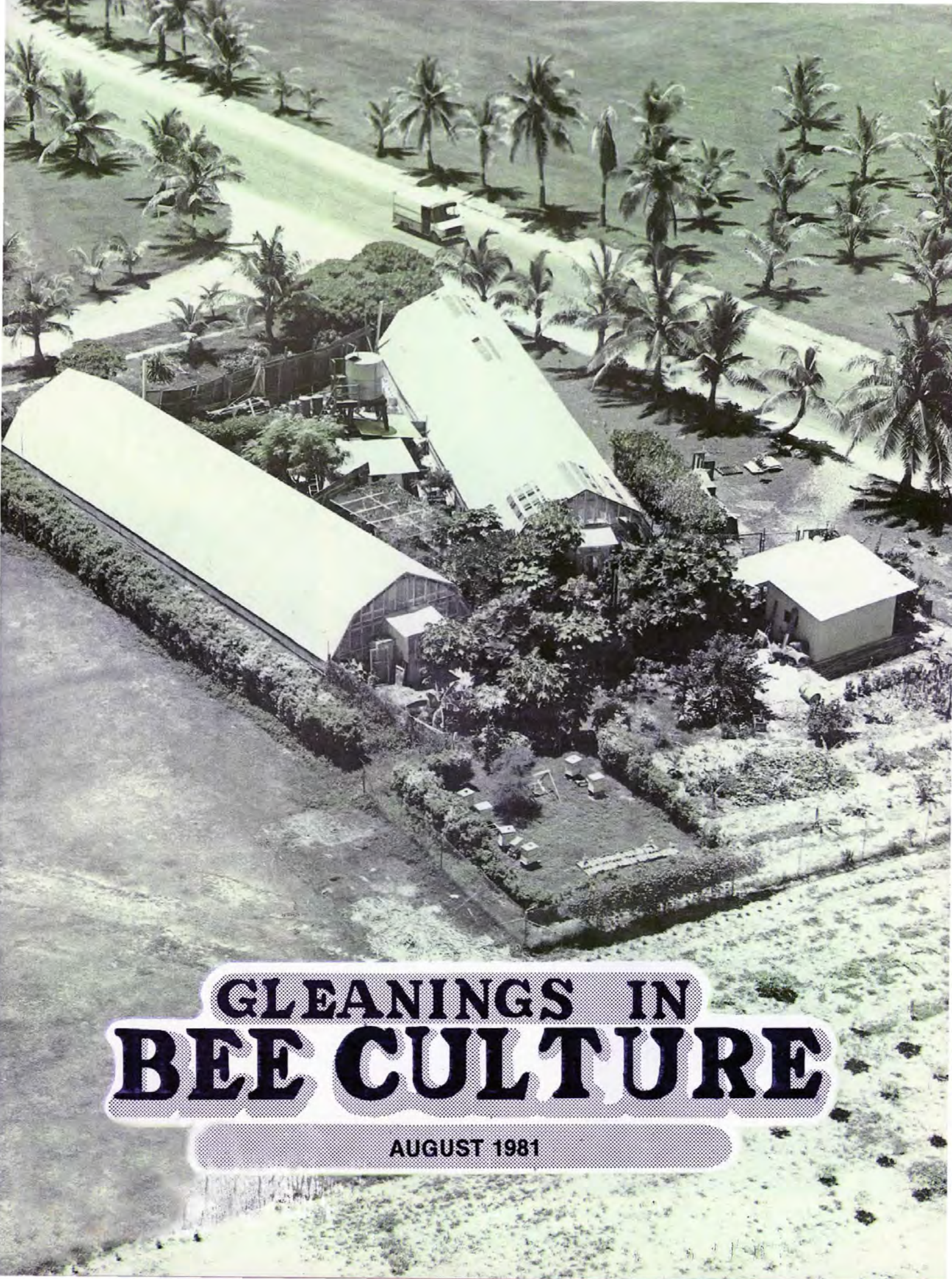

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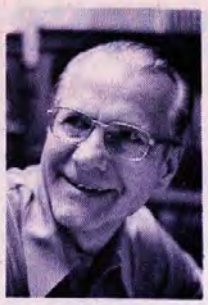
118 YEARS FOR PROGRESS IN BEEKEEPING

John Root



Lawrence Goltz

AUGUST

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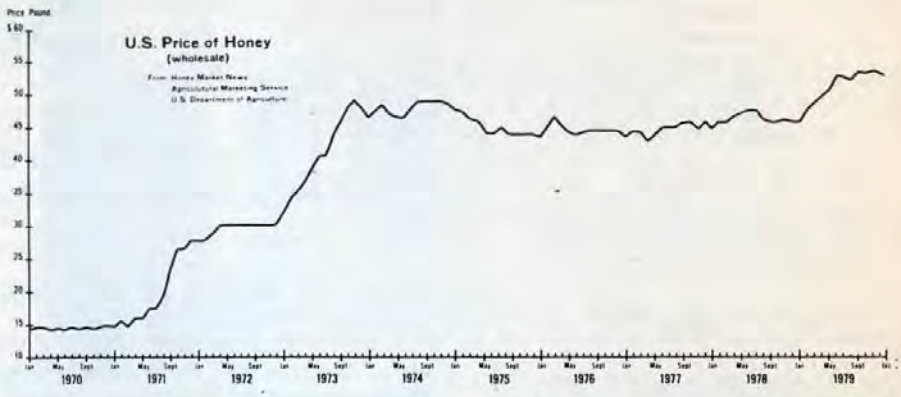
COVER STORY

An aerial view of hydroponic greenhouses, experimental gardens and bee yard of an installation on Kwajalein, Marshall Islands in the Pacific Ocean. Vitex surrounds the bee yard and along the side of the greenhouse. Young papaya and castor trees are in the right foreground. See Beekeeping In The Marshall Islands in this issue (Brogden and Jackson photo.)

Management For Success Part I

By GRANT D. MORSE, Ph.D.
Saugerties, NY

MANY BEEKEEPERS are unhappy with the current prices of honey, which, they point out, have not risen markedly in the last seven years. The accompanying chart of the U.S. Price of Honey shows this to be substantially true.



But the price ten years ago was considerably lower than in 1981. The *American Bee Journal* in its Sept. 1971 issue said: "Honey prices reported are in the 17-20 cents per-pound range."

If one takes the increase in honey prices since 1971, it is not too bad compared with increases in other commodities. During that period family food prices have risen only 128 percent; the typical family income has risen only 130 percent. These figures are provided by the *U.S. News and World Report.*

Many good beekeepers are getting better prices than those shown in the chart.

Honey tends to be a luxury item in the budget of many consumers. Competing sugars, though not to be compared with honey in flavor qualities, are lower priced than honey, particularly granulated cane sugar, which currently retails at approximately 40 cents per pound.

Today's modest prices for honey demand from the beekeeper that he adopt the highest yielding methods of production, plus the most economical plan of expenditures.

Financial Problems and A Few Observations

Worry over finances has probably killed more beekeepers than has the lifting of heavy supers. Some never escape from this worry. Others do something about it.

Probably the first step that should be taken by an individual who wants to go into beekeeping is with the aid of a pencil. It should be a family bookkeeping session, too, because the beekeeper's spouse is just as much involved as he is. Furthermore, unless a beekeeper's spouse cooperates (as almost all of them do, willingly), he is bound to be in financial trouble. It has been said that a careless wife can throw out through the back door with a spoon more than a man can bring in through the front door with a shovel. But, fortunately, the wife is as often a good planner as the husband.

Ideally, a beekeeper should start his enterprise with a surplus in the bank because, if it is his only source of income, he must wait until the honey is sold before he has revenue.

Doubtless, the typical beekeeper makes his greatest bookkeeping error when he fails to set up two bank accounts — one dealing solely with the beekeeping, the other with his household and non-beekeeping transactions. Many a beekeeper who thinks his beekeeping practices are a failure should look to his non-beekeeping expenditures.

If a beekeeper keeps his accounts together, the chances are he will blame his non-beekeeping expenditures for his failures. The two, most successful beekeepers find, must be kept positively separate. Probably worry over finances has driven more men out of the business than any one other thing. The successful ones keep two accounts. Then they know where mismanagement, if any, lies. Good beekeeping practice for a beekeeper should begin with a budget, one for the beekeeping part of the family program, another with budgets for household expenditures, one for food, one for the wife's personal spending (every spouse should have her allowance, based, of course, on an estimate of family income), and others for other departments of the family spending program. It will not always be possible to keep within these budgets, but you may rest assured it will be even more difficult to do so if budgets are not prepared in advance.

Supplementary Projects

I have observed that many financially successful beekeepers operate some type of project that helps them secure more than a wholesale price for their product. If one is operating in a community where there is considerable traffic, a salesroom in a well placed building can often be a source of additional revenue. A separate bookkeeping account should be kept for this, too. And it should never be forgotten that this part of the business calls for extra effort by someone, and so is not properly a part of the general beekeeping income.

In the good years, a planned amount should be set aside and invested. That is the only way to ride out the poor years — and they will come. Sometimes there is no yield whatsoever. That is a bad year, indeed. But all businesses, or nearly all, have such experiences.

(Continued on page 419)

Management for Success

(Continued from page 418)

Determining Weak Spots

If a beekeeper finds his program is not a financial success, he should sit down and analyze his practices. Where is he failing? What percentage of his colonies are failing to winter well enough so that they are productive? What is his swarming percentage? Is too much or too little being spent for equipment? What is the per-colony yield? Is too much being spent for hired helpers? Is the beekeeper separating his better honey, and getting a proper price for it? Is the operation too large, or too small? The beekeeper who doesn't know the answers to these questions really doesn't know what is causing his failure — or his success.

A Few Thoughts For Those With Problems

And now I'll change the subject. I'll write about some of the details of beekeeping that may possibly interest or help someone who believes he has a problem.

One detail that a beginner should appreciate is that if he is operating just a few hives, say fewer than ten, he seldom experiences the problems with stinging by the bees that the commercial operator goes through when working in a good sized yard of bees. I observed this today. I had occasion to open only three hives and remove frames. Although the temperature was not high (67 degrees F. in the shade) not a single bee attempted to sting me, nor did a single bee follow me as I left the yard. Part of this relief is due, no doubt, to the fact that the hobbyist can work more slowly, and more carefully, not arousing the guards.

Professional beekeepers, however, know how to use smoke more effectively in most cases, than amateurs. The professional puffs a bit of smoke in from two sides as he initially lifts the inner cover. If he is a patient man he waits a few seconds, too, for the bees to experience the effects of the smoke. If he's the type that can't wait, the smoke does little good. A puff or two at the entrance reduces the likelihood of the guards there leaving their posts and attacking the operator. Not all bees in a hive engage in stinging. It's chiefly the ones who take on the responsibility for guard work. They may not be on guard at the moment, but they assume the function, just as some humans act as helpers when they see another human being attacked. Many beginners, however, use an unnecessarily large quantity of smoke. They assume that if a little is effective, larger quantities give added protection. There is a point beyond which more smoke is not effective. It is, instead, cruel and unnecessary.

Adequate Food Stores

I've observed that when I break up a colony to help form a nucleus, I tend to give the new portion the honey stores that are essential to the established portion. Then what was an adequate supply of food until the nectar flow, becomes insufficient.

It is at such times that the lack of surplus frames of honey for feeding becomes apparent. Some beekeepers seem not to mind the chore of feeding sugar syrup. I dislike this job. I'd much rather save a few frames of good honey in the fall to take care of such emergencies. I don't like to feed dry sugar, either. But today (the middle of May) the dandelion flow is over, the weather is cold, especially at night, so as I divided some old colonies to make up the upper parts of two-queen set-ups, I gave the old parts some dry sugar. They can get water now to help in consuming it, as they seldom can in the winter.

The nights this spring seem to be especially cold (near freezing) so I replaced some of the entrance blocks, especially on the weaker colonies. Without such protection, they simply will not produce brood in the lower parts of the lower brood chamber.

Checking for Disease

Today I demonstrated to myself how much I am prone to fail to examine frames of brood for disease as I remove them from the nest. Of course, I rationalize my failure by saying to myself that even a cursory glance tells an experienced beekeeper whether something is wrong, as it often does. But that's hardly enough. A second or two may provide the information that a cursory inspection fails to reveal.

About ten days ago I made up two nuclei, placing them above old colonies with a screen in the inner cover between the nucleus and the brood chamber below. A small cut in the rim of the inner cover serves as an exit. For a couple of days I kept the exit closed with green grass which soon withered. Field bees today were bringing in pollen in very considerable quantities — evidence that both of the two queens were laying. So I didn't have to open those two nuclei. To have done so would have been disturbing to them. It might even encourage the balling of the young queens. Opening them would have been pointless. I know that they have plenty of honey, brood, and bees because the flight at the entrances confirms it. But during this rather cool period the most signigicant part of my manipulation of these two nuclei was the provision of heat to them from the old established colonies below. Later, depending on several circumstances, I will decide to operate them as two queen units, or set the nuclei off and thereby start new colonies.

Setting up a Comb Honey Unit

I may decide to use one of these new units for comb honey production. If I do, when I set it off I shall place it on the foundation of the old colony, and add frames of brood if it lacks one or two of being full of brood. The old colony I shall set to one side. It will still be strong enough to make some surplus, but a good part of its working force will be recruited to the new unit.

Some producers of comb honey prefer to place mostly frames with foundation in them rather than use frames with capped brood, as I do. This may work better if the honey flow is short. But if the flow is of any considerable length, the frames of brood that I place in the unit will be the source of the workers that will be producing in a few weeks.

—Dr. Harry H. Laidlaw, Jr.—

Winner of the C. W. Woodworth Award (13th annual) by the Pacific Branch of the Entomological Society of America, Oakland, California June 22.

Dr. Harry H. Laidlaw, Jr.

HARRY H. LAIDLAW, JR. was born in Houston, Texas, 1907. His interest in Entomology started when he was a teenager helping his grandfather, then a hobby beekeeper, keeping a few bee hives. Being fascinated by the social structure and the behavior of honeybees, young Harry decided to devote himself to the science of insects. He went to study Entomology at Louisiana State University, where he received his Bachelor's and Master's degrees in Entomology, in 1933 and 1934. Then he went to the University of Wisconsin (Madison) to continue his study on the genetics of honeybees, and was awarded a Ph.D. in Entomology and Genetics in 1939. Dr. Laidlaw started his career in Entomology as a Professor of Biology at Oakland City College, Indiana in 1939. A year later, Harry was recruited as the State Apiarist of the Alabama Department of Agriculture where he worked till the outbreak of World War II. During the war he served in the U.S. Army working as an Entomologist in the Sanitation Corps. Since 1947, Harry has been with the Department of Entomology, University of California, Davis, as a Professor of Entomology and Apiculture till his retirement in 1974.

As a teacher, Dr. Laidlaw delivers fine, informative lectures and is highly respected by his students. His former students consider him a great teacher and a sincere educator. Harry has taught courses including Insect Morphology and Physiology, Introductory Apiculture, Advanced Apiculture and University Extension courses for the general public such as Queen Rearing. Dr. Laidlaw's important contribution to bee research was in the fundamental study of bee genetics, development of an efficient artificial insemination method for queen honeybees, study on the principles and methods of queen rearing, development of the mechanism and methods for re-queening, and the control of American Foulbrood by using antibiotics.

His contriution to the field of bee genetics have laid the foundation for modern bee breeding programs, and he has produced some of the very best lines of bees known for their gentleness and high honey yields. He discovered eye mutations and other mutation lines and used these mutations in his genetics work. Those mutant lines ultimately have become the basis for the National Bee Stock Center at Baton Rouge, Louisiana.

Dr. Laidlaw has designed an artificial insemination apparatus, and developed an efficient method for artificial insemination of queen honeybees. His technique has been widely used in bee genetic studies and breeding programs. The methodology is also currently considered to be the only reliable way that genes of Africanized "Killer" bees from South America can be prevented from contaminating present bee stocks.

In addition to Dr. Laidlaw's many scientific articles he has contributed significantly to the literature of practical apiculture with his books; "Queen Rearing", "Contemporary Queen Rearing" and "Instrumental Insemination of Honeybee Queens — Pictorial Instruction Manual". These books are globally recognized as the best written reference and hand books in the field.

Dr. Laidlaw does not limit his academic activities just to research and teaching. He has also devoted many hours to visiting with hobby and commercial beekeepers for discussion of their operations and problems, and making valuable suggestions for improvement. His dedication and enthusiasm for beekeeping have won him a great reputation in the American beekeeping industry, and he is also highly respected by the beekeepers throughout the world.

Dr. Laidlaw's reputation and experience stretch across the world. He has worked with Dr. Kerr in South America to minimize the effects of the Africanized bees by genetic approaches.Even after his retirement, Dr. Laidlaw is still actively involved in international Apicultural programs. He is currently working on a U.S.-Egyptian government project, which will help accelerate the transition from traditional to modern beekeeping in Egypt through a breeding program.

The above information demonstrates the types and significance of the contributions to the field of Entomology, particularly Apiculture, made by Dr. Harry Laidlaw over the past half century.□

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Monthly HONEY Report

LAWRENCE GOLTZ

July 10, 1981

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	42.00	31.80	35.50			36.50	31.20	33.00	32.40
60 lbs. (per can) Amber	42.00	28.60	32.40			34.80	29.60	32.50	31.80
55 gal. drum (per lb.) White		.53	.58	.56	.53		.52	.54	
55 gal. drum (per lb.) Amber		.46	.54	.53	.49		.46	.52	
Caselots — Wholesale									
1 lb. jar (case of 24)	26.50	24.25	25.80	22.44		22.25		21.50	24.00
2 lb. jar (case of 12)	25.00		22.40	21.00		21.50		18.50	22.30
5 lb. jar (case of 6)	30.00	26.95	26.75	24.40		25.50		23.50	25.60
Retail Honey Prices									
½ lb.	.90		.90		.79	.85		.80	.89
12 oz. Squeeze Bottle	1.35	1.25	1.50		1.29	1.15		1.29	1.39
1 lb.	1.35	1.35	1.50	1.25	1.39	1.35	1.39	1.39	1.49
2 lb.	2.55	2.50	2.85	2.33	2.29	2.40	2.49	2.40	2.85
2½ lb.	3.15				3.19	3.00		3.29	
3 lb.	3.80	4.00				3.60		3.59	3.99
4 lb.	5.00	4.80		4.50		4.55	4.59	4.85	
5 lb.	6.00		5.95		4.99	5.20		5.35	6.15
1 lb. Creamed			1.55					1.49	1.59
1 lb. Comb			2.00		1.87	1.65		1.49	
Round Plastic Comb		1.95	1.85					1.30	
Beeswax (Light)	2.00	2.00	1.90	1.90	1.90	1.85	1.90	1.90	1.85
Beeswax (Dark)	2.00	1.80	1.85		1.80	1.95	1.85	1.80	1.80
Pollination Fee (Ave. Per Colony)	30.00		22.50				20.00	15.00	

Misc. Comments

Region 1

Bees are in good condition and the honey flow in better than average. Ground moisture condition are very good. Everything points to a better than average honey crop. Honey is selling slow due to seasonal hot weather. Spraying of sweet corn with pesticide may become a threat to beekeepers.

Region 2

Honey crop one of the best in years in Maryland, particularly from tulip poplar. West Virginia had excessive rainfall. A slightly above average honey crop in Pennsylvania where prospects for a fall honey flow are excellent. Honey sales off 10% for year to date in Pennsylvania. Bees in good condition in New York state, but honey flow is late in starting. Much honey under loan.

Region 3

Very rainy, unsettled weather conditions across area has interfered with honey flow. Many colonies damaged by flood waters in Indiana and western Ohio. Colonies were being fed up into June. Much swarming and supersedure of queens. Little honey produced in Illinois; hoping for good flow from soybeans, which may be late due to delayed planting date.

