALL

(Continued from page 358)

provided by placing strips of wooden shingles (shakes) on the sides of the upper brood chamber under the inner cover. A 7/8 inch, or 1 inch auger hole, below the handhold, in each brood chamber would seem to be sufficient for the entrance of air. The lower entrance can be completely closed.

GETTING CAUCASIANIZED

(Continued from page 348)

Now I got into a panic. I still had a queen from '76, many of whose workers were grey. I made queen cells on some of her brood. It shouldn't work. It was slipshod, but options, and the summer, were running out. The virgins hatched and most of them were grey. The grey ones I kept. In a couple of weeks most of them had mated. By now it was nearing August, but I left the brood of the mated queens in their nucs and hoped they might make more. In three weeks the first brood hatched. I looked anxiously over the newly-hatched workers and saw not a yellow one among them. Some of the de-queened nucs made new queens and these too mated. By then the big hive was kicking out drones. There would be no more. Another three weeks passed and lo, the second generation's workers were also grey. I had succeeded, though I'd kept my mongrels.

"Interesting", allowed Thomas when I told him the whole story, "now perhaps you can start doing something with your bees."

FROM THE WEST

(Continued from page 356)

hobbyist should consider the welfare of his bees, as well as his own comfort. Bees which are being harassed by their natural enemies are on the defensive and take it out on their keeper when he tries to attend to their needs. A hive stand which keeps the entrance of the hive two feet above the ground is a great help in keeping bees good natured.

"The best hive stand is one which accommodates but one single hive. It is climb-proof against opossums. Further more, unlike the dual hive stand, it does not transmit vibrations and shocks to the other colony on the same stand. Bees resent shocks and when the beekeeper is ready to examine the other colony, they are ready for him too, for their tempers have been aroused.

"With the single stand one can let the sun fall over the shoulders so as to have a good view when looking for eggs."-------

And then there is my monthly mail from interested readers. One of them wrote, "The termites have eaten my floorboards, up into my slatted racks, and on up into my first hive body. I overwinter my bees in double hive bodies. The replacement of this beeware every two or three years is quite expensive and getting more so with each succeeding year. I want to get myself in a position so that continuous replacement will not be necessary." My answer, get hive stands and your troubles will be over.

And another one wrote, "The Florida mosquito season started and the sprayer came down the street one night. The next day there was a large pile of dead bees in front of the hive and all the bees were dead. I realized I had the hive in a low place and the poison had drifted down and did its work." Again, my answer was, a hive stand might have saved your bees.

But that sprayer going down the street at night set me to thinking. My April issue of **Gleanings** arrived yesterday, May 15th, which is the penalty for living in Hawaii. It contained the following item in its **Gleanings Mail Box**. "Dear Editor: The following article appeared in the January 23, 1979, **Washington Post** newspaper amid the highlights of President Carter's budget proposal for FY 1980:

A Budget Axe For Beekeepers

"The Federal Government once again is trying to get out of the business of paying beekeepers for damage to their swarms of bees from the use of pesticides on nearby land. Congress set up the program which cost nearly $4 million last year, in 1970 and has extended it through fiscal 1981.

"An earlier attempt at repeal failed. In the fiscal 1980 budget the administration is not seeking repeal, it's just not asking for any money for the program.

"Congressional testimony last year showed that most of the benefits were going to only a few beekeepers who had **repeated** claims. An attempt to replace the omitted money is expected to be made this year by beekeepers' representatives.

"Although it is not known if beekeepers are being singled out, one method used within the government to reduce spending or eliminate programs is not to appropriate money.

"Consequently, it is again time for each U.S. beekeeper to write both their Senators and their Congressmen."

I would like to add to include President Carter when you write. Use a postcard and write your **complaint** in longhand with a ballpoint pen. Don't use a typewriter. One old black man did just that and his writing was not too good but his Senator got the idea and carried that postcard in his pocket to show it to his cronies in the Senate. You got to hit them between the eyes.

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