Region 4

Poor bee flight weather in Minnesota during stormy period through June. Hoping for later honey flows from alfalfa. Some colonies had to be fed through June where no surplus was stored from spring honey flows. Basswood shows promise in southeast Minnesota. Colonies are, in general, in good condition but beekeepers in Minnesota are hoping for more favorable conditions if a crop is to be harvested. Very unsettled weather conditions in Nebraska and Iowa threatens to cause a honey crop failure.

Region 5

Best tulip poplar honey flow in years in North Carolina, and weather was favorable. Very good crop harvested. Due to extremely cold winter in Florida the mangrove trees are not producing honey. New growth must mature before the mangrove will again produce honey in Florida.

(Continued on page 439)

Honey and Infant Botulism

By DR. G. VORWOHL
State Institute for Bee Science
University Hohenheim
Stuttgart-Hohenheim, West Germany

Translated from *Allgemeine Deutsche Imkerzeitung*, Vol: 14; pp. 342-345

"This finding was somewhat prematurely and incritically recoined into the recommendation not to serve honey to infants under one year."

Editors Note:
This article by Dr. G. Vorwohl, State Institute for Bee Science at the University of Hohenheim, Stuttgart, West Germany, appeared in the German Beekeeping Journal *Allgemeine Deutsche Imkerzeitung*. H. H. Schumacher secured permission for the article to be published in *Gleanings In Bee Culture*. Elliott Johnson effected the translation. This article was brough to the attention of *Gleanings* by Mr. Hans Schumacher of Alhambra, California.

FOR APPROXIMATELY two years reports have from time to time been going through the press in which it is warned against giving infants below one year honey because of the danger of botulism infection.

These reports had, with justification, worried the beekeeping industry, and it is time to investigate in somewhat more detail how these reports came about and what truth they may contain.

Botulism is caused by a bacillus, *Clostridium botulinum*. When *Colstridium* multiplies on a suitable culture medium, it secretes a toxin which is called botulin. This toxin belongs to the most dangerous materials we know. It acts as a nerve poison and can result in death through paralysis of the breathing or the heart. (1).

Clostridium botulinum can **not** grow in honey. Consequently, honey can not contain botulin either. All investigations on this subject produced a negative result. The active stages of *Clostridium botulinum* which are able to reproduce are subject to certain conditions: The air must be excluded (the bacillus can not live in an oxygen-containing environment); the culture medium must not be too acidic, must be rich in protein and have an adequate water content (1). All these conditions are **not** satisfied in honey. Honey contains little protein and amino acids, in most cases less than one percent. The water content lies mostly below 20%. The high sugar content develops a strong osmotic pressure, which does not leave the enclosed microorganisms, even osmophilic yeast, with any possibilities for an active metabolism. During the extraction the honey is intensively aerated. For the storage it is not necessary to exclude the air. Finally, honey reacts — except for a few honeydew honeys — in the chemical sense too acidic to provide a good culture medium for *Clostridium botulinum*.

Clostridium botulinum forms spores as propagation and rest form.These spores are very resistant and are therefore not bound to the strict environmental conditions just described. They produce no botulin and do not germinate until they again get into an environment which agrees with them.

The spores of *Clostridium botulinum* are ubiquitous (1). They can therefore also get into honey; however, apparently this does not happen too often. The investigation of 50 Australian honeys produced a negative result (2). In investigations in the United States of a larger sample material a low percentage of the honeys tested contained spores of *Clostridium botulinum* (7-10%) (2). I have not yet been informed of any results from investigations of domestic honeys. (*)

According to previous medical knowledge, the botulism disease is produced by absorbing the toxin, the botulin, with the food, for instance, with inadequately heated canned sausages (1).

Clostridium botulinum finds **no suitable living conditions** in the human organism. However, in contradiction to this classical view, it was reported by medical doctors in California (12) that infections with *Clostridium botulinum* are possible in infants below one year. In other words: Spores of the causative organism, which are absorbed with the food or otherwise, germinate in the intestines of the infant, are converted into the active stage and multiply and secrete botulin. The medical doctors, who were occupied with the recently discovered botulism infection of infants in the first year of life, naturally searched for possible sources of the infection. It was then shown in some cases that the infants had received honey in which spores of *Clostridium botulinum* were detectable (15).

This finding was somewhat prematurely and uncritically recoined into the recommendation not to serve honey to infants under one year (16). On its path through the media the formulations were simplified to "infant botulism through bee honey" (13) or "honey can be very dangerous for babies" (14). It was then not taken adequately into consideration that most infants which became sick from botulism had **never** received honey. This also included breast-fed children in which the spores thus could not have been a constituent of the food.

Because the *Clostridium botulinum* spores are present everywhere, infection of the infants can be prevented only by raising them completely sterile and supplying them only highly sterilized food. This can not be realized in practice. Temperatures of approximately 130° are required to kill off *Clostridium* spores. Detecting spores of *Clostridium botulinum* in the honey does not yet prove that the infections observed also have actually taken place through the honey since for the period of time which is involved for the infection it can not be excluded that spores have been picked up from other sources.

Furthermore, as is well known, honey has bacteriostatic and

(Continued on page 428)

(*)In the meantime Flemming tried to find spores of *Clostridium botulinum* in 92 German honey samples. The result was negative. (29th Meeting of Official Veterinarians, Berlin 1980.)

Obituary

Frank (Quint) Bunch

Frank (Quint) Bunch of Welch, Minnesota died on June the 7th, 1981, at the age of 85.

Mr. Bunch served as a rural mail carrier since 1917. He enlisted in the Navy in 1918 but returned to become a rural mail carrier after W.W. I. He operated his bee business before and after his retirement from the mail service. He was a member of the Sioux Honey Association, The American Beekeeping Federation and the Minnesota Beekeepers Association of which he served as Secretary-Treasurer and was a former editor of the association newsletter. He also was active as an editor and contributor to other outdoor publications.

Bunch was a very skilled photographer with a special interest in photographing flowers from which honeybees gather nectar and pollen.

He is survived by his wife Helen of Welch; one brother, Allan Bunch of Wayzata and several nieces and nephews.

HONEY AND INFANT BOTULISM

(Continued from page 426)

bacteriocidal properties. In other words, it can inhibit the growth of bacteria or kill them. This effect discovered in 1937 by Dold and coworkers has in the meantime been confirmed many times (3 through 11), where the literature cited only represents a selection. The bacteriocidal properties of the honey are not effective against the spores of *Clostridium botulinum* holding out in the rest stage; at least, they are not able to kill the spores. However, during the transition to the active form capable of multiplying, *Clostridium botulinum* becomes more sensitive. It would be completely conceivable that the germination of *Clostridium botulinum* spores and the multiplication of the vegetative stages are prevented if the concentration of honey in the intestines should be sufficiently high.

The threat to infants from consumption of honey is thus far from being a settled case. The problem of infant botulism will not be eliminated by removing honey from infants' diets with insufficient justification. It is necessary to clarify the question of why a small number of infants become sick in the first year while many children of the same age and older children and grownups can not be infected although they certainly pick up spores of the causative organism from time to time. When the reasons for this phenomenon are known, one will also possibly have available the means for effective prevention.

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Beekeeping in the Marshall Islands

"In May of 1979 Kwajalein finally had its first population of Hawaiian-Italian bees."

By ALDEN P. MARSHALL
5 Burton St.
Hudson, NH 03051

Kwajalein from 10,000 feet. (Photo by Brogden & Jackson.)

KWAJALEIN ATOLL is a ring of islands situated 2,100 miles southwest of Hawaii in a group of atolls designated the Marshall Islands. This particular coral atoll is the largest in the world constituting over 90 islands with a circumference of 190 miles and a total land mass of only about 6 square miles. Kwajalein Island, named after the atoll, is the most southern of the chain and it is here that several colonies of bees have recently been established.

Although very few beekeepers will have an opportunity to manage colonies under these conditions, I think many will find the particular circumstances and conditions of interest.

The aerial photograph of the island shows the somewhat horse-shoe shape. And to give some bearing, the runway runs in an east-northeast direction. Situated on the eastern end are houses and trailers where employees and their families live. Also located in this area are the schools for grades 1 through 12, a super market, cafeteria, dining hall, club, department store, recreation areas, and post office.

The lagoon is protected most of the time from high seas and winds by the islands and reefs. Here boating operations are conducted and the piers can be seen in the photograph. The temperature varies from 78° to 86° year round. There are times of the year when the rain is heavier than others. Trade winds of 12 to 15 knots are the norm rather than the exception. Of course there are times the winds are less or more intense.

Perhaps the subjects of most interest to we beekeeping enthusiasts are the experimental gardens and the beekeeping enterprise. Some years ago two wood framed greenhouses were erected with screened sides and ends with fiber glass roof panels. Here experimentation with hydroponic gardening was conducted. Since then official operations have terminated and it looked at one time as if gardening there would be discontinued.

A couple of island employees desiring to see the gardening work continued expressed an interest in taking on the task in their free time. They would continue experimenting with greenhouse plants using hydroponics as well as with other conventionally grown plants in the out-of-doors. The garden area is located across from the runway, a little more than ⅔ toward the west end.

These two ambitious individuals are Mike Brogden and Nelson Young. Mike is employed by Kentron International, Inc. as a Senior Photographer and Photo Technician and Nelson is under employ by Global Assoc. as Chief Engineer on one of the harbor tugs.

To date numerous types of plants have been tried with varied success. Some grown are intended for food

(Continued on page 433)

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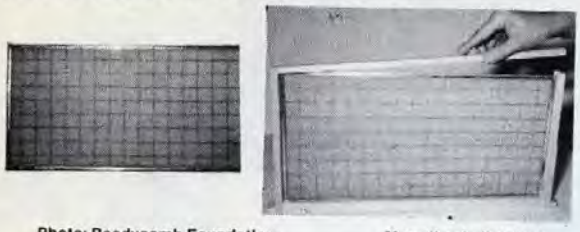

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Honey for Health

Beekeeping in the Marshall Islands

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crops and others for ground cover to be tilled in to enrich the soil. Just about anything that grows and is cast aside is used as compost. As one can well imagine, coral will only harbor growth of a limited amount of plants. Efforts of composting and trying varied crops are beginning to bear results. As soon as some of the successful crops began to bear blossoms the frustration of pollination deficiency had to be faced. Only limited pollination to date was achieved by wind, a few butterflies and nectar seekings wasps. It was at this point, about 4 years ago, that Mike and Nelson felt that honeybees could possibly accomplish this task. It was, however, a question as to whether there was enough forage around to sustain a hive and could authorization be obtained to establish honeybees colonies. At this time they began researching the peculiarities of bees and how the existing flora would accommodate their required diet. It was obvious that the small amount of garden area would not sustain a hive. However, it was conceivable that various types of growth around the island would suffice.

During the early months of 1977 the necessary paper work was initiated and within a reasonable period of time approval was forthcoming permitting honeybees to be brought onto Kwajalein for the purpose of pollination. Of course bees can't be restricted to a single chore so some provisions had to be made to take care of the honey crop. Hive equipment and a honey extractor were procured without difficulty. However, when it came to the bees that was another story. The first order for package bees never was received or any acknowledgement from the supplier. When it appeared this effort would be fruitless, a second order was placed with another supplier a few months later. Word was received that the shipper could not send bees to an A.P.O. address. By this time things were looking pretty bleak. It was learned that a flight was coming back to Kwajalein via Wake Island where there were a number of colonies of bees and one of the crew would pick up a nuc or package from there. Well, this arrangement never did materialize, so again it looked as if the purchased bee equipment would never be associated with bees or honey on that island. Sometime later one of Mike's fellow employee was traveling to Hawaii for a brief stay and offered to bring back a nuc of bees.

In May of 1979 Kwajalein finally had its first population of Hawaiian-Italian honeybees.

Shortly after their establishment it was evident that many more plants were having a marked increase in bloom set. The following are some plants the bees work to varying degrees. Ocean Morning Glory, Sea Bean, Hitch-hiker Bean, Beach Heliotrope, Eranthemums, Hau, Common Hibiscus, Kamani, Morinda, Christmas Berry, Pandanus, Scavola, Sea Grape, Wedelia, Coconut Palm, Breadfruit, Squash, Vitex, Papaya, Castor, Buckwheat, and Millet (for Pollen). Norfolk and Ironwood pines grow there and I suspect some propolis is gathered from them.

Apiary, greenhouse and garden management team. Left to right Mike Brogden and Nelson Young.

Nelson with brood and honey frame in front of Papaya trees. (Photo by Brogden & Jackson.)

I would like to mention that the Breadfruit fruit excretes a white milky sap that the bees forage on. The Plumeria are also visited frequently, not the blossom but leaf buds. The bees have learned to chew on the ends of new branches to cause the white milky sap to flow. Strangely enough, the two trees next to the apiary have been visited so frequently that the gnawing has inhibited leaf growth and it appears that the plants will not survive. This is the first occasion I have heard or seen where bees have been a detriment to plants. If any of you beekeepers out there have had experience or heard of such please comment with an article in the *Gleanings* or drop me a line.

I do not consider myself to be any authority on beekeeping but I do feel honored when I am asked my opinion on various hive management situations. On my last trip I was asked to go through the hives and to comment in general on practices I would suggest they use to improve their management. After going through the hives, it was evident to me that the queen needed more laying space. Only one brood chamber was being used on all of the colonies. With one exception all frames were full of brood, eggs, and a modest quantity of pollen and honey. There were no empty cell areas for the queen to lay. Another in-

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Beekeeping in the Marshall Islands

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dicator was that in the hatching brood area eggs appeared to be laid in cells that had probably only just been cleaned, evident by the rather scattered laying pattern that brood seems to hatch out in. With the high humidity and temperatures it also seemed to me that more populous colonies would help to ventilate the hive and perhaps cure the honey faster. However, the urge to swarm did not seem to be evident at the time. Observing the large quantities of bees clustered on the front of the supers and stands indicated to me that the colony was excessively warm. Internal observation did not indicate an overcrowded colony. I suggested that some type of shade be provided and the front of the colonies be moved back a couple of feet from the Vitex hedge that surrounds the apiary to provide a better flight pattern and possibly more air. The hedge is provided for a windbreak and to heighten the flight path for the benefit of visitors. The apiary is situated in the proximity of the greenhouses.

As soon as it was agreed by Mike and Nelson that shade would be a beneficial management practice, we set to work cutting some old dump salvaged water pipe and drove the pipe into the ground in the area the hives would be shifted back to. We then attached pipe to make an overhead framework, then cut and wired palm fronds for a roof cover. Within an hour the bees had all moved in with the exception of the landing board fanners. I really did not expect the shading to be such a dramatic influence in such a short time. Soon the shade cover will be some type of growing vine.

Another of my interior hive observations was the very small quantities of propolis. I believe this must be due to the lack thereof rather than any particular trait of the bees. Being a Northeasterner, I am used to seeing plenty of this glue, although I do not consider it much of a hindrance.

The predominant pests here are ants. The first hive stands that were used were made of aluminum with feet that had a flat plate on them and set in a cutoff plastic container of crankcase oil. They had some problems with these such as rain washing out the oil, bees and ants

Hives with palm branches on pipe frame for shade. Vitex wind break hedge in front. (Brogden & Jackson photo.)

getting caught in them, and the ants crawling over carcasses. There are ways of making immersion pest inhibitors work but they found a less bothersome means of control. Creosoted three x threes set across small cement blocks did the trick. The honey locker in the honey house is on legs that stand in oil filled containers and the shelves are enclosed with screening.

There are some moths present but not too bothersome. Geckos (small lizards) hang out around the outer cover edges and feed on moths. The bees get a little help here. It is not known for sure if the geckos disturb the bees but they have not been observed to do so.

I have observed a couple of varieties of small wasps and hornets but have been told they are not of sufficient size to be a problem to the bee. In an 18-month period one 5-frame nuc has grown to 6 colonies and produced several hundred pounds of honey.

I believe it important to mention that Mike and Nelson use the proceeds from plants, produce, and honey sales in purchase of new plants, growth chemicals, seeds and equipment to make the venture viable. They have offered to share their knowledge of beekeeping and gardening with anyone interested. There are many challenges and opportunity for reward. If not in monetary terms, as is often the case with beekeeping, just being able to vitalize growth capability of a land mass that will possibly be more productive to inhabitants, I believe that this is a success story that should be shared and wish for Mike and Nelson an even more fruitful outcome in the future.

Mike has had the fortune to have his wife and children join him recently from Palau. They all take great interest and active part in the efforts of experimental plant growing and managing of honeybees in this, as yet, a challenging environment.□

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Beekeeping Technology

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

The Stinging Of A Three-Year Old

A FEW HOURS AGO, a non-beekeeping neighbor's child was stung by a bee from one of my colonies. Most beekeepers know how the scenario goes in such cases. In this instance, I was having a quiet dinner, aware of the sounds of kids playing in the back yard. Suddenly there were screams of pain and panic that all parents instantly recognize as a potentially serious situation. I dashed to the door only to see the fading image of a three-year old girl headed for home — full speed ahead. It was with no small amount of anxiety that I hurried down the street to offer my belated assistance. The child had been stung on the neck, just beneath her right ear. It appeared to be a mild sting — but no less a traumatic situation for mother, child and beekeeper.

Somehow all the factual arguments seemed inept: The bees are normally very gentle, bees perform many valuable services, the kid was in my yard swatting at my bees. But to a three-year old none of these were very convincing declarations.

Honeybee stings are rarely taken lightly by anyone — beekeeper or not. Even the most hardened professional beekeeper has to acknowledge the enthusiastic sting of a bee that has just scored a direct hit, say under his right arm or just beneath his left nostril.

We, as beekeepers, that are accustomed to stings (more or less) must always sympathize with a non-beekeeper who has just been stung. At the instant, the victim could not care less about how beneficial honeybees are!

Unfortunately, for a second group of people, stings may be a much more serious occurrence. I am not referring to the average person that is stung, has local swelling, takes benadryl and honestly believes they have had a harmful reaction to a sting. I am referring to an obvious reaction. A good case in point is a student I had two years ago. This individual had participated in the bee program for a year and had taken quite a number of stings. The first sting she received the second spring resulted in shortness of breath, itching in and around the ears and difficulty in hearing. I thought this to be an appropriate case to set precedence for the bee program at ATI. I arranged for her to be examined by an allergist from the Ohio State University Medical School. The student and I discussed the questions we would like to have answered. It is always difficult to explain to a physician why it is possible to be a beekeeper in face of obvious medical risks. This woman was determined to make her point and, in fact, she did. Her test results indicated she was sensitive to honeybee stings, and honeybee stings alone. The physician stated he could not predict the results of the next sting. She could get better, show no change, or unfortunately, get worse. It seems that she had three basic alternatives: Desensitization with the macerated bodies of bees (whole body extract), pure venom desensitization and finally, simply taking another sting. The physician was skeptical about the efficacy of whole body extract. Unfortunately, only two physicians in this state administer pure venom and both were a long drive away. Sensibly, the doctor was opposed to subjecting the student to another sting. I agreed with his suggestions. The results of the tests were a disappointment to both the student and me. Reluctantly, the student dropped out of the program.

I have found these two aspects of the stinging problem — stinging non-beekeepers and beekeepers becoming sensitive to stings, to be difficult areas. When an "innocent bystander" is stung, they are hurt and embarassed at the same time. A definite degree of tact is required. Secondly, as beekeepers become sensitive to stings, the medical advice invariably is to stop keeping bees. This is almost always the sensible, but disappointing solution.

I plan to pursue the subject of honeybee sting desensitizations in a future article. I would appreciate hearing from beekeepers that have both successfully and unsuccessfully undergone desensitization techniques. □

Research Review

By DR. ROGER A. MORSE
Research Editor of Gleanings
Professor of Apiculture
Cornell University
Ithaca, NY 14853

Temperature of a Swarm

IF ONE SHAKES a swarm from a limb in the late evening or early morning, most of the bees just drop to the ground (or into a box held below them). This occurs, says researcher Bernd Heinrich, because most of the bees in the swarm are too cold to fly. Only if a bee's flight muscles are warm enough can the bee fly. While the swarm is clustered, only about five percent of the bees do any flying. These are the scouts, looking for a new homesite, plus the drones. The rest of the bees in the swarm stay put, they are also working; they are involved in temperature regulation, avoiding both chilling and overheating.

Bees keep the center of a swarm cluster quite warm, approximately 35°C. (95°F.), which is about the same temperature one would find in the brood nest of a normal colony. Towards the outside of the cluster the temperature drops, with the outermost bees having a temperature not too different from the air temperature around them under normal circumstances. However, in chilly weather even these outer bees are kept much warmer than the air temperature.

Individual bees in a swarm produce heat by shivering. Older bees are much more adept at doing this than are young bees. Also, as the temperature on the outside of the cluster drops, many of the bees there move to the inside, thus plugging the passageways and helping to slow heat loss. Generally, most of the heat production is by the bees in the core of the cluster but those on the outside may also shiver if the temperature falls too low.

An exposed swarm must also avoid overheating, which it does in much the same way as does a winter cluster in a hive. As the air temperature rises, the cluster expands, leaving more space between the individual bees. As the swarm's surface area is increased, heat is lost much faster. At high outside temperatures, Heinrich observed distinct "curtains" of bees separated by air spaces, with bees moving back and forth between the center of the cluster and the outside.

How is temperature regulation coordinated? It was observed that both queenless and queenright swarms were equally good at maintaining comfortable temperatures. Therefore, the queen is apparently not a controlling force. When the bees in the core of the swarm were enclosed in thin gauze they were still able to hold their high temperature, indicating they did not need information from the outermost bees to do so; that is, bees in the core maintain their high temperature independently of any "need" for greater warmth by the outlying bees. The outside bees tolerate much lower temperatures but when they are cooled to 19°C. (65°F.) they too will begin to heat themselves up.

A bee's body temperature must be at 35°C. for her to be able to take flight quickly, and bees in a swarm must be ready to fly when the scouts indicate it is time to do so. It takes about four minutes of shivering for a bee to warm its body from 19°C. to 35°C. Scouts stimulating a swarm to take to the air do so by rushing through the cluster, jostling their sisters. This apparently causes the bees to increase their body temperatures in preparation to taking flight.

I've watched many swarms as they prepared to take flight. It is fascinating to watch the scouts stimulate the rest of the bees into taking off. Some bees respond slowly. One can hear a unique sound in the cluster, presumably made by the scouts. It is a high-pitched buzz. More and more of these sounds can be heard as the time approaches for the swarm to take to the air. In fact, one can predict when the swarm will take flight by "listening" to it.

Heinrich, B.
The regulation of temperature in the honeybee swarm. *Scientific American*, 244: (6) 146 - 8+. June, 1981.

The Cost to the U.S. of Mites in Mexico

The fact that acarine mites have been found in Mexico, not too far south of the Texas border, has prompted some beekeepers in Australia to request their government to suspend the importation of bees from the U.S. and Canada. One can understand their concern. Such an action would certainly affect a portion of the U.S. beekeeping industry. We have no data on how many queens and pounds of bees are shipped abroad each year but certainly it is well over a million dollars worth.

How serious is acarine? Many textbooks say it is a disease to be greatly feared. Dr. L. Bailey at the Rothamsted Experiment Station in England says this is not so. Acarine is found throughout much of Europe, and while its negative effects are occasionally mentioned, the problem appears to be no greater than that caused by chalkbrood and some other honeybee stress diseases.

From time to time we hear about the advantages of using islands as queen rearing areas. I have often wondered why an enterprising beekeeper didn't establish a queen rearing operation on one of the Caribbean Islands for the express purpose of selling queens to the U.S. On occasion I receive letters from someone on such an island asking about information on beekeeping there. Except for some older articles on Cuba, where many U.S. beekeepers once had extensive apiaries, there has been little written about the honey plants, cycle of the year or appropriate management schemes for many Caribbean Islands that might qualify for such operations.

It is critical that a strict quarantine be enforced on these islands. Also, a bee disease inspection system must be rigorously enforced. We are increasingly spreading bee diseases, not purposely, but just because of the nature of the bee business. Having more island operations may provide partial protection but we will need some more research and considerable vigilance to make them work.

Briggs, L.
Acarine-request for import ban. *The Australasian Beekeeper* 82: 180-181. 1981.

Monthly Honey Report

(Continued from page 422)

Region 6

Bees have been inactive in June in Kentucky. The tulip poplar honey flow was good in the forrested area of Kentucky. Expect July honey sources to make up for June inactivity. Rains came too late to help clover honey flow in Tennessee. Prospects for honey flow in fall are good. Had a honey flow from tulip poplar. Demand for bakery honey is good and the retail market is steady.

Region 7

Good honey flow in east central Oklahoma, but about three weeks later than usual. No local honey available. Very good spring crop of honey in Arkansas, though of a darker grade than usual. Soybeans planted late and honey flow prospects from this source are questionable. Retail honey sales are good but price increase in offering. Packers not offering support price for honey.

Region 8

Excellent honey crop predicted for Montana. Rainfall has been above average but more needed through summer. Irrigation water supply is low due to poor snow pack during winter. Honey plants in good condition. In Colorado dry conditions had followed the early honey flows, but rain fell during June. Some alfalfa bloom hurt by late freeze but by end of June the bees were again working alfalfa and sweet clover. Demand for honey is normal. Supplies of packers are adequate at present time.

Region 9

Colonies in good condition in Washington State. Western Washington cool and rainy during June. Bees working in Alfalfa fields. Bees in very good condition in Oregon but weather has been unfavorable during the early season. Citrus honey crop in central and southern California very poor, averaging only 10-15 lbs. per colony. Sage and buckwheat honey crops along central coast were very poor. Colonies being moved to the irrigated crops in face of increasingly drier weather. Trading in honey is slow, with some being purchased in Mexico for June — September delivery.

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Make Uncapping Easier

By MEL KIRKWOOD
Seattle, WA

AS WE ALL know there are problems involved with reclaiming the honey carried off with the cappings. Also, a good stable bearing to support the frame while working with the uncapping knife is most desirable.

I learned a good method for doing this while working with Capt. Carl Moen, an old timer at the business, who taught me a lot about beekeeping. Of course, I added a little to his basic setup but the main idea is his and I'm grateful for learning about it.

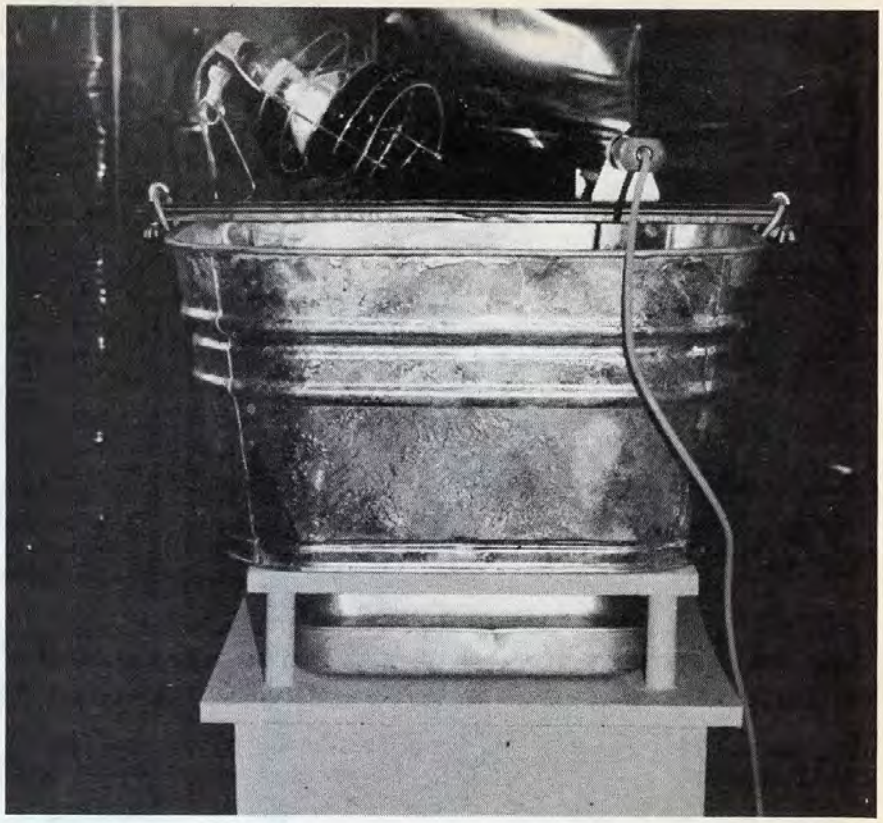
You'll see in Figures 1 and 2 that I use a square galvanized wash tub with a drainhole in the bottom. Another kind of tub of similar dimensions could be used just as well; Capt. Moen and I just happened to use the galvanized tubs.

Across the top of the cappings tub a wooden bar is fitted and attached to the tub at each end as indicated in Figure 3. In its middle a screw is run up from below with its point projecting above the crossbar. This gives a sharp, no-slip bearing upon which to rest the frame when using the uncapping knife.

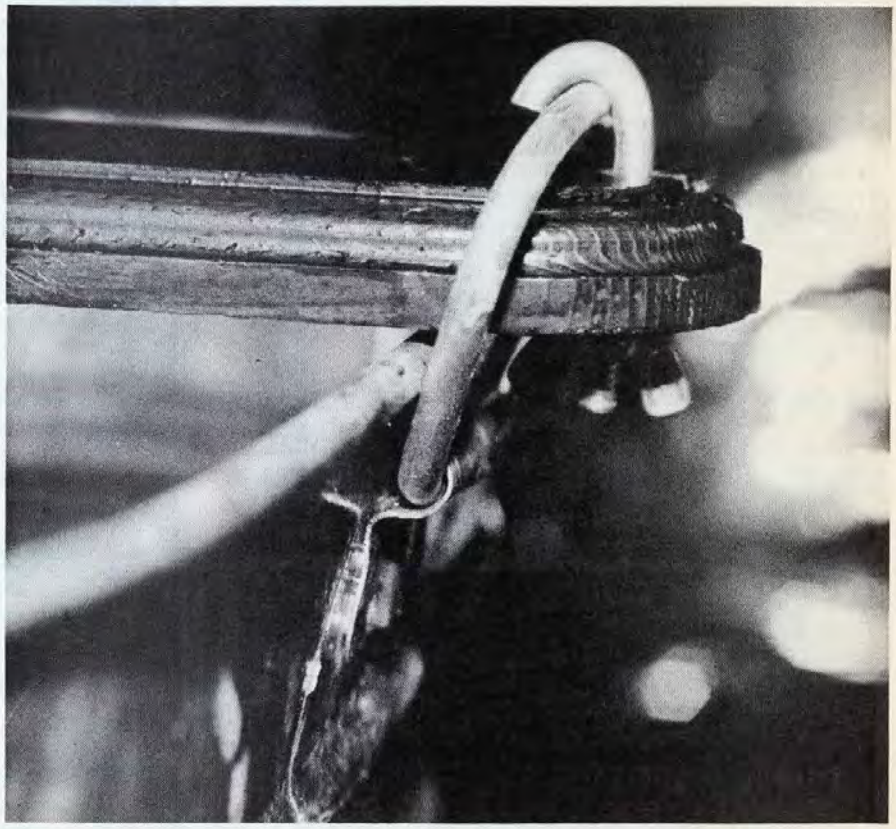
A frame of ¾" x 1½" lumber the size of the bottom of the tub needs be built and ¼" mesh hardware cloth attached to it as indicated in Figure 2. This will allow the honey from the cappings to run down through to the drain without taking beeswax and a lot of debris with it.

Figure 1 illustrates how the table is built with two levels. The upper level is separated from the lower sufficiently to allow the drain pipe to extend through and for a shallow pan to be inserted to catch the honey drain-

(Continued on page 442)



The tub and its table with the heat lamp and the uncapping knife in place. Note the shallow pan underneath. (Figure 1)



Detail of the cross bar hold-down using a bent bolt and wing nut.

In Search Of The Ambrosius Hive

"Johan and I instantly and simultaneousy expressed a desire to purchase one of these treasures."

By BARBARA VAN ACHTERBERG
Easton, Connecticut

IT WAS ON A trip to Holland in the autumn of 1976 that we first heard of the legendary St. Ambrosius hives. My husband had become a beekeeper since his previous visit to Vaassen, the town in the Netherlands where he was born and where his parents still live. He had started to collect a small library of American bee books and he wanted to see what was available in Dutch. An old man who had kept bees in straw skeps when Johan was a boy had given up his hobby, but he directed him to a nearby beekeeper who still wove his own skeps. ("Skep", by the way, is an English word; the Dutch word is "korf.") This man agreed to make a hive for us to take back to America. He showed my husband and son around his apiary and told them of a large bee equipment supply house in the town of Wageningen. A day or two later Johan, our two childern and I visited this fascinating store. There we saw honey in dozens of flavors, including both heather and winter heath. We purchased one jar each of these two, and also bought an attractive brass smoker and a remarkable skep with a rectangular base and removable handmade frames. (Later we saw a drawing of one just like it on page 344 of *The ABC and XYZ of Bee Culture*). Finally Johan bought a book *De Oude Imkerij* (The Old Apiary — not available in English) which is a book of photographs and descriptions of early bee equipment in the Open Air Folk Art Museum in Arnhem. On the cover of the book was a photograph that riveted our attention. There sat a beehive cunningly woven to look like a man — not just any man but a bishop complete with miter and staff. Of course, having become in only two days a couple of enthusiastic collectors of straw skeps, Johan and I instantly and simultaneously expressed a desire to purchase one of these treasures. But the storekeeper threw cold water over our ardor, telling us that these were not available, although he had once seen one.

So we flew home with our other purchases, and had quite a time going through customs with our suspicious-looking hives and smoker. In the months ahead we occasionally leafed through *The Old Apiary*, studying the quaint hives of the old times. I especially was intrigued with the legend of St. Ambrosius. Born in the Fourth Century, he was a babe in his cradle when a swarm of bees came down and clustered upon him. He was totally unharmed and being an infant, unafraid. His father witnessed this event and took it as a sign from God that in word and writing his son should gather heavenly honey. Ambrosius (whose very name means nectar of the gods) grew up to become the Bishop of Milan and was considered the most eloquent preacher of his day. Later he was named

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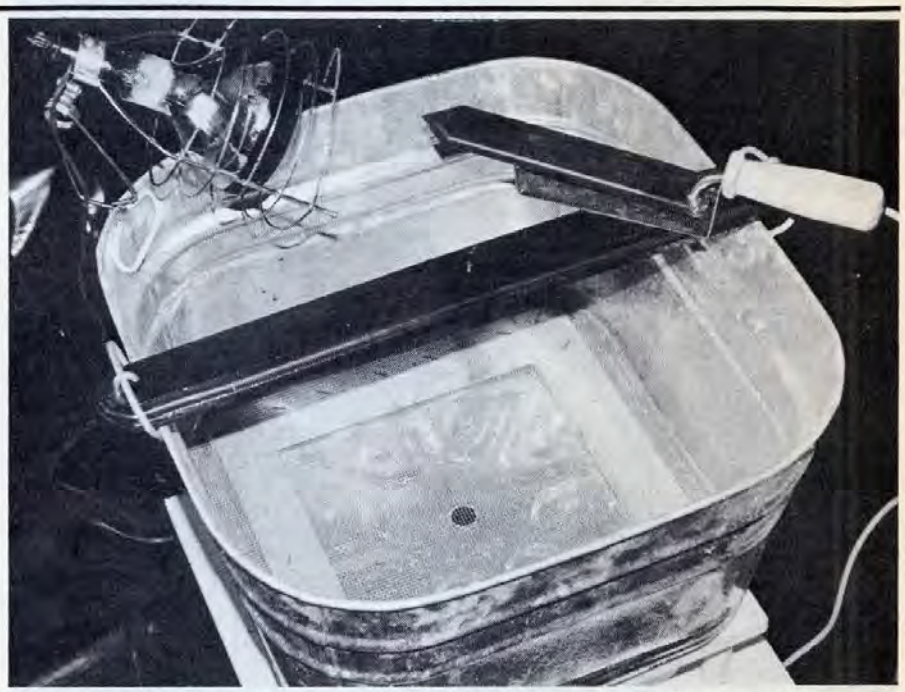
Make Uncapping Easier

(Continued from page 440)

ing from the cappings.

In Figure 1 and 2 you'll notice that I have a heat lamp attached to the top edge of the tub and directed to where the pile of cappings will accumulate. This heats the cappings so that the honey runs down through the screen in the bottom of the tub and into the pan below but leaves the beeswax behind. The wax can then be reclaimed after uncapping is completed.

I have found this setup makes uncapping much easier than others I've tried and it's great to have the honey removed from the cappings while I'm working. This eliminates having to find another method of doing so. I've not come across one that is plausible. □



The uncapping tub from above showing the crossbar with the uncapping knife in place, the heat lamp directed to where the cappings will accumulate, the screen on its frame in the bottom, and the drain hole to direct the honey to the pan below. (Figure 2)

Bee Talk

By DR. RICHARD TAYLOR
Trumansburg, NY 14886

THERE ARE lots of things I feel like talking about. The trouble is, there's not much connection between them, and a column like this should probably have a certain unity, rather than rambling around into disconnected lines of thought. But I think I won't worry about that, and instead, just talk about some of the things that have come up in my mind lately.

One of them is honey granulation. I'd heard that honey won't granulate if it is kept very cold. Bill Clarke told me that, and he usually knows what he's talking about. Of course that sort of goes against a beekeeper's common experience, since we all know how fast honey granulates in a cold honey house. But I decided to test it out, and indeed, it does work — at least for comb honey. I filled one of my freezers with comb honey last fall, and just for comparison I also kept some of it out, storing it in the warmest room in the house — which, I should add, wasn't awfully warm. Also, for further comparison, I put into the same freezer some jars of chunk honey. Well, the other day I got some of the honey out of the freezer, left it for a day to warm back up to room temperature, and here's what I found: The comb honey from the freezer was still liquid, not a bit of granulation that I could find. And it was goldenrod honey, too, which is one of the quickest to granulate that there is. The sections I'd left all winter in the house, on the other hand, were granulated, some of them clear through. And the chunk honey that had been left in the freezer? Well, the extracted part was granulated, but the chunks of comb in it were not!

So I really did learn something there. And it is something very important for a comb honey beekeeper like me. I like to get all my comb honey crop sold before granulation can become a problem. But now I know that, if some of it does not get sold, I have a way of keeping it good as new until the next year. And this means I can get my honey stand going even before I harvest the first comb honey. All I have to do is pop the leftover crop into a freezer and not worry about a thing. Of course it means I have to maintain a freezer all winter, but that doesn't cost much, because it is out in my cold honey house, and for much of the winter it hardly ever goes on at all.

That's one thing I was going to talk about. The next thing is sumac. Yesterday I was out working around the sumacs, and soon became aware

that they were full of bees. A lot of people don't realize what an excellent honey plant the sumac is. Of course there are lots of different sumacs, and maybe they are not all good for bees, but the staghorn that grows here certainly is. Allen Latham, long ago, learned what a good bee plant it is in Connecticut. All the beekeepers there thought they were getting basswood honey, but Mr. Latham showed them, to their surprise, that it was coming from the sumacs. Once my scale hive gained twenty-five pounds in one day from the sumac flow, and then the next day it gained another twenty-six! So if you had maybe a hundred hives like that, then you would go to bed owning about a ton of honey that you didn't own when you woke up that morning, just from the sumacs. And you wouldn't have lifted a finger to get it. I mentioned that to my dear wife, and she of course pointed out that one would do a lot of finger lifting before any of that honey got turned into income. Very true.

And the last thing I thought I'd talk about is bee stings, which I was thinking about the other day. I have a knack for not getting them. What I do is send love out to the bees. It actually works. Of course there is nothing mysterious about it. You just, by sending love out to them, put yourself into that calm, sensitive and relaxed frame of mind that is precisely what is needed when working with the bees. If one comes buzzing around my face, just to see what's going on and let me know she's there, I generally ignore her. I can tell — I don't know how — whether she is really feeling threatened enough to sting, or is just bluffing. I can tell every time. Now of course the mood of the bees changes as conditions change. When the hives get very populous, by August, and there are no flowers for them to visit, then all the love in the world isn't going to prevent stings. You need a bit of smoke too, and veil, and perhaps even gloves. But in spring and early summer, when the whole of creation just seems filled with joy, then you can take a whole hive apart if you want to, and you don't even need a veil.

That works out well in my beekeeping courses. I give a bee course each spring, at a nearby community college. It consists of four evening meetings and then a trip to an apiary early in May, by which time all the members of the class, most of whom have never seen the inside of a hive, can get started with their own bees if they want to. Well, this May, as with every May, we met for our field day with the bees, and when I got there the students were all waiting, a good safe distance from the hives, and well prepared with veils and gloves and all. What a splendid opportunity for me to show off a bit, and also teach them something of the gentleness of

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Strictly Backlot

By CARL CALLENBACH
135 College Avenue
Elizabethtown, PA 17022

COMMON TASKS like turning the compost piles, hoeing corn, and freezing green beans sometimes make it impossible for me to go immediately to the locale of a swarm — that and the fact that I often run out of bee equipment for hiving swarms in late June — and I usually respond to the phone caller with an "I'll try to be there by three o'clock." Occasionally, when the interval is longer than I'd like it to be, the bees are gone when I arrive. "They took off again about two o'clock," a young woman advises me. "Flew in a big circle and then headed over the woods." She points southwest, toward Mt. Gretna.

Why not northeast, toward Hershey? I ponder the direction; I wonder what tree hole, cottage chimney, or house eave hums now with the charged energy of a newly settled swarm. How exactly, pray tell, did all 30,000 bees end up, let's say, in a cottage chimney in nearby Mr. Gretna?

J.D. Meeuse, in his book *The Story of Pollination* (New York: The Ronald Press, 1961, pages 128-130), describes the hazardous period following the initial swarming when a good home must be found. His tale of the activities of the bees is based largely on the work of M. Lindauer (*Communication Among Social Bees.* Harvard University Press. 1961, pages 34-58), a collaborator of von Frisch whose text *The Dancing Bees* (New York: Harcourt, Brace and Company. 1953, pages 132-136) also decribes the swarm behavior during the new house hunting period. Meeuse notes that the actions of the bees in determining their new home site is "so strongly reminiscent of a political convention in the United States that it is very hard to avoid humanizing the bees." I'm not sure how the bees might feel about that statement! But the analogy, like a lot of analogies, between the behaviors of politicians at conventions — Meeuse didn't designate which political party — and the demeanor of bees in a swarm barely — as they say — flies, powered by an extremely weak rubber band. More about weak rubber bands later.

Lindauer writes that very soon after the bees have swarmed, scouts (recruited from the forage bees that are familiar with the territory) fly out in all directions to find a good home site. Meeuse notes that this small committee of bees — the scout bees — ultimately makes the decisions about the new home site — for chaos would reign if all the bees in the swarm could nominate a new site. (Remember the 1980 Democratic Convention?) Indeed, some scout bees begin house hunting before the swarming takes place (Carter in 1975; Reagan in 1972-present).

von Frisch: "Dozens of scouts can be seen on their way in all directions and it is not long before one has found something here, another there, that might be suitable, though often many miles distant. Successful scouts **dance** on their return, on the surface of the cluster; they indicate the distance and direction of the accommodations they have discovered, in the same way as the foragers show the way to a source of food." Lindauer, writing in 1961, notes that "these dances of the bees not only serve to give information in the search for food, but also play a decisive role in mutual communication during the search for a dwelling. There is no doubt that, next to the search for food, this presents one of the most important problems of existence in a bee community."

"Few change channels to see how the Phillies are doing; none go to the refrigerator for a beer."

Time for the gavel: I believe the original question was why Mt. Gretna and not Hershey? What happens when numerous bees return to the swarm and dance about their findings in Mt. Gretna, Lebanon, Colebrook, Mastersonville, R.D.; not to mention Hershey?

Meeuse, like von Frisch and Lindauer, writes that the rules which the bees follow in their dancing are like those observed by foragers returning from a forage plant. Instead of nectar or pollen, the bee returns with remnants of, for example, chimney brick or soot. Distance and direction are described by the dance, and as the number of returning scout bees grows, a mad medley of dancing results. Meeuse wonders "How in the world, one may ask, will the bees ever reach agreement?" Not in a cigar-smoke filled room, you may be sure! It is here the rubber band snaps and the analogy sputters. Meeuse notes wistfully: "I wish I could say that our political conventions were decided as simply and eloquently." von Frisch, to the point, says: "There is much man could learn from the bees, but he does not have the patience."

For each scout bee is **honest** in her reporting! (Steiner, somewhere, writes that animals use "language" to convey information; humans use "language" to convey misinformation.) The scout bee must dance with captivating joy about an exceptional site; she must be subdued about a mediocre site. Lindauer observed that a scout bee will sometimes dance an hour or more when announcing an excellent site; a poor home is described by a lazy dance of a few seconds.

The nomination speeches-dances are **honest** — think about that! And the audience of bees are alert and totally interested. Few change channels to see how the Phillies are doing; none go to the refrigerator for a beer.

It is equally as important that the scout bees **not** be adamant about particular site choices. It is obvious that some scouts must be, to use Meeuse's word, "converted." Lindauer: "Which of them shall decide which nesting place should be chosen? "Later he writes "... it struck me that those dancers which the day before had solicited for the southeast, today announced a nesting place in the north. This was the nesting place that was already preferred by most of the other dancers. Had the former allowed themselves to be brought around for another nesting place? It was conceivable that they had let themselves be persuaded by the dancers from the north, and that they had then inspected the second nesting place, and now joined in soliciting for it in a cluster, perhaps because it was the better dwelling site. In any case, we arrived at the following conclusions: (1) the decision concerning the choice of a nesting place lies solely with the

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Two Goldenrods

By M. H. STRICKER
Stockton, NJ

THERE CAN BE no doubt that most ornamentals come from weeds; looking at seaside goldenrod (*solidago sempervirens*) will prove this. The large showy blossoms will deserve a place in anyone's flower garden and if the flower grower is someone who likes bee activity, here is a plant that attracts honeybees from early morning till late evening, with as long a blooming period as any known honey plant.

Seaside goldenrod still blooming in the snow.

On Long Beach Island, New Jersey, where I gathered my seed, it starts to bloom right after Labor Day and in most years, it continues blooming until after Thanksgiving.

I do not know whether there are colonies of bees on this New Jersey Island, or whether they fly from the mainland, but always when there is not too much wind, and the temperature is above sixty degrees Farenheit, honeybees are visiting this plant.

Two years ago, I collected some seed to start a flower bed, and though only one plant matured the first season, it was spectacular enough to arrest the attention of all my visitors, and attractive to bees from early September till the first severe frost in November. Now, in its second year, the bed has spread by root and seed so that it has become a treat for all the bees (honey and otherwise) in the neighborhood.

Nature seems to have provided for this plant's preservation by not allowing it to bloom until after Labor Day when the summer tourists have mostly left the shore, or it would probably go home in a thousand bouquets that would eventually destroy the plant. This would be especially bad for the beaches of New Jersey, since the extensive root system of *solidago sempervirens* helps the sand dunes to resist the erosion of both wind and water.

Identifying this plant, which grows along the eastern seaboard from Canada south to and including New Jersey, is not easy. It can be from one foot to six feet high, though most are about two feet tall. It has a large fleshy leaf that children often call "shoe soles", placing them in their sweaty sneakers, claiming they are soft and cool for summer use. The leaves are often large enough to fit a very large shoe.

Large blossoms of seaside goldenrod.

Though in some areas the plant has become hybridized with *solidago rugosa*, there are always enough of the showy blossoms with 7 to 10 large rays to identify it.

There is also a narrow-leaved variety that grows in the salt marshes from New York south to Florida that is attractive to bees, but not nearly as showy for your flower bed.

In the area of northwest New Jersey where I have one large flower bed, and anticipate more, It continues blooming even when covered by early snows.

To grow it successfully, it needs a sharp sand, such as beach sand, or mason's sand from the local lumber yard. This should be spread over well rotted manure to a depth of at least ten inches, being sure the sand is highly acid for the germination of the seed.

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Two Goldenrods

(Continued from page 445)

The seed should be picked late in the season when it is fully matured, and planted early in the spring if your location is north of New Jersey. Winter planting is possible, but most seeds will not germinate too readily if the ground is frozen too hard or too deep. After the plant is established, the roots probably go down so deeply that the excessive cold of northern climes do not affect it.

If the plant shows stunted and yellow leaves, aluminum sulphate should be added to the soil to increase the acidity. Otherwise, it will bloom well and be a joy to both you and your bees.

— — — — —

Sweet goldenrod (*solidago odoro*) is not so conspicuous as seaside goldenrod, and I don't believe I would have noticed it if I hadn't come across some people gathering it in the pine barrens of South Jersey. When I approached them, they told me they mixed it with "grass" to smoke. Evidently they were using the usual "young-to-old" tactic to either scare or startle an old "fogey" like me.

I went along with the gag and helped them pick the plant, breaking it at ground level and placing the leaves and stems into the bags they were carrying. They seemed to recognize it by its scent, since the other varieties blooming in that area didn't have the sweet anise-like odor that distinguishes it. The anise-like odor is most easily recognized when the leaves are crushed.

The slender leaves are somewhat smooth and toothless, usually showing transparent dots. The plant grows in dry open spaces and will probably tolerate a wide variety of soils.

I noticed that these human harvesters were careful not to lose any leaves, and told me they were going to dry it for winter use! When I showed them the transparent dots on the leaves were an easy way to identify it, they stated that they selected it because there were "more bees on it". There did seem to be more bees active on it than on the other two varieties present (*s. juncea* and *s. canadensis*), although the early goldenrod was well past its prime.

Although they didn't tell me the true reason they were picking it, when I mentioned that cramming it into their bags would knock some of the leaves off the plant, making it less desirable for winter drying, one "picker" said, "Oh, we will use that for tea!". The leaves of the plant will make an anise flavored tea much favored by the older generation of people in the southern Jersey pines for its taste and "health properties".

Boiled in water, it will make a vivid green dye that can be used for fabrics; perhaps this was the purpose of these young people who must have stored five or more burlap bags of the plants in their station wagon while I was there. But, no matter what their planned use, they taught me that it was the most attractive to bees of the goldenrods in the area that day.□

INTRODUCING . . .

Henry Hermann
Athens Bee Supply

If you visit Athens Bee Supply, located on Georgia Highway 334 between Athens and Nicholson, Georgia you'll find a congenial, easy-going Henry Hermann. You'd think he had all the time in the world . . . he never seems too busy, but under that quiet slow-going motion you soon discover how very active his involvments are. He is a professor at the University of Georgia in the Entomology Department and is one of the few specialists in the field of study of the wasp. His love for the honeybee developed as a result of his study and research with the wasp. Henry can give you the technical names of the anatomy of insects, is knowledgeable from the scientific standpoint, but what he realized about the honeybee was that man can really profit in a substantial way from the little honeybee more than any other insect. As a Root qualified dealer Henry finds his insect hobby rewarding.

In addition to his teaching and research and selling bee supplies, Henry also sells pools and spaas to the Athens area homeowners. As if that were not enough, on their property he and his wife have a riding academy and stables which provide Athens area folks much pleasure and fun. Their young son, Brad, has recently become interested in beekeeping and helps his dad as much as possible with the supplies.

Capping The News

THE EDITORS

"Beekeeping Small Talk"

Bee Behavior

DUE TO THE exceptionally unsettled spring and the early summer weather in the midwestern and eastern United States, bees have shown rather unusual behavior.

A colony of honeybees is an exceptionally organized and relatively stable union of individuals but is vulnerable to outside infuences over which the colony has very little control. One of these influences is the weather and there is little the beekeeper can do except to provide protection against the very extremes.

A herd of cattle or a flock of poultry, for example, can function as individuals; survival does not depend on a shared responsibility for gathering and storing food, rearing young and protecting the group, although vestiges of what may have been survival tactics still exist among domestic animals. Among these insticts may be found such behavior as gathering in herds, social (pecking) order and mating behavior. Bees have remained practically unchanged both in behavior and form during the evolutionary periods through which other animals have passed. Keeping bees in hives has not domesticated them or has beekeeping science succeeded in modifying the physical or behavioral characteristics to a degree which would boost yields dramatically, make them easier to handle or ensure productivity under adverse conditions.

Few, if any, species of animals depend for survival so completely on a single member of the group as does a colony of bees. The queen quite literally has the life of the individual and of the colony within her influence. Not only are certain behaviors influenced by her mere presence but she ultimately determines the composition and many of the characteristics of the colony. This is of the greatest importance to the beekeeper. The queen's adjustment to the colony must be near perfect and her performance up to certain standards, otherwise she could be disposed of by the beekeeper, or, most certainly, by the worker bees.

There is no doubt that weather and other environmental conditions which cause colony stress also effect colony behavior. During periods of threatening, unsettled weather as much of the eastern United States has experienced, colonies exhibit erratic behavior, queens are not accepted during re-queening and are superseded for no apparent reason. Bees are prone to sting, show inconsistencies in brood rearing and foraging habits, and abscond.

Honeybees may not be able to cope with extremes of their environment as do the larger animals for reasons explainable only by the laws of animal physiology, behavior and ecology.

In practice, beekeeping is somewhat different from dairying and other forms of animal husbandry. A farmer may harvest (between showers) a bumper crop of hay if he is equipped with machinery and storage facilities for handling chopped green forage. With a few days of clear weather bountiful crops of alfalfa and mixed hay have been put up for later use and the pastures are lush with legumes and grass. Unfortunately, this bonus, the result of favorable growing conditions, has not always benefited the beekeeper; the bees could not gather the nectar, or, we suspect the supply of nectar is not available in proportion to the heavy plant growth. The larger livestock will thrive on the abundant supply of forage because they are not denied access to an abundant food source as are the vulnerable little bees. For this reason the problems of the beekeeper are not always understood by those who practice other forms of agriculture.

Nature has a way of balancing out extremes over a season, or over several seasons. Beekeepers with long experience are aware of these nuances. They attempt to adjust their management accordingly by moving bees to new locations or by selecting apiary sites that have diverse forage. For the hobby beekeeper with only a few colonies restricted to the backyard, moving bees to a better location is out of the question. Being unaware of the inconsistancies of honey yields is commonly the mark of the inexperienced but, unfortunately, even experience in bee management cannot compensate for unfavorable foraging conditions.

Washington State Honeybee Monitoring Program Continues

"THE HONEYBEE monitoring program will be continued in the state of Washington in 1981 and its effectiveness will be directly dependent on bee industry participation," writes Robert L. Longnecker, President of the Washington State Beekeepers' Association. ". . . . it is to your advantage to report all bee kills to the W.S.B.A. Pesticide Branch," says Longnecker to all member beekeepers. His phone number is 509-575-2746.

The honeybee monitoring program investigation funds are under the direction of Carl Johansen and Dan Meyer of Washington State University, Pullman, Washington. The university is contributing $2,400 and it is hoped the balance needed will come from the W.S.B.A. general support funds.

The monitoring program is a step toward documenting the continual, debilitating low to moderate honeybee pesticide losses in Washington. Severe bee kills are expected to be reported regularly. Results of the program is expected to show that there is a problem when dealing with legislation, the general public and state and federal agencies. A second object is to pinpoint types and/or sources of bee poisoning.

Selected apiaries will be fitted with dead bee traps and the apiaries visited regularly to check on any losses that occur. The 1981 program will be conducted June through September.

Notes From The Straw Skep

By BESS CLARKE
50 Lycoming Street
Canton, PA. 17724

THE APPALACHIAN FOLK Life Center in Pipestem, W. Va. has received twenty colonies of bees through the Heifer Project. The bees will be distributed to families in the vicinity in an effort to provide them with a means of producing food and , possibly, additional income.

The Heifer Project is an internationally known plan to alleviate hunger throughout the world by teaching people how to help themselves. Recipients of livestock are expected to share their profits with others who also need a start.

The Chiques Church of the Brethren in Manheim, Pa., which has been involved in the Heifer Project for years, heard about the request for bees and asked Dan Fitzkee, one of their members who is a beekeeper, if he could collect enough colonies to supply the need. Dan put a notice asking for donations in the Pennsylvania Beekeepers' Newsletter; and made an announcement at the Lancaster County Beekeepers' meeting. The response from church members and beekeepers was exciting. People who didn't have equipment gave cash.

Dan coordinated the effort; collected the hives at his home, attended two auctions where he was able to make good purchases, hived swarms, and delivered it all. A total of 24 colonies was assembled. In addition to bees, queens, hive bodies, bottom boards, supers, and lids there were smokers, hive tools, gloves, bee veils, and instruction booklets for each recipient.

Most of the cash, bees, and equipment came from Lancaster and surrounding counties, but one man called from the southwest corner of the state to offer a colony if arrangements could be made to get it. It just happened that Fitzkee's son was attending college nearby so Dan picked up the hive when he drove out at the end of the term. The surprising feature of that story is the fact that there was room for a colony of bees in a load of a year's worth of dormitory possessions.

A dedication service was held at the church the Sunday before the bees were to be delivered. Dan showed the congregation a sample of the equipment which had been collected. In addition to the bees, sixteen rabbits were being sent to Kentucky, and four heifers were to be shipped to Africa.

Dan loaded the truck late one evening, and he and his wife, Floy, drove all day on Decoration Day. They

Dan Fitzkee showing the congregation of the Chiques Church of the Brethern the bee equipment he will take to Pipestem, W. Va.

reached their destination without incident. Dan West, the manager of the Folk Life Center, met them and helped unload. West, a lifelong champion of the underdog, has established the Center as a place where Appalachian people can learn to be a proud of their mountain heritage. One of West's relatives was the founder of the Heifer Project and West has continued the family tradition.

The Center is operated as a summer camp where kids can spend the summer learning skills. A major event each summer is the folk music festival which attracts thousands of people from all over the country.

After visiting at Pipestem the Fitzkees took the four remaining colonies of bees and the sixteen rabbits to Jackson, Kentucky where they were distributed to young people in that area through the Grass Roots Economic Center. This organization works in cooperation with 4-H clubs to teach youth how to manage livestock projects in the anticipation that they may become self-sufficient.

Dan Fitzkee put a lot of time and effort into the project and a great many other people contributed, too. I think it's a heartwarming story.

RECIPE

Red sour cherries are ripe now and we have the promise of a pie for the coming weekend. It's a once a year treat which we anticipate. Instead of pie I made a quart of the delicious tasting fruit into a Cherry Pineapple Jam.

SOUR CHERRY PINEAPPLE JAM: 3 quarts of cherries (enough to make about 5 cups when stemmed and pitted), 3½ cups sugar, 1 cup honey, 2-8oz. cans crushed unsweetened pineapple. Rinse, stem, and pit cherries. Chop coarsely in a food processor or grinder. Place in a large kettle and add the sugar and honey. Let stand several hours or overnight, stirring occasionally. Bring to a boil and boil 3 minutes. Stir in the undrained pineapple and bring to a boil again. Continue to boil, stirring often, until mixture thickens — about 12 minutes. To test, pour a small amount on a cold plate. If it jells it is done. Remove from heat, skim surface. Ladle into clean hot jars. Wipe edges clean and seal.

Questions and Answers

Q. How can one find the area where drones congregate? Are they there for only a limited period of time daily? If an apiary has no unmated queens will the drones still be in the area?

Is it possible or has anyone tried to artificially inseminate a queen that has been laying for some time, perhaps a year or so later? L.O., Ohio

A. We must admit we have very little knowledge of the drone congregation areas of our own neighborhood. Scientists who have made studies of drone congregation areas have published some reports but much more remains to be learned. To answer your questions: Drone congregation areas are difficult to find as they may be at various distances from an apiary and are at some distance above the ground. Only during certain hours of the day, sometime during midafternoon usually, do the drones fly to the congregating area. During peak mating periods in the spring the largest numbers of drones are undoubtedly present, but I am sure there are always a few around during the balance of the active season.

★ ★ ★ ★ ★ ★

Q. I have about decided that the best thing to do with a swarm is to quickly replace the queen with a young one because the queen with a swarm was probably so old she would soon have to be replaced.

Has any research been done or a periodic count or estimate of brood in a hive just after a swarm has been hived that would furnish a guideline for judging the queen? How soon would she be expected to have a normal amount of brood? H.C., North Carolina

A. Undoubtedly much speculation has occurred among beekeepers regarding the vigor of queens accompanying swarms. It is not uncommon for queens of a hived swarm to be superceded, although others may provide a full season of egg laying and a strong colony during the late season. Supersedure usually takes place for good reason although the reason is sometimes evident only to the bees. A visual inspection of the brood nest is the most simple and certainly the most reliable indicator of the condition of the queen once the swarm has become established. Queens accompanying a swarm are usually of an indeterminate age. This is because swarms are usually from hives whose identity, and consequently, record, is unknown. This leaves few clues to the queen's capability until she begins to lay eggs. A queen accompanying a swarm should start to lay eggs in a matter of a day or two or perhaps in only a matter of a few hours if drawn comb is available and prepared. I would expect the queen in a large swarm to be pretty good because her egg laying produced the bees that caused the swarm to issue, but how long is anyone's guess.

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Q. Recently during a discussion on "laying workers" the following idea was offered as a way to save the colony. Take the hive 40 or 50 feet away from the stand, take all the bees out and put it back on the stand. The theory being that laying workers are so heavy they can't fly and all that is needed is to introduce a new queen. Is this truth or fiction? Will young workers that have never left the hive find their way back? Approximately how long will a colony be queenless before laying workers appear? R.S., Ohio.

A. I suspect this is closer to fiction than reality, but I cannot cite proof that laying workers can or cannot return to the hive. I have tried this but in my only experience it did not work; the hive would not accept a new queen. A worker bee, laying worker or otherwise, would have to be rendered nearly totally disabled before she would succumb outside the hive. I cannot imagine this being the fate of a laying worker who is carrying possibly a limited number of eggs. Young workers will find their way back to the hive after some momentary confusion.

It normally takes two to three weeks or more before laying workers appear; usually after a colony becomes hopelessly queenless, although the time factor is subject to variation due to other factors. One factor may be related to the degree of development of the egg laying capability of the workers. The best way to dispose of a cluster of bees with laying workers among them is to unite the bees with a strong, queenright colony.

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Q. I, like many hobbyists who work five days a week and maintain an apiary quite distant from home find time consuming swarm control measures somewhat of a handicap, especially if things don't go as planned. It is even more difficult to pick up the swarms that do issue, daily visits are impossible and the result is a lot of bees do get away. Having expanded to 30 plus hives this year I needed a swarm control measure that fits into my scheme of things. I have read on occasion that requeening in the spring, while expensive, can keep swarming to a minimum or nonexistant provided there is ample room at all times. Is this correct? Are there any pitfalls I should be on the lookout for? I would gladly undergo the expense of buying new queens each year if there was a good possibility of this solving my problem.

A. Keeping young queens in your colonies is one of the most positive things that can be done to prevent excessive swarming. Requeening with young queens is perhaps equal in importance to manipulating brood combs and early supering, measures taken to relieve congestion in the brood chamber.

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Q. I am interested in moving bees in mountainous area to a remote area where there are bears.

Will an electric fence keep the bears out? In the fall this area is loaded with fireweed so I'd like to move them there but can't guard them. L.W., Idaho.

A. Yes, bear fences are effective, within limitations. According to information gathered from beekeepers who have experienced bear raids on their hives, an electrified fence will usually turn an inquisitive bear but not always a powerful, determined or hungry bear. Detailed instructions for building and maintaining an electric

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Questions and Answers

(Continued from page 449)

bear fence are found in the **ABC and XYZ Of Bee Culture** (38th Ed., page 49). Articles on this subject have also appeared in the American and Canadian Bee Journals.

Electric fences are an expensive addition to an apiary but are usually the only alternative to destroyed hives and crop losses. Other methods of preventing bear damage may be tried, including placing the hives on high stands or platforms, using repellants or trapping the bears and removing them to another area. Many harassed beekeepers are forced to kill very destructive bears who hibitually raid beehives, but before doing this the wildlife manager of your district should be consulted.

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Q. I have been interested in beekeeping for the last few years but the opportunity to actually keep bees seemed remote. That all changed this spring with the purchase of seven rural acres on an island. One startling surprise for me in roaming the woods was to discover a colony of bees in a rotting log. As I have no practical experience I will need quite explicit guidelines if it is possible to capture these bees. Would they be "good" bees?

A. You did not say whether the rotten log is standing or had fallen. If the decayed tree is standing it may be safer to fell it first. If the cavity can be exposed in which the bees have built comb, it would be much easier than attempting to trap the bees out of the tree. The transfer of the bees from the tree trunk to a hive is possible but it must be done in the spring or early summer if the bees are to survive the winter. Removing bees from a natural nest is sometimes a difficult procedure and experience working with bees would help you to cope with some of the problems which are likely to arise. Perhaps you can locate an experienced beekeeper in your neighborhood who can be asked to assist or advise you. If you decide to proceed we suggest you consult one of the basic beekeeping books which usually advise you on this procedure.

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Q. Could you tell me if I could use maraschino cherry syrup for fall feeding? The ingredients are: water, corn syrup, sugar, citric acid, natural flavor, artificial color, benzoate of soda, sorbic acid, and sulphur dioxide. Any information you can give me on this will be appreciated. C.M., Missouri.

A. No, we do not recommend feeding this material to honeybees. Any sugar, if it contains extraneous material such as dye, flavoring, starch filler or dirt may be harmful to bees. Pure, granulated beet or cane sugar, or the high fructose sugar syrups are the only satisfactory substitutes for honey. Granulated white sugar is nearly pure sucrose while HFS (high fructose syrup) is mainly glucose and fructose, the sugars of honey.

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Q. I am disappointed that I cannot find sodium sulfathiazole. I have a friend who I assisted in becoming a beekeeper. He has spent quite a lot for equipment and bees, but he doesn't know how to care for them. They all died last winter, but there was quite a lot of honey in the hives. It appears some of the brood died last fall. I think it just got chilled. How will I know if it was foulbrood? N.M., Indiana.

Sodium sulfathiazole has been removed from the market for use by beekeepers due to the lack of being able to meet the labeling requirements. If there is any doubt about the possibility of the combs being contaminated with disese we would suggest your asking for an inspection by your local apiary inspection service. If you do not know who this individual is or have none, one of your county agricultural agents can refer you to your regional or state apiarist for information.

Terramycin labeled for beekeeping use can be purchased for preventive freeding of bees and has proven very effective. It can be purchased at most bee supply outlets.

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Q. For many years I enjoyed your magazine but due to circumstances I was unable to have bees.

I am now retired and in the Panhandle of Idaho and have purchased eight hives of bees in eight-frame hives which are new to me. My question is: Are 8-frame hives a disadvantage? L.W., Idaho.

A. Eight-frame hives are no longer being manufactured by the major bee supply companies but many are still in use and may continue to be made by individuals making their own hives. I have four in use and can see no distinct disadvantages to the average hobby beekeeper. The standard ten frame hive has a greater capacity for brood rearing and for honey storage space and is better suited for migratory beekeeping and pollination. The eight-frame hive was popular with comb honey producers who needed the compact brood nest and a concentrated honey storage space. Some of the older beemasters such as Dr. C.C. Miller used eight-frame size hives to produce comb honey. They use the standard depth Hoffman frames. The eight-frame super or hive body has a height of 9½ inches, a width of 13¾ inches and a length of 19⅞ or 20 inches.

Michigan Beekeepers File Resolution

The Executive Board and the Membership of the Char-Em Beekeepers' Association, an affiliate of the Michigan Beekeepers Association unanimously approved the following resolution which was sent to Dean Pridgeon, Director of Agriculture, with copies to William Millikin, Governor; State Senator Mich Irwin and State Representatives Steve Andrews and Charles Varnum:

Whereas, it is our opinion that the microencapsulated insecticides are too hazardous to be applied to any area at any time when honeybees are present; therefore, be it resolved that the Char-Em Beekeepers' Association request the Michigan Department of Agriculture (Plant Industry Division) prohibit the application of microencapsulated Methyl Parathion known as Penncap M® to corn, barley and oats.

Joan Hass, President

Siftings

By CHARLES MRAZ
Box 127
Middlebury, VT 05753

IN THE SPRING issue of *Canadian Beekeeping* is an article, entitled "A Modern Approach To Producing Honey", that disturbs me very much. I only hope beekeepers do not take this "modern approach" seriously advocated in this article. It is a trend several beekeepers are advocating, and as a honey packer as well as a beekeeper, I believe this "modern approach" to beekeeping will do more to destroy our honey market than anything a commercial beekeeper can do.

Basically, this "modern approach" takes pride in producing the most honey with the least amount of wax by removing the full supers before the combs are sealed. Actually, it is not honey yet, it is still nectar with a high level of moisture. I've seen "honey" extracted in Canada with as much as 22% moisture.

This "modern approach" is to place the supers of green honey in a warm room with circulating air and reduce the moisture down to 18%. The author-beekeeper seems to indicate that he knows how to "ripen" honey better than the bees do, in a hot room. The aim is to produce 540 lbs. of honey for every pound of wax. That is over 10 standard or over 15 shallow supers full of honey and removing only 1 lb. of wax capping from all these supers. It should be obvious almost none of this honey is ripened by the bees and not sealed over with wax. The claim is made that bees waste too much time making wax and sealing the combs of honey after it is properly ripened by the bees.

Personally, I do not believe any beekeeper knows how to "ripen" honey better than the bees do. Also, it is a question if allowing bees to ripen the honey and seal the combs actually reduces the pounds of honey the bees will produce. I doubt it very much, I believe they will produce just as much if the supers are left on the hives until they are all sealed before removal.

The disturbing part of this "modern approach" of producing honey is that the beekeepers advocating this program do not seem to know what they are doing to the honey. No doubt they get rid of it fast. If the honey ferments in storage, it is the unfortunate buyer that is stuck in more ways than one with fermented honey. Dr. Gordon Townsend, I believe, considers 17.2% moisture is the "break point" for honey fermentation. Less than 17.2% honey is not likely to ferment; above 17.2% moisture, it can ferment on storage, especially the following summer if it is kept that long without sterilizing it by heat to kill the sugar tolerant yeasts.

"...Much to their surprise they say it is delicious. 'Now that kind of honey I can eat ..."

It is true, green honey when first extracted does not have too bad a flavor, but let that honey stand for several months and the flavor becomes so bad sometimes, it is impossible to eat it. While there may not be active fermentation a change comes over the thin honey that gives it a sharp, burning, disagreeable flavor. If beekeepers are going to sell that kind of honey to the public, how can we expect people to buy it if it taste so bad they cannot eat it? When people tell you, "I don't like honey and never eat it", that is the kind of honey they are referring to. Many people have told me they normally do not like honey, but they tasted my honey and much to their surprise they say it is delicious. "Now that kind of honey I can eat", they tell me. Just by trying to make an extra buck by not letting the bees ripen the honey properly, this "modern approach" can ruin the honey market. Actually, by letting bees ripen the honey, you get that extra wax @ $2.00 per lb. and I am sure it does not decrease the amount of honey produced a particle. And you will produce honey that is delicious to eat, honey that people are willing to buy.

I do hope commercial beekeepers will do all they can to produce only ripened honey from combs that have been completely sealed before extracting. Only then does the honey develop the smooth, mellow, delicious flavor by preserving the aroma of the clover blossoms. Have you ever smelled a clover field in bloom? The way that clover smells is the way the honey should taste. If your honey does not sell, do not blame the buyer or the market or the economic conditions; you must blame yourself. If you produce green, high moisture honey, then you are the cause of a poor honey market and low prices. Can you imagine what can happen to such honey on government loan that is put into storage and the barrels start blowing up? If the beekeeper that produces such honey had it happen to him a few times, barrels blowing up with fermentation, they will realize that to try to earn an extra buck, they can lose the whole crop of honey.

It is true also, honey buyers are also often to blame. Many of them pay no attention to the quality of the honey, perhaps only the color. Many of them will pay no more for 14.5% moisture honey than for 18.5% moisture honey. Personally, I believe any honey over 17% moisture should no longer be called honey, it is then nothing more than a "cheap syrup". If buyers will demand low moisture honey and pay more for it, then the producer has more incentive to produce good quality honey, even if he has to produce more beeswax to do it. At $2.00 per lb., the wax can indeed make a sizable additional income. I buy lots of clover honey every year besides our own production, and I must admit, to try and find good flavored, low moisture honey is not easy. Not all commercial beekeepers make an effort to produce well ripened, low moisture honey. It is a serious problem, more serious than one realizes unless you are close to your honey customers, as we are.

Speaking of beeswax, there is an excellent article by Robert Berthold in the June, 1981 *Gleanings*, page 298. Beeswax has many unique properties that are not found in vegetable and mineral waxes. In its use in

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HERE'S TO YOU HONEY by Joe Parkhill. Country Bazaar Publishing and Distributing, Rt. 2, Box 190, Berryville, Arkansas 72616. 168 pages. $6.95 plus 80¢ for postage and handling.

The author, a lecturer and nutrition consultant has brought out this book which contains over 300 taste tested recipes. It features recipes for the use of honey in canning, cooking with honey and using honey in preventive medicine. The book also contains health hints, beauty ideas and facts about the origin of honey.

The book has a full color cover and is spiral bound to lie flat.

On the whole it's a plus for the honey industry by a faithful promoter of our product.

L. Goltz

BEEKEEPING IN THE MIDWEST, by Elbert R. Jaycox, third edition. Urbana, Illinois: Cooperative Extension Service, University of Illinois, 1981, 169 pages, $2.50 ppd.

Backlot beekeepers would have a hard time finding a better book than this on the basics of beekeeping, or one at a better price. The original edition was called **BEEKEEPING IN ILLINOIS**, but even the revised title is too limited. The fundamentals of apiculture covered in this book are valid almost any place in the world.

The book is well organized and clear, with an especially valuable section on miscellaneous techniques in beekeeping. It is also beautifully and profusely illustrated with photographs by Dr. Jaycox. And there are many excellent line drawings showing how to make such things as a bee veil, pollen trap, wiring board, and so on.

One aspect of beekeeping that is not dealt with much is raising comb honey, and there is no reference whatever to the use of round sections, which is certainly one of the most significant developments in apiculture in many years.

Still, a serious backlotter could hardly do better than follow the procedures outlined in this splendid book. Order from Agricultural Publications Office, 123 Mumford Hall, 1301 W. Gregory, Urbana, IL 61801.

Richard Taylor

Siftings

(Continued from page 451)

cosmetics, it does not cause allergic reactions, as stated in the article. It is used in lipstick, but perhaps its greatest use in cosmetics is in making "cold creams" of various types. It is possible to make cosmetic creams with other waxes but there is an important difference. Beeswax has been used for cold creams for over 2,000 years. The basic formula then and now is beeswax, and water containing a small amount of Borax as an emulsifying agent. The melted wax is stirred into the water-Borax mixture to make a smooth cream. It can be scented and mixed with other ingredients for special formulations.

Creams made in this way with mineral and vegetable waxes will also emulsify, but on standing for a period of time, the wax will separate from the water and it is no longer a cream, just a layer of wax and a layer of water. Beeswax is the only wax that will make a stable emulsion that will not separate. Any beekeeper interested in making their own "face creams" can have a lot of fun experimenting with some of their fine, clean yellow capping wax that makes the best fragrant cold cream.

Another use for beeswax is for a polish, especially on wood. It is usually mixed with turpentine, about half and half, to make a paste as described in the article. The wood can first be stained and sealed with a wood filler. Then when completely dry, it should be made smooth with steel wool. Apply the beeswax paste very thin, and polish a little at a time. It is hard work if there is a lot of wood to polish, but when you are finished you have a finish that will last almost forever. I polished all the natural finish wood work in our house with beeswax 30 years ago. It hasn't been touched since and looks just as good as the day it was polished. Nothing sticks to it and just a wipe cleans off any dust or accumulation.

Wax polish can also be made with mineral waxes, but it is not the same. If you polish a piece of furniture, half with beeswax and half with mineral wax polish, you will see the difference. There isn't any difference at first, for a couple of months it will look the same. However, if you wait a few months, then you will see the mineral wax in the polish starting to crystalize. This gives the polish a gray cast and no longer brings out the grain of the wood. The beeswax polish will stay clear for more than a 100 years without loosing it luster.

In ancient Rome, beeswax was used in encaustic painting. The wax was colored and used as a paint. Some of these encaustic paintings still exist today, just as good as they were 2,000 years ago.

These are only a few of the advantages of beeswax over other types of waxes. In spite of advances in chemistry, beeswax for many uses is still the best and in some cases the only wax that can be used in certain applications. This is all the more reason to avoid this "modern approach" to honey production where the objective is to produce the most honey with the least amount of wax cappings. It should be the other way, honey should be extracted only when the combs are completely sealed to produce the most wax and at the same time produce honey of the best quality. There is no better combination.

Page 306, July *Gleanings* it mentions that high fructose corn syrup is favorable for brood production. A beekeeper friend of mine in Florida said exclusive high fructose corn syrup feeding after 2 weeks, caused the brood to die off. Who is right? Perhaps the difference is whether or not the bees are also collecting some honey at the same time. I believe that bees with nothing but sugar syrup or corn syrup, will not produce brood. There must be some honey along with it. Some 30 years ago I observed that bees wintered on a super of honey were much stronger in the spring than bees that had sugar syrup for winter feed. At least this is the way it looked on about 1,000 colonies of bees that I used to feed for many

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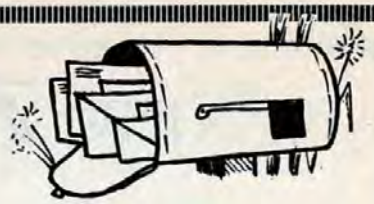
Gleanings Mail Box



Congratulations!

Dear Editor:

Would it be possible to give congratulations to Clark Alexander of Euart, Mich. for being a beekeeper for 60 years in August? He runs his operation by steam power. He'll be 75 years young on Sept. 1.

As a little boy he always loved steam and bees. He trapped woodchucks to buy his first bee hive. As a lad he ran away from home, to help a man in a saw mill.

In 1969 he was named the Bee Master of the Year by Baxter Woodman, being the only person in the United States running his operation by steam power.

Mrs. Clark Alexander
Euart, Mich.

Open Letter To Dr. Richard Taylor

Dear Dr. Taylor, Dear Friend and Humanitarian:

I have followed your articles AND your gentle philosophy for I don't remember how long. I read your books and have some of them. Most of the time you "took the words out of my mouth". Your article on Page 130, March 1981 of *Gleanings* is the one that prompts me to write. The gentle treatment of creatures, bees, snakes and leaving the baby mice alone. Because motherhood is sacred. Even for the mice. How many times have I encountered the rattlesnakes in my small apiaries in the orchards, I fail to recall. But I never harmed, or killed any of them. As a matter of fact, as they usually came out from under the bottom board support I have let them go, or very carefully picked up the occasional lazy "squater" and let it go gently in the canyon. Not one has ever tried to bite me and that is for over seventeen years in this neck of the woods. And half a dozen to a dozen "encounters" per year on the average .... It is heartwarming to know, that reasonable gentleness is alive and well in America and kept alive by the (hopefully) many-many Richard Taylors. And you are "getting through" wide and far. I have just received and have in front of me the Hungarian Beekeeper Magazine "*Mehszet*" ("Beekeeping"). April 1981, page 68, 69. A detailed review of your book "*How to Raise Beautiful Comb Honey*". In my native Hungarian it is a recognition of your skill, knowledge and thoroughness almost on the scale of a local major book. I wish you many-many years in good health and all the best with many thanks.

Alexander Alt
Santa Barbara, CA

A Long Time Beekeeper

Dear Editor:

Thanks for the nice article and my picture in the March *Gleanings*. I have been keeping bees continually since 1900.

Roy E. Wiseman
Elk Garden, WV

A Long Time Subscriber

Dear Editor:

I have been a subscriber to *Gleanings* for 79 years. I am 93 years old and have worked with bees for 81 years. I once had over 1,000 colonies and I still have 12 to play with. I was at the American Beekeeping Federation in Seattle and I wanted to meet you but they told me you were not there. I wanted to tell you about a slatted bottom board which I have under my hives. For four years I have had only four swarms. I also had some very good experiences in my life curing some very bad cases of arthritis with bee venom. I told you about this a few years ago but for some reason or other you did not publish it. Since that time *Gleanings* has mentioned it quite often. Some 50 or 60 years ago *Gleanings* had lots of write-ups about arthritis.

Edmund Ulrich
Filer, Idaho

On Pesticides

Dear Editor:

Mr. Richard R. Cater's letter, which was published in the July issue of *Gleanings*, raises some points that need further clarification. The writer takes exception to some statements Charles Mraz made in the June issue of *Gleanings*.

I have no interest in getting into a pro and con argument with either of these gentlemen, but the subject of pesticides and bees as outlined in Mr. Cater's letter needs further comment since it implies that the Environmental Protection Agency and the chemical companies will eventually solve our problems if we stop pointing fingers and work together. Working with all parties concerned is certainly the thing to do, and many beekeepers and their associations are doing that very thing with some degree of success, but THIS AIN'T GONNA BE ANY BREAKTHROUGH.

Cater Said —

"... with the development and implementation of Integrated Pest Management Programs, the number of pesticide applications has been reduced and those still applied are better timed to maximize pest control ...."

This seems to imply that the Integrated Pest Management (IPM) is a well established program and is widely used by farmers. On the contrary, except in a few isolated cases this voluntary program has hardly seen the light of day. Beekeepers have been hopeful that farmers would incorporate this technique in their pest control since its widespread use would materially reduce bee losses to pesticides. Realistically, we know that wide acceptance among farmers is years away. Also, we feel that due to the shortage of funds the government agencies charged with the responsibility of promoting the IPM technique will not be able to accomplish very much.

Mr. Cater's reference to the role of EPA in the registration of pesticides fails to cover several important points. The following needs clarification —

"... It now takes approximately 7½ years from the time a product is synthesized until it receives its final EPA registration for use in the marketplace. During this time, extensive studies are run on human health risks, pest control effectiveness, effect on predators (as well as bees, birds and fish) and how it will interact and decompose in the environment ..."

(Continued on page 455)

New Zealand Honey Dew

"Honey with strong, distinctive flavors are not popular with everyone."

By KEN STEVENS
Devon, England

THE BLACK BEECH is a forest tree that grows up to 25m tall and covers the rolling mountain slopes with a somewhat sombre green. Other types of beech, mountain, hard and red are also to be found in the northern part of South Island, New Zealand as are a number of different honey dew producing insects.

The bark of young trees is pale and smooth if protected from the attentions of larger mammals, while that of many of the older specimens is darker and anything but smooth as it is deeply furrowed and flaky. It has made a significant difference to honey crops in these areas that a small insect makes its home in the bark. Suffering from the name of *Ultraceelostoma assimile* (it does not seem to have a common name) this tiny pink creature goes through various stages. During one of these it burrows out of sight into the easily penetrable bark and plugs its stylet into the phloem tissue to feed on the abundant sap. Its presence is made obvious by a "give-away" waxy, anal tube about 4mm long. This silvery duct sticks out from the bark like a piece of cotton. Beekeepers refer to it as a whisker or thread and at the very tip, a globule of clear liquid forms, shining like a small jewel in the sunlight and waggling in the lightest breeze so that the syrupy droplet can be dislodged and allowed to fall away. Like the acres of blooms that go unvisited in many lands, most of this health food goes to waste. It hangs, probably an embarrassment to the small creature, until it drops onto the bark to form a sweet, sticky smear.

When removed by bees or wasps, it soon reforms and it has been calculated that up to four times as much is exuded when the bees draw it into their proboscises. If one touches the honey dew with a finger tip it will leave a colorless wet mark which proves to be sweet to the tongue. It seems to be thicker than 2:1 syrup and bees have to develop considerable skill to harvest it, preferring most other sources if these are available.

It has been found that 330 droplets only make one millilitre and it is estimated that two million droplets go to form a kilo of honey. Single hive weight increases of 15 kg in a day and 300 kg per season have been recorded. Wherever the sticky secretion falls, a large family of sooty molds develop, clothing everything with a black velvety fungus somewhat like "undersealing" on a car though nearer 5mm thick. The jet black haulms, carcoaled against the sunlit greenery, make a stark contrast to the little whisps that bear the shining honey dew. Rarely one finds an opague drop and sometimes one tinged with pink.

Naive Foragers

Doubtless you'd expect a strong colony, moved into such an area in still, warm weather to fill super upon super. But surprise! Blundering, dopey bees stumble about on the bark seeming quite uncertain as to how to collect the super-abundant sweetness. They lick at the black mold, stagger about with wings outstretched and bump into the threads. One bee has a bead of juice upon its abdomen, another between its eyes, while yet others have sticky wings or glued-up thoraxes. Sadly, here and there one even finds a bee that has succumbed. Ants are too few to cart them off, even if not busy with the honey dew themselves and they remain wedged into crevices as if caught by low overnight temperatures.

Strong colonies have been reduced to the strength of nuclei in this way but versatile little learners that they are, experience is gained and passed on to recruits so that not only are tongues lashed out to lock the dew onto the proboscises before it can touch their bodies but it is found that colonies moved out of the beech forests to work the rata or the kamahi, fly straight to the bark of these trees ignoring the flowers, though in these cases they only waste time, not lives.

Honeys with strong distinctive flavors are not popular with everyone. Heather and buckwheat fall into this category. So when we discover that beech honey dew honey also has a distinctive flavor that can be detected by those with a sensitive palate, right down to a 5% mix, then it is not surprising that some people do not like it. As honey dew does not have a popular reception in many countries, New Zealanders for a long time considered it suitable only for winter stores. For this purpose it was good as it has a low moisture content and does not granulate. However, its consitituents are such that it compares favorably with any other honey and it now fetches the highest price when exported to connoisseurs like the Germans and the Japanese.

Although the life cycles of the *U. assimile* go right on through the year, honey dew is normally harvested in two flows, one early and one late. Bees on the honey dew were seen to be avidly working buttercups for pollen. In some places, as with pine tree honey dew, pollen can be scarce. This together with the rather sticky and difficult nature of the honey dew collection often prevents colonies from doing as well as they otherwise might, though in spite of this some extremely good crops have been harvested. Where hives are left to winter in the "bush", apiaries have died out — almost certainly through lack of pollen, though wasps need man's intervention to prevent depredations too.

The wholesale development of these honey dew in the New Zealand bush is at present limited by the inaccessibility of large areas which, like flowers born to blush unseen, waste their honey dew in the deserted glare (with apologies). □

NOTICE

Through an oversight the Beekeepers Association of Northern California was not included in the list of Beekeeping Associations of California. This list was a part of the article titled "The Anatomy Of The Honey Bee Club" in the July 1981 issue. The contact person is Ray Diltz, 3992 Mary Ave., Marysville, CA 95901.

Editor

Gleanings mail box

(Continued from page 453)

As near as we can determine, the EPA did not give very much attention to honeybees during its earlier years. We were advised about one of their policy changes on January 26, 1979 —

"... In view of the importance of nontarget insects to pollination and natural pest control efforts, we have decided that fish and wildlife hazard evaluations should also include information on the effects of nontarget insects, including honeybees ..."

Since this rule was changed, the bee industry has netted very little consideration. Unless things change the EPA's rule making, we will receive very little consideration in the future.

As near as we can determine, this agency violated its own rules when Penncap-M® was originally approved for use on crops where bees were foraging. And it appears that this violation was magnified when this deadly bee killer was approved for use on corn. We feel that the registration of Penncap-M® was premature since EPA does not have sufficient data on its effect on pollinators, its persistence in the environment, and its chronic toxicity to birds, acquatic organisms and mammals.

EPA officials have reminded us many times that the restrictive wording on the pesticide labels does not permit the use of pesticides where bees are foraging. We agree that our losses would be lessened considerably if the label requirements were enforced, but we have learned of no instance where enforcement has been practiced. We feel that the wording on the label is worthless as far as saving bees is concerned.

In conclusion, I repeat the points that needed further discussion in Mr. Cater's letter —

1. The Integrated Pest Management is still in the bud stage.

2. The Environmental Protection Agency cannot give us very much consideration under its present regulations.

. I hope that I have disagreed with Mr. Cater without being disagreeable.

Sincerely,
Glenn Gibson, Executive Secretary
THE AMERICAN HONEY
PRODUCERS ASSN.

In Search Of The Ambrosius Hive

(Continued from page 442)

patron saint of beekeepers. At some point of time which is unknown to me, a few beekeepers in the predominantly Catholic provinces of Brabant and Limburg began to fashion hives of straw in the shape of the saint. A single Ambrosius hive placed in the center of a row of ordinary skeps would, it was hoped, protect all the hives from harm. Up to the Twentieth Century such hives were still being used, although I suspect with a good deal of care being taken to protect them from the weather. Now, as we believed, they had become museum pieces.

We jump forward to April, 1979. We are again in Holland, visiting a bee fair in Driebergen. What fun! Men, women and childern are thronging around the exhibits in a small school yard, jostling cheerfully for a look. (Dutch fairs are always crowded). Here one can buy smokers and tools of ingenious design, sleek modern hives and straw skeps, their undersides covered with sheets, full of bees, a few escaping and clinging to the straw. Winter heath is in bloom and hundreds of plants in paper pots can be had in either pink or white for the equivalent of fifty cents each. Several bees have discovered the *erica carnea* and are getting right to work. The mixed aroma of honey and flowers is heady. And there on a table, blessing us all, is a real, in-the-flesh — that is in-the-straw Ambrosius. He is wearing a sign "Niet te koop" (not for sale). Johan makes a few inquires and learns that this is the only Ambrosius in the possession of his owner, who does not know of any others for sale. However, he has seen one or two others around at other beekeeping affairs. Johan and I sigh, but we will have no time to pursue our quest for an Ambrosius hive during this brief visit.

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Honey Imports

"Total imports of honey by the nine countries belonging to the European Community in the late 1970's nearly doubled in value."

By J. B. PARKER
Burke, VA 22015

THE ADDITION of Greece to the prosperous nine members of the European Community recently will not interrupt the steady upward trend in total EC honey imports. Greek honey exports have been in the vicinity of $2 million annually in recent years and over half of those shipments went to the nine EC countries. The future entry of Spain and Portugal should not inhibit the steady growth in EC imports of honey from Mexico, Argentina, China, Eastern Europe and the United States.

Total imports of honey by the nine countries belonging to the European Community in the late 1970's nearly doubled in value — rising from $74 million in 1975 to $138 million in 1979. Further gains occurred as larger imports of honey from Latin America, China and Eastern Europe arrived in 1980. Higher prices accounted for part of the growth in the value of their honey imports. The quantity of EC imports of honey rose from 84,300 tons in 1975 to 113,100 tons in 1979.

The leading supplier of EC honey imports during all of the 1970's was Mexico. EC imports of honey from Mexico increased steadily from 15,500 tons in 1975 to 31,300 tons in 1979 and the value during the period increased from $12.7 million to $34.3 million. The second major supplier was Argentina throughout the late 1970's, with deliveries valued at $20 million in 1979.

China has expanded orchards of apples, pears, peaches and oranges in recent years. With pleasant surroundings in the orchard areas more Chinese have taken advantages of the government programs designed to boost the out put of honey, particularly for export. EC imports of honey from China (mainland) increased from 8,600 tons in 1975 to 17,000 tons in 1979 and the value soared from $6.6 million to $18 million. The most striking increase occurred in 1979 when Peking (now officially named Bejiing) planners made extra efforts to boost China's honey exports. China ranked next to Canada as the leading foreign supplier of U.S. honey in 1980 and may have surpassed Argentina to become the second major supplier of EC honey imports.

Continuous gains have been made by East European countries and the Soviet Union in their sales of honey to the Soviet Union. Bee culture seems to be a honey activity which communist countries allow farmers to pursue in their private plots. EC imports of honey from Hungary increased from 3,600 tons in 1976 to 4,800 tons in 1979 and the value rose from $3.5 million to $6.9 millon. The second major East European supplier of EC honey imports in 1979 was Rumania, supplying 3,300 tons valued at $4.3 million. EC imports of honey from Soviet Union increased from 1,100 tons in 1976 to 3,400 tons valued at $3.2 million in 1979. EC imports of honey from Bulgaria increased from 717 tons in 1977 to 1,633 tons in 1978, but fell to 1,372 tons in 1979. Czechoslovakia's deliveries of honey to EC drifted downward from 1,293 tons in 1975 to 690 tons in 1979. EC imports of honey from East Germany, Poland and Yugoslavia were each valued at less than $100,000 in 1979.

"Some of the reason for the steady growth EC imports of honey include the increase in demand for all kinds of health food."

Cuba was important as a supplier of 6,400 tons of honey to the EC in 1975, but by 1979 their deliveries had fallen to only 2,700 tons. Cuban output of honey didn't increase enough to provide adequate supplier for domestic demand and to maintain export volume at the previous level.

The EC is a major market for honey exports by a number of Latin American countries. EC imports of honey from El Salvador exceeded 1,400 tons annually during 1976-79. Their imports from Brazil averaged about 550 tons annually during 1976-79, compared with 1,640 tons in 1975. Domestic demand in Brazil has increased rapidly and the attractiveness of exporting has lessened. EC imports of honey from Guatemala averaged about 2,550 tons annually during the 1975-79 period. Uruquay sent more than 500 tons of honey annually to the EC during the last four years. EC imports of Chilean honey exceed 1,00 tons annually.

EC imports of honey from the United States reached 4,000 tons in 1979 valued at $5.6 million — up from 2,087 tons in 1975 valued at $2.3 million. Imports of Canadian honey by the Ec increased steadily from 1,500 tons in 1975 to 3,431 tons in 1979 and the value rose to $4.8 million in 1979 — up from $1.8 million in 1975. The upward trend in Canadian honey exports to the EC was even more pronounced than the growth in U.S. sales. Exports of U.S. honey to West Germany increased from $1.0

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The European Community: Imports of honey by quantity and value and country of origin, annual 1975-79

Country of Origin	1975	1976	1977	1978	1979	1975	1976	1977	1978	1979
	Thousand Metric Tons					1,000 Dollars				
Total	84.3	81.6	86.8	98.6	113.1	74,448	68,655	78,496	104,663	138,195
Mexico	15.5	17.4	30.6	31.0	31.3	12,727	13,461	24,513	26,804	34,318
Argentina	9.1	10.6	10.5	15.6	17.5	7,591	8,256	9,142	15,260	20,128
China (PRC)	8.6	8.9	5.3	8.1	17.0	6,556	6,269	4,372	7,764	18,173
Hungary	4.6	3.6	4.5	4.3	4.8	4,600	3,469	4,930	5,450	6,883
West Germany	3.2	3.3	3.0	1.8	3.2	3,242	3,257	3,506	3,426	6,374
United States	2.1	2.2	3.3	3.4	4.0	2,250	2,258	3,086	4,203	5,550
Australia	6.8	6.4	3.3	2.4	4.4	5,335	4,655	2,722	2,401	4,889
Canada	1.5	1.8	2.3	3.0	3.4	1,782	2,068	2,530	3,672	4,816
Romania	3.2	1.7	0.8	1.9	3.3	3,400	1,766	937	2,517	4,280
Soviet Union	2.2	1.1	1.6	2.5	3.4	1,550	750	1,235	2,232	3,208

Source: United Nations Trade Center, Geneva. The official statistics of Denmark, Belgium-Luxembourg, France, Italy, Netherlands, Ireland, United Kingdom and West Germany were used and converted to metric tons and dollars from their trade books.

Bee Talk

(Continued from page 443)

bees! I strode up to a hive, opened it, with only the tiniest bit of smoking, and without veil or gloves or anything, showed them everything there was to see — brood, drones, queen cells, pollen, honey, and of course, the queen herself. Then I gently put the hive back together again, meanwhile splitting out a nuc, with one of the queen cells, to discourage swarming, still with no veil or anything. So it was quite a complete demonstration, not the least important part of which was how to **act** around bees. Of course I didn't get a single sting. But one of the students got **two**. I speculated that it was because he must have been having impure thoughts.

The old-time beekeepers used to have all sorts of mystical notions about the bees and their sagacity. They used to say that you had to talk to the bees a certain way (I go along with that), and how someone had to go deliver the sad news to them if their master died (which is of course nonsense, but quaint and charming nonsense), and all that sort of thing. Contemporary writers on apiculture do not put such foolish things in their books, but even foolish things are at least sometimes fairly harmless, if not taken too literally. And if you saw me with my bees, especially in May, when everything is on my side, then I think you'd have to admit that I am doing **something** right, no matter how foolish it might sound if I tried putting it into words.□

Honey Imports

(Continued from page 456)

million in 1979 to $1.2 million in 1980, but our honey exports to France and the United Kingdom fell sharply in 1980. A reduction of more than 10 percent in U.S. exports of honey to the EC in 1980 meant a reversal of the upward trend which had occurred between 1975 and 1979.

EC imports of honey from Spain declined drastically from 5,223 tons in 1975 to only 1,429 tons in 1979. Greater sales of honey to tourists and a boom in local demand for consumer goods contributed to the reduction in Spanish exports of honey to the EC. Portugal sent token shipments of honey to the EC in 1975, but the loss of supplies of honey from Angola meant that no honey was available for export from Portugal to the EC during 1976-79.

Spain and Portugal have increased their imports of food at a rapid pace in recent years. Spain's imports of honey from all countries increased from only 16 tons in 1978 to 4,263 tons in 1979 valued at $5 million. Total exports of honey by Spain fell from 5,100 tons in 1978 to only 2,132 tons in 1979 and the value tumbled from $6.5 million to $4.0 million. It appears that the sudden change by Spain from a significant honey exporter to a net importer indicates that its entry into the EC will accelerate the growth in total EC honey imports.

Table 2 - The European Community: Imports and Exports of Honey by quantity and value, annual 1977-79.

Imports:	Quantity			Value		
Country	1977	1978	1979	1977	1978	1979
	Metric Tons			1,000 Dollars		
West Germany	51,241	57,656	62,146	45,024	59,490	72,491
United Kingdom	17,216	16,962	17,973	14,654	16,378	20,496
Italy	2,850	3,714	10,100	2,923	4,492	13,066
France	5,074	7,395	7,678	4,900	8,450	10,383
Netherlands	4,288	5,554	6,641	4,680	6,827	9.662
Belgium-Luxembourg	4,084	4,710	5,373	3,951	5,312	6,972
Denmark	1,388	1,994	2,428	1,377	2,395	3,563
Ireland	690	663	769	794	940	1,319
Exports:						
West Germany	2,441	3,801	6,341	3,976	7,264	12,564
France	1,070	1,059	1,169	2,769	3,687	4,487
United Kingdom	1,107	1,406	1,542	1,890	2,08	3,185
Belgium-Luxembourg	1,304	1,401	2,022	1,166	1,560	2,566
Italy	303	318	333	495	586	995
Denmark	133	379	298	233	590	582
Ireland	48	106	88	91	224	301
Netherlands	892	1,184	983	949	1,353	1,587

Sources: Foreign Trade Statistics of specified countries.

EC honey imports during 1981 are likely to range between 130,000 and 145,000 tons. West Germany will continue to be the leading EC importer and exporter of honey. West Germany accounted for over half of the EC imports of honey during the late 1970's. East German honey imports reached 62,146 tons in 1979, in contrast to 17,973 tons imported by the United Kingdom and 10,100 tons imported by Italy. West German exports of honey trended upward during the 1970's reaching 6,341 tons valued at $12.6 million in 1979. Exports of honey by Belgium reached 2,022 tons in 1979 and shipments from the United Kingdom and France each exceeded 1,100 tons. This includes their exports to all countries, not just to other EC markets.

Some of the reasons for the steady growth EC imports of honey include the increase in demand for all types of health food, the relatively reasonable prices for honey in relation to some other foods and the opening of many fast food shops where pancakes and other foods are served with honey. The restaurants and fast food shops provide food for a large number of immigrant workers and for some of them, pancakes with honey may be one of the major meals they have during the day.

Apiculture is Theme of F.A.O. Medal

1981 HAS BEEN designated by the UN General Assembly as the International Year of Disabled Persons. The Food and Agriculture Organization of the United Nations (F.A.O.) has recently issued a medal in bronze, silver and gold to mark this year.

The theme of "apiculture" chosen by F.A.O. for the medal, will surely be appreciated by beekeepers from different countries.

In keeping with the Year's theme of "Full Participation and Equality", the medal was realized through the teamwork of a young handicapped Italian artist, Giorgio Massimi, and a noted medalist, Luciano Zanelli.

They have chosen the theme of apiculture, symbolizing the collaboration of human society by the collaboration of bees — one of the most social of insects — in the production of honey. Bees are shown on both the obverse and reverse of the medal.

FAO Medal

FAO Medal — Reverse Side

The dignity and ability of disabled persons who work is portrayed on the obverse of the medal by the beekeeper, whose protective clothing creates a symbol independent of race or sex. The inscription "FAO ROME" appears at the top of the medal, and a bee gathering nectar from flowers at the bottom.

Metals may be ordered from: FAO Medals (Rome), 1776 F Street NW, Washington, D.C. 20437. The sterling silver medal, 925, 2 inch (50 mm) (50 grams) is priced at $65.00; the gold, 18 caret, 9/10 inch (28 mm) (13 grams) is $320.00 and bronze, 2 inch (50 mm) is $20.00.

Strictly Backlot

(Continued from page 444)

scouting bees; (2) the choice is always for the best nesting place offered."

Meeuse includes an example of how the problem-solving process works — borrowed from the observations of Lindauer: "In the afternoon of June 26, a scout bee from Swarm E came back for the first time with information concerning the Spot S, which was finally chosen by the whole swarm. That afternoon, only one other nest site was announced by another scout. In the course of the next few days, however a total of 27 different spots were considered in the deliberations that took place. In the morning of June 29, there was dancing of 22 scouts indicating 11 different sites; 7 of the scouts had preference for Spot S. Late in the afternoon, many more had joined the bandwagon, so that 61 scouts were now in favor of S, but two stubborn ones still held out for another direction. Even the next morning the haggling was not quite over. At 10 o'clock, however, agreement was complete, and the swarm took off to the new home, S."

von Frisch cooly and succinctly sums it up: "Thus an agreement is reached; all dance the same measure and in the same direction. When everything is ready, the swarm dissolves, to fly off under the direction of hundreds of its members who already know the way to the objective which has been chosen as the best available."

Which is why they flew southwest toward Mt. Gretna and I am more than ever once again astonished. □

Siftings

(Continued from page 452)

years. We no longer feed sugar syrup or any other kind of syrup and haven't for many years. In our cold-winter country bees do far better on honey.

Page 320, July 1981, *Gleanings*, Richard Taylor talks about producing comb honey in shallow supers. We have produced hundreds of shallow supers of comb honey and packed in 4¼" square plastic sandwich boxes. With a steam heated cutter, cutting the combs is no problem. We packed it in plastic boxes. Our main problem now is with our poor honey crops. We seldom get a good honey flow to produce good comb honey and in the past few years demand for comb honey has dropped greatly. The last good crop of cut comb we had, we could not sell it all. For the time being we have gone out of comb honey production. We will still produce some on a small scale as a favor for some of the dealers.

Lessons Learned From An Observation Hive

By CLYDE HIESTAND
Tunisia, Africa

I CONFESS to being influenced by Dr. Richard Taylor's articles: "Beekeeping can lead to so many possiblities — an interest in flowers, weather watching, candle making, carpentry, making an observation hive. Any beekeeper who hasn't branched out into at least one of these isn't worth his salt."

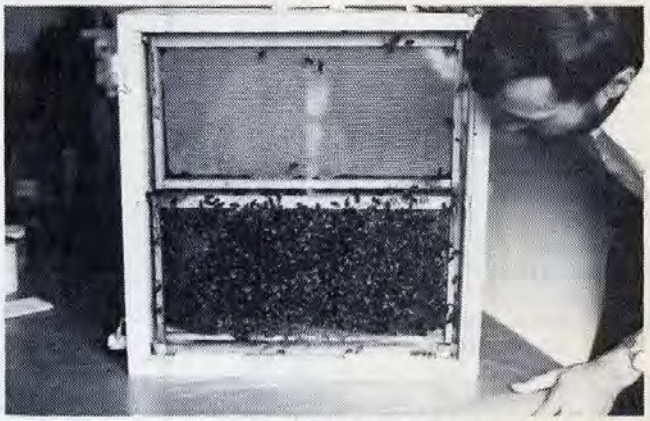
That is my paraphrase of what he probably said so much more poetically! But I got the message. I would make an observation hive.

My regular hive was located out in the country where I couldn't watch the bees. Our home was a tiny efficiency apartment in a 10 story apartment building in Constantine, Algeria. It had a 2 ft. by 6 ft. balcony where I could put the hive. The books said bees could be "induced" to exit through a pipe up to 10 foot in length. So I would put the hive in the middle of the balcony and run a hose over to the side where the bees would slip off to do their foraging unnoticed.

First I scrounged around the local flea markets. New wood is very expensive in North Africa where trees are very scarce. The locals sold and reused old shipping crates. So would I.

Afterwards, many a quiet winter evening was spent creating this observation hive — from pictures recalled from books. My tools were primitive. All the work was done by hand, and some mistakes made — none irremediable — and the result was an observation hive that still gives me a feeling of joy. I had created it with my own hands, all by myself!

One noteworthy moment in the construction process occurred when I carried the partly finished wooden frame out of the glass store to outfit it with glass. Coming back to the building, I noticed a puzzled look on the omnipresent private detective who was assigned to keep an eye on the activities of this crazy foreigner. I still wonder if he ever figured out what I was carrying into the building that day.



Looking into the observation hive. Note tin which slips into a slot effectively closing off the pipe when hive is to be carried to a new location.

Spring comes early in Algeria. I'd fed my big hive and it had swarm cells in February, so I tried to stock the observation hive. Too early! The weather was too cold and it died out before becoming queenright.

My first observation colony perished, but not before I had learned my first lesson: The books don't tell you how to "induce the bees" to get used to exiting through the hose. Well, after penning my bees in the hive the suggested day or so unitl they calmed down, they were spotting up the inside of my nice new observation hive. I wanted to get them to go out quickly, but they just sat there.

I gave up and took off the long extension hose, and of course they exploded into the air. The next step, I figured, was to make the 3 inch pipe a little longer by gradually extending a longer and longer hose on it. Result? Failure! Bees can fly out for miles, but they memorize the entry. If you add one inch of hose on to that pipe they will never find the entrance. So I gave up on that first batch and let them use the short entrance.

On my second attempt to stock the observation hive, I penned them up a shorter time, so they would have more time to "discover" the exit tube themselves before spotting up the hive. (The books hadn't warned me they would do this if penned up too long!)

Bees are clever; but they are stupied too! When I pulled the little tin gate freeing them — my invention — they never thought to explore in the hose and discover the entrance in the end. They never found it! That's when I got the bright idea of pouring a little sugar water down the four feet length of hose, and presto — within 10 minutes the first bees were out making orientation flights.

Soon they were coming in and going out freely. But oops — as I looked up and down the building I saw clouds of bees buzzing inquisitively at the indentical locations off to the side of my neighbors' balconies several stories below and above ours! Fortunately I had thought to put the exit of the pipe to the side, so the bees weren't actually buzzing around directly in front of the balconies, so I don't think many of the neighbors noticed it.

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In Search of the Ambrosius Hive

(Continued from page 455)

Six months later, back in America, we received a letter from Johan's parents. What would we like for Christmas? I answered with some ideas for the childern, and added that Johan and I could think of nothing for ourselves — unless, I added as an afterthought, they happened to locate a beehive shaped like St. Ambrosius. It was a ridiculous request. Johan's parents are in their eighties, not beekeepers, and we could hardly expect that they could find what younger active beekeepers had not been able to lead us to.

But I had not counted on my energetic in-laws. They telephoned a cousin whose husband had kept bees. He called a man who knew a man who made such things, at length my father-in-law found himself talking to Mr. C. van Humen of Edeveen, who had actually made two Ambrosius hives, and could be reluctantly persuaded to part with one. But, wrote my mother-in-law, when you hear the price I am sure you would rather we spend the money on another gift for you, as that is a great deal for a beehive.

Johan and I wrote back that we would like nothing more than this gift, that we had no intention of using it as a beehive, but would display it indoors as a work of folk art. Accepting this explanation, the senior van Achterbergs agreed to bring it to us on their next visit. Meanwhile they would visit Mr. van Hunen and interview him for me. So the following summer Johan's father drove his mother, holding a list of questions from me, to Edeveen and the home of Mr. van Hunen.

Mr. van Hunen kept bees beginning in 1934, but only began making hives in 1973. He was inspired by a cousin of his father. But nobody taught him how to make his first Ambrosius hive. He was at a bee fair in Beekbergen where he saw a photograph of an Ambrosius and determined to make one himself. He used rye straw, "not prepared", for the main body, with bent grass and couch grass for trim. For the beard he used flax, and for the eyes old spoons! The Ambrosius my husband's parents bought was only the second one Mr. van Hunen had made. (He has since made a third). He knows of very few other people who make these nowadays. Indeed these Ambrosius hives are so little known by the general public even in Holland that everyone who sees one of Mr. van Hunen's refers to it as "Sinterklass", after a much more famous Fourth Century bishop, beloved by childern around the world.

One of a very few Ambrosius Hives.

Mr. and Mrs. van Hunen teach classes in straw weaving. After ten evening lessons people from all walks of life are capable of creating a basic hive or basket. Perhaps they will teach one or two gifted pupils who may some day rise to the challenge of making an Ambrosius hive.

On October 3, 1980, Johan's parents arrived for a visit with us in Connecticut. In their eighties, they not only managed to fly five thousand miles to see us, but they brought out our long awaited friend. (We had begun to think of the Ambrosius in anthropomorhic terms.) Vader had spent one whole day wrapping it. The wrapping itself was a work of art. When the customs official had been told that this mummy-like object contained a beehive, he had asked only, "Does it contain any bees?" Receiving a negative answer, he had let it through.

Now Johan's parents are back in Holland, but the Ambrosius remains, gazing benignly over us from his place of honor on the dining room buffet. He seems to bless us as we eat, and he reminds us of the love and energy of his donors, the skill of his maker, and the centuries of tradition that have gone into beekeeping in the Netherlands.

Crops In Clover Need Less Fertilizer

A NEW VERSION of no-till planting saves fertilizer by placing the main crop in a "living mulch" of clover. Researchers at Cornell University, Ithace, N.Y., discovered that clover, when treated with growth suppressors, released nitrogen to the main crop. That decreased the need for conventional nitrogen applications by as much as 50% without affecting yield. Cornell's most successful work was done with atrazine-treated white and ladino clover grown with sweet corn. The nitrogen provided by the clover comes from nitrogen-fixing bacteria in the clover's root nodules.

From *Industry Week*, June 1, 1981.

Lessons Learned From An Observation Hive

(Continued from page 460)

Lesson: God hasn't equipped the bees with the sense to distinguish the height of several identical looking balconies of a modern apartment building. Had I stayed on there, I think I would have tried to paint a circle on the building to mark the 10th floor from all others.

Then, of course, there was all the fun of watching the queen lay her eggs, the pollen coming in, and of seeing the bees suddenly leave the brood cluster one morning at 8:30 when the hot summer sun hit the hive. They spread out as if shot in all directions.

Then there was what I came to call the "crazy hour". Every day from 2:30 to 3:30 PM the bees suddenly break up and scatter in all directions, flying about madly in the air. I've seen it often since in the big hives. The first time I saw it was before I had my observation hive; I thought it was the beginning of a swarm. I'm still puzzled. Is this what the books call orientation flight? But the books say it happens in the late afternoon. I've never read about it in the literature as happening at that time. Are our African black bees different?

The outside of the hive made by author.

Remember my first attempt to stock the observation hive that failed because it was queenless? From it I learned a lesson. Queenless hives **do** bring in pollen! But only halfheartedly, in dibs and dabs. On my second try with a queen (incidentily, I inadvertedly got the queen of the big hive) you should have seen the difference. They brought in huge bursting loads of pollen. The presense of the queen made the difference. Lesson: It is the **size** of the pollen load that indicates the presence or absence of a queen.

Today, when I look at the entrance of a big colony I know things about what's going on inside that I would never had known if I hadn't had an observation hive.

The grand finale of this story came when we had to leave Algeria on 48 hours notice. Officially it was called "invited" to leave.

Only 48 hours to pack! What to leave? Who would look after the hive? My wife said "Why not take it along? "But Honey, they won't allow it on the plane", I said. "Or worse, the glass will break in the plane's luggage compartment, and there will be bees everywhere. Even if they do take it on the plane, the French customs won't accept it," I thought.

However wifey was encouraging, so, in the end the innocent looking observation hive joined our two other suitcases in the little police VW beetle on the special escort to the airport. It was in the back seat between my wife and I, and the driver was blithely unaware of its contents.

Once at the airport, the policeman who committed us to the customs officer barked an order: "Search their bags carefully!"

The unsmiling officer commanded: "Open this suitcase" and proceeded to do a careful search through its contents. The same with the second suitcase. When he came to the observation hive, he said still unsmilingly, "Open this."

I unhooked the door exposing hundreds of now excited bees. The

(Continued on page 464)

Embossed Bee Envelopes Available

EUGENE KILLION, State Apiarist of Illinois, whose father promoted the issuance of the embossed bee stamp envelope advises that the U.S. Postal Service has some of the embossed envelopes remaining for sale. They may be ordered for 19¢ each from the Philatelic Sales Division, U.S. Postal Service, Washington, D.C. 20265. They are listed as follows: #3/4 E 614 and #10 E 114.

The Codfish lays 10,000 eggs;
The homely hen lays one.
The Codfish never cackles
To tell what she has done;
And so we scorn the Codfish
While the humble hen we prize —
Which only goes to show you
That it pays to advertise!

Lessons Learned From An Observation Hive

(Continued from page 462)

customs officer quickly realized that he had come to the limits of his search possibilities of that side.

So he said, "Open the other side." Same result! Meanwhile a crowd of curious people was gathering.

"Hey, they're bees" someone said. Other people moved in to gawk.

At the ludicrous moment, when the agent didn't quite know what to do or make of the situation I couldn't help trying a little humor. Attempting to keep as straight face as I could, I said to him: "Officer, would you like me to open it a little further?"

Somehow he could not, or would not, see the humor of the situation and said simply "No!"

Then, to my surprise, he scribbled his initials on the side of the now closed observation hive and it was free to go.

I was happy to note that the workman who loaded the bags and suitcases, having seen the observation hive's contents, was careful to set it upright on the floor of the baggage cart. I suspected and hoped they would also do the same on the plane.

But would it arrive without the glass breaking? What about the men who unloaded it on the other side of the Mediterranean? And would the French customs accept it?

The answer to the first question was, yes. It arrived intact with only one of the door locks twisted. The bees were understandably rattled by their flight.

However the poor customs officer was nonplussed to know what to do with such unusual cargo. He finally resolved the situation by deciding to charge $5.00 customs fee on the "hive" which he estimated to be worth $50.00.

I was elated. Compared to leaving it behind — never to be retrived again, or being refused at the border, what was $5.00?

I still had my hive!

I put it up on my friend's balcony in Marseilles. Result: He got interested in bees and today he keeps two hives on his roof.

News and Events

MEXICO
XXVIIIth International Apicultural Congress of Apimondia

The 28th International Apicultural Congress will be held in Acapulco, Mexico October 23-29, 1981. The general theme of the Congress will be "Social and Economic Importance of Beekeeping."

Registration forms (A) are available by writing to — Union Nacional De Apicultures, Ave. Uruguay No. 42-101, Mexico, DF. A registration form, filled in, should be mailed in, with fee payment, to the above address. the registration fee for U.S. residents is $110.00. For Apimonida members it is $100.00 and $70.00 for accompanying persons. These fees apply to those who register before August 1st, 1981. After that the fees are $120.00 and $80.00.

Room reservations (Form B) may be arranged through the same address.

Pre-Congress, Post-Congress and study trips and tours during the Congress are available.

SOUTH CAROLINA
South Carolina Beekeeping Association

The South Carolina Beekeepers' Association will hold its Summer Meeting at Clemson University, Clemson, S.C. on August 6,7 and 8. A varied program with a cast of interesting well known speakers is planned.

Rooms will be available at the Clemson House for $5.50 per night plus a $2.00 linen charge.

There is a Chicken Bar-B-Que dinner planned for Friday night at $3.00 per plate.

TEXAS
North Harris County Beekeepers' Association

May 5, 1981 Michele Gilbert was voted Honey Queen of the North Harris County Beekeepers' Association in Houston, Texas. She is a graduate of Aldine High School, she is 18 years old, twirler for the band and earned a years scholarship to Blinn Jr. College.

Michele will represent our club at the Heritage Fair, Sept. 25, 26, and 27 at Spring, Texas. She will also represent us in Mcallen, Texas at the Texas Beekeepers Association meeting in November. Michele will be going all over the Houston area promoting the honey industry and beekeeping. She is the first honey queen in the area.

CANADA
International Symposium on European Foulbrood

The Western world's best known specialists on European foulbrood will meet next October 19 and 20 in Quebec City to discuss this little-known disease to which some researchers attribute important apicultural losses.

All apiculturists who want to know more about the development of this disease in beehives as well as its consequences for the practice of apiculture are cordially invited to attend the international symposium at Quebec.

The registration fee of $35.00 should be mailed to Madame Yvette Fortin, Ministere de Agriculture, des Peacheries Et De Lialimentation, Direction des Communications, 200, Chemin Sainte-Foy, 7E Etage, Quebec, Canada, G1R 4X6.

WEST VIRGINA
West Virginia Honey Festival

Thousands of visitors are expected to swarm to the City Park in Parkersburg, West Virgina, August 14, 15, and 16 to see the bee beard, to watch honey being harvested from the hive and bottled, and to sample the types of honey produced from flower and forest in the Mountain State.

Activities will begin with the coronation of the Honey Princess on Friday evening. Saturday morning honey-powered athletes will complete in the 10,000 meter Mountain State Honey Run. On the same day a panel of judges will select the outstanding honeys and pastries from among those entered in the Honey and Baked Goods Show.

Musical enteriainment, including Bluegrass and Gospel, will be provided each day of the Festival, which will be opened from 5 p.m. to 9 p.m. on Friday, 9 a.m. to 8 p.m. on Saturday and 1 p.m. to 8 p.m. on Sunday.

Barbecued chicken, lemonade and ice-cream prepared with honey will be on sale, along with art and craft items related to honey and beekeeping.

Further information can be obtained from P.O. Box 228, Parkersburg, WV 26101, phone: 304-422-5880.

(Continued on page 471)

Michele Gilbert — North Harris County Honey Queen.

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8 ITALIANS
1

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	1-3	4-25	26-99	100-up
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3-lb. pkg. w/q	26.00	24.90	24.25	23.75
5-lb.pkg. w/q	38.90	38.00	37.00	36.00
Queens	6.50	6.00	5.50	5.00

STARLINE OR MIDNITE

	1-3	4-25	26-99	100-up
2-lb. pkg. w/q	$21.00	$20.25	$19.50	$19.00
3-lb pkg. w/q	26.50	25.50	24.75	24.25
5-lb. pkg. w/q	39.40	38.50	37.50	36.50
Queens	7.00	6.50	6.00	5.50

Prices F.O.B. Jesup
Queenless packages — deduct $3.00 per pkg.
Tested Queens — add $1.50 per pkg. or queen.
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Terms: Small orders cash, larger orders $2.00 deposit per package and balance three weeks prior to shipping date. Allow three weeks for personal checks to clear.

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MAGAZINES

THE AMERICAN BEEKEEPING FEDERATION needs your support; participate in national affairs; receive six issues of the NEWS LETTER per year. The ABF, Inc., 13637 N.W. 39th Avenue, Gainesville, FL 32601.

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

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

THE INTERNATIONAL BEE RESEARCH ASSOCIATION regularly publishes new information on bees, beekeeping, and hive products, for beekeepers and scientists all over the world. Mail inquiries from USA: H. Kolb, P.O. Box 183,, 737 West Main, Edmond, OK 73034, Phone: (405) 314-0984. IBRA PUBLISHES: **Bee World,** a quarterly journal for the progressive beekeeper. **Apicultural Abstracts,** a survey of scientific literature from all languages. **Journal of Apiculture Research,** for original bee research papers. Books and pamphlets on all beekeeping topics. Catalogues of publications and details of journals and membership $1. Specimen copy of **Bee World** $1.50; **Journal of Apicultural Research** $1.50; **Apicultural Abstracts** $2.00, from INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks. SL9 ONR, England.

DAIRY GOATS—for milk, pleasure and profit. Excellent for children, women and family! Monthly magazine $11.00 per year ($13.50 outside U.S.A.). DAIRY GOAT JOURNAL, Box 1808 T-3, Scottsdale, Arizona 85252.

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

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

BEE CRAFT — Official (monthly) magazine of the British Beekeepers Association. Contains interesting and informative articles. Annual Subscription (Sterling cheque 2.22 p.or U.S. $6.) Post paid. The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex, RH10 3DS.

INDIAN BEE JOURNAL Official organ of the All India Beekeepers' Association, 817, Sadashiv Peth, Poona 411030. The only bee journal of India Published in English, issued quarterly. Furnishes information on Indian bees and articles of interest to beekeepers and bee scientists.

Annual subscription postpaid in foreign countries: For individuals US $7.00 for institutions, companies and corporate bodies US $10.00 or it's equivalent, to be received in advance by IMO or bank draft, payable in Poona (India).

"Pollen Natures Life Force" pamphlet is available now to beekeepers at no charge. Champie Pollen Co., 5118 N. 18th Ave., Phoenix Arizona, 85015

MISCELLANEOUS

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

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

HONEY STRAINER, fine mesh fabric bag, approx. 18" x 20", Instructions, Practical, Convenient, reusable. Ppd. $3.00 each, 2 up $2.50 each, Beckman G12, Box 633, Stuart, FL 33495.

DEALERS WANTED — The A.I. Root Company has dealership territories available in the south. The new branch supply located in Athens is ready to serve. If you are interested contact Lee Russell, Branch Mgr., 1700 Commerce Rd., Athens, Ga. 30607. Phone: (404) 548-Root.

INSEMINATION DEVICES. For prices write Otto Mackensen, Box 1557, Buena Vista, CO 81211.

SEEDS

SEEDS OF HONEY PLANTS — Catalog on request. Pellett Gardens, Atlantic, Iowa 50022.

BEESWAX

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

BEESWAX WANTED — Small lots to truck loads. Write or call. **DONALD SCHMIDT,** 859 W. 9th Street, Winner, SD 57580. PH: 605-842-0350.

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

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

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

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HONEY WANTED

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

WANTED — HONEY, all grades, Send samples and price. M. R. Cary Corp., Box 122, Syracuse, N. Y. 13208.

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

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

All Grades of Honey, Any quantity drums or cans. Call Toll Free 800-248-0334. Hubbard Apiaries, Inc., Box 160, Onsted, Michigan 49265.

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

WANTED: comb and all grades of extracted in 60's or drums. Send sample and price to MOORLAND APIARIES INC., 5 Airport Drive, Hopedale, MA 01747.

WANTED—All grades of extracted honey. Send sample and price to MacDonald Honey Co., Sauquoit, New York 13456. Area Code 315-737-5662.

IF YOUR honey is better, I'll pay you more. U.S. or Foreign. Cans, drums. Sample: Allan Hardman, Kawana Honey Company, 2100 Kawana Springs Road, Santa Rosa, CA 95404. (707) 528-4377.

HONEY WANTED: All varieties, any quantity, also comb honey. Office 612 464-4633. Residence 612-633-8371 — 612-457-2409. Nature's Treat, 6764 W. Bdwy., Forest Lake, MN 55025.

WANTED

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

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

WANTED: Used Beekeeping Equipment and Supplies. Also buy working colonies. 6061 Maple St., Omaha, Nebr. 68104, Phone: 556-6174.

TRADE 80 acre farm near New Plymonth, ID valued at $220,000, 74 irrigated acres with 2 bedroom home. For complete apiary or use as collaterial towards contract purchase. P.O. Box 66, Pendleton, OR 97801, Phone: 276-7509.

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PROPOLIS U.S.A., ROUTE 8, HAYWARD, WISC. is again buying hive scrapings and propolis that has had the wax floated off in cold water. Please send a 5 to 10 pound sample if you live south of Illinois border or in treeless plains states. Paying $2.00 to $3.00 for scrapings and $5.00 to $10.00 for concentrated propolis. We also pay shipping costs. NO C.O.D.s except barrels or large shipments by truck freight.

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FRESH, PURE, Bee Pollen available in 1 pound container at $8.50 per pound postpaid. 10 pound bulk pack at $7.90 per pound. Large lots, ask for price. Hubbard Apiaries, Inc.. Onsted. Mich. 49265.

BEEKEEPERS CONSIDER trapping pollen. You can make extra income per hive and still produce your honey crops. For free information on pollen prices and pollen traps, write or call collect to Champie Pollen Co., 5118 N. 18th Ave., Phoenix, AZ 85015. Phone 602-277-0482. We buy pollen from beekeepers and we are not affiliated with any other companies.

BEES & QUEENS FOR SALE

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

NORTHERN CALIFORNIA ITALIAN QUEENS. April 1-May 15. 1-5 $6.00, 6-25 $5.50, 26-99 $5.25, 100 up $5.00. After May 15: 1-5 $5.50, 6-25 $5.00, 26-99 $4.75, 100 up $4.50. Ship air mail post paid and insured. Live delivery guaranteed. Bachman Apiaries, 1801 Calin Lane, Anderson, CA 96007. Phone 916-365-4029.

THREE-STORY Colonies, 81 Queens 9⅝. Locations in Wis. and Fla. Pallets — Supers 9⅝ — Moving Screens — 3 compartment hives 6⅝ NO BEES. Ray's Honey Farm, Raymond C. Meyer, P.O. Box 1822, Appleton, WI 54813, Phone: (414) 734-4017.

ITALIAN QUEENS — APRIL 1-MAY 5: 1-5 $6.50, 6-24 $6.25, 25-99 $6.00, 100-499 $5.50, 500 up $5.00. AFTER MAY 5 20% off RICKARD APIARIES, Rt 1, Box 2241, Anderson, CA 96007. 916-365-5551; 916-365-6556.

FORTY NINE hives — 2-story; 111 Super with drawn comb; 28 frame supers; 612 motorized honey extractor; Kelley Wax Melter withsepator; capping basket; 50 mouse guards; 75 lbs. foundation; 6 hive top feeders; 55 gallon pails; 45 winter tops; 150 grams K.D.; 50 feeders with 2-quart jars; 2 fence chargers and miss items. Reason for selling is health. first $4400 goes! Ed Winnie, 4905 Lyncott, Lansing, MI 48910, Phone 517-882-7800.

FOR SALE: 200 two story hives with bees, over 200 extra hive bodies, extra lids, bottoms, ect. Large truck with boom, 40 frame extractor, uncapper, liquidfier, cappings melter, large storage tanks, plus much more.

$35,00. 408-608-7140, 680 Wildwood Drive, Watsonville, California 95076.

FOUR HUNDERD TWENTY-FIVE two-story colonies, 8-frame with 1981 queens and one super each — 165.00. Also supers, feeders, lids, bottoms, etc. No junk. One or All. Phone: (503) 363-8913.

FOR SALE: 1300 colonies, supers, excellent equipment. Wisconsin and Florida locations. Will divide. Bogen schutz Uncapper, dovetail saw, 100 comb supers. Phone: 608-924-3255.

FOUR HUNDRED 3-frame nuclei, all or part. Package bees and queens, queenless bees, and brooding bees. Walker Apiaries, Rt. 1, Box 34B, Rogers, Texas 76569, Phone: 817-983-2891.

NORTHERN BRED CARNIOLAN queens. $5.00 each, p/p. Glenmont Woods Honey Farm, 6137 Ely Rd., Wooster, Ohio 44691.

FOR SALE 50 hives of bees. Kevin Vinoke, Chesaning, Michigan 48616, Phone: 517-845-36-89.

FIVE HUNDRED single story hives, 1981 queen excellent condition. $40.00 each. Call after 7:00 p.m. W.L. Tate, Rt 2, Millry, AL 36558, Phone: 205-846-2661.

BOOKS

NEW AND OLD Bee Books For Sale: Scout Bottom Farm, Mytholmroyd, Halifax, England.

NEW BEE BOOKS. Send for list. Linden Books, Interlaken, N.Y. 14847

FIFTY YEARS AMONG THE BEES, Dr. Miller's classic now reprinted. $17.95, softcover, $12.50 hardcover. $1.00 postage. New York residents add 6% tax. Molly Yes Press, RD 3, New Berlin, NY 13411.

NINTY COLONIES with honey — $55.00. Walter Eshleman Apiaries, Morovia, NY 13118, Phone 1-315-497-1258.

ROYAL JELLY

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

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

BEE SUPPLIES FOR SALE

WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation. Onsted, Mich.

FOR TOP QUALITY BEE SUPPLIES and advice on beekeeping problems, visit your nearest Root dealer and send for your FREE Root catalog. Satisfaction guaranteed. The A.I. Root Co., P.O. Box 706, Medina, OH 44256.

BEE EQUIPMENT manufacturers-Oregon pine woodenware, super ends rabbet-joint and beekeeping supplies, smokers, excluders, etc. Write or Call for commercial prices:MONCRIEF BEE SUPPLIES, Post Office Box 625, 1105 Lakewood,Lakeland, FL 33802. (813) 858-6754.

WAXMASTER CAPPING SEPARATOR...melts cappings fast with temperature controlled, circulated hot water, electrically heated. Pack fine quality honey with the PACKING HONEY BOTTLING SYSTEM. All equipment stainless. Free brochure. HONEY SALES COMPANY, Mfrs., 2817 No. 2nd Street, MINNEAPOLIS, MINN. 55411.

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

ALL WESTERN BEEKEEPERS: Lock-corner supers — tops — bottoms — frames. Complete stock — supplies & equipment. Phone or write for quantity prices. UNITED BEE CRAFT COMPANY, 600 Harbor Blvd., West Sacramento, CA 95691. (916) 371-9340.

OUR OBSERVATION HIVES, are furniture crafted of beautiful oak and are reasonably priced. Be ready for spring! Write now for free brochure or send $5.00 for our complete plans and instructions packet. Kawana Honey, 2100 Kawana Springs Rd., Box G,Santa Rosa, CA 95404, Phone (707) 528-4377.

"CONICAL BEE ESCAPES AND TEMPERATURE CONTROLLED VENTILATORS is our specialty. For free information write to: Trafalgar B. Equipment, 3371 Trafalgar Road, RR 1, Oakville, Ontario, Canada L6J 4Z2."

QUALITY CYPRESS BEEKEEPING SUPPLIES — dovetailed hives and hive parts, beginner's kits, complete supplies. Write: BEE-JAY FARM, Dacula, GA. 30211.

PINE BEE SUPPLIES
*Beehives dovetailed — $3.50 each
*Super 5¾" or 6⅝" — $2.50 each
*Frames heavy duty per 100 — $28.80
*Frames heavy duty per 1000 — $250.00
*Lids or bottoms (migratory) — $1.75 each or $3.50 per set

Allow manufacturing time on large orders. Marvin Smith Apiaries, Rt. 1, Parma, Idaho 83660, Phone 208-722-5278 days.

BEESWAX, old combs and scrapings collecting? Process it easily and economically with the BEESWAX PROCESSOR. Write Shots Inc., 4418 Josephine Lane, Robbinsdale, MN 55422.

STRAUSER BEE SUPPLIES available in Ohio. Quality supplies at low prices. Send for catalog. Shreffler, 7734 Waynesburg Dr., Waynesburg, Ohio 44688.

RADIAL HONEY EXTRACTORS-5 frames, 6⅜ or 5½. Patented. Wholesale and retail sales. GAMBLE'S HONEY EXTRACTOR CO., P.O. Box 7997, Greensboro, NC 27407, Phone: (919) 299-3973, Day or Night.

EIGHTEEN-FRAME stainless extractor, 18 — 2-story hives and many extras. One sale only. Phone: 216-252-5124.

FOR SALE 75 complete cobana, supers, painted, with frames, foundation, ready for the hive. 218- 238-5594 or write. Rich Olson, Rt. 1, Lake Park, MN 56554.

FOR SALE: ONE FIFTY-FRAME EXTRACTOR. $200.00. Phone: 218-796-5794.

BEE ENTRANCE. Fits between brood and honey supers. Use with or without excluder. Up to 50% more honey. No assembly required. $2.50 + .50 p&h, 10 for $25.00, postpaid. Les Hall, Rt. 5, Atlanta, Michigan. 49709.

NEW-NO HEAT OR ELECTRICITY USED. Uncapping fork (not just a scratcher). No flavor loss and better flavor retention. No burnt fingers or shocks. Honey from dark comb not

(Continued from page 466)

MASSACHUSETTS
Middlesex County Beekeepers' Association

The regular monthly meeting of the Middlesex County Beekeepers' Association will be held Saturday, Aug. 29, 1981 at 2 p.m. at the home of Mr. and Mrs. Dave MacNutt, 24 Gov. Hutchinson Rd., Billerica, MA 01821, Phone: 617-667-5695.

BEE SUPPLIES

(Continued from page 470)

discolored as with hot knife. $11.00 each pp., Blossomtime, P.O. Box 1015, Tempe, AZ. 85281.

USED ROTARY Knife Uncapper. Used Cowen Uncapper, Used Cilbertson Uncapper and Used Auto-Load Extractor. Cook & Beals, Inc., Loup City, NE 68853, Phone: 308-745-0154.

FOR SALE

COMPLETE PACK KING BOTTLER — never been used. Also 2 each 500 gallon honey tanks — 3″ gates. Phone: (406) 388-4862.

FOR SALE: 1500 colony outfit in North Eastern Saskatchewan. Included is a 96 x 40 foot honey house and a 96 x 40 foot warehouse. A shop , a wintering building and house situated on a 3 acre plot. Only serious inquiries. Contact Richard Gane, Box 143, Aylsham, Sask., Phone: 306-862-9425.

HONEY PRODUCTION BUSINESS in Southeast Colorado, 250 colonies, equipment for 200 more. Prime locations on Arkansas River. Large Building, extracting equipment. Four state retail route. Phone: 303-456-0975.

COMPLETE HONEY operation. Five irrigated acres, hives, buildings, extractors, and more. Century 21 Sun Basin, Evenings: (509) 787-2597.

CALIFORNIA
W.A.S. Conference 1981

Monday August 17

10:00 a.m.	Conference Registration begins
10:00 a.m.	Delegates Buzz Session
1:00 p.m.	Registration opens for Honey and Gadgets
1:00 p.m.	Delegates Meeting
2:30 p.m.	Directors Meeting
4:30 p.m.	Registration for Honey and Gadgets Ends
5:30 p.m. — 6:30 p.m.	Dinner in Dining Commons
7:00 p.m.	"California Bee House" — Charles Duncan, President
8:30 p.m.	Buzz Session and refreshments — Hosted by Los Angeles County and Orange County Beekeepers' Association

Tuesday August 18

7:30 a.m. — 8:30 a.m.	Breakfast in Dining Commons
8:00 a.m. — 9:00 a.m.	Photo Contest Registration
9:00 a.m.	"Call to Order" — Charles Duncan, President
9:30 a.m.	"Chancellors Welcome" — Dr. Dan Aldridge, Chancellor
9:45 a.m.	"Varroa Mite" — Dr. Harry Laidlaw
10:45 a.m.	Coffee Break
11:00 a.m.	"Queens — Selection and Timing" — Jack Park
11:45 a.m. — 12:45 p.m.	Lunch in Dining Commons
1:00 p.m.	"Pheromones" — Dr. Norman Gary
2:00 p.m.	Group Photo
2:30 p.m.	Field Demonstrations
5:30 p.m.	Social Hour
6:30 p.m.	"Old West Bar-B-Que"
8:00 p.m.	"Entertainment

Wednesday August 19

7:30 a.m. — 8:30 a.m.	Breakfast in Dining Commons
9:00 a.m.	Announcements and Raffle
9:15 a.m.	"Living With the Brazilian Bee" — Dr. Warwick Kerr
10:30 a.m.	Coffee Break
10:45 a.m.	"Women in Beekeeping" — Roberta Glatz
11:45 a.m. — 12:45 p.m.	Lunch in Dining Commons
1:00 p.m.	"Bee Venom" — Dr. Eric Mussen
2:00 p.m.	Field Demonstrations
4:00 p.m.	Business Meeting
5:30 p.m. — 6:30 p.m.	Dinner in Dining Commons
7:00 p.m.	"Timesaving Gadgets for Beekeeping" — Ron Neese
8:00 p.m.	"Speakers Roundtable Discussion" — All Conference Speakers

Thursday August 20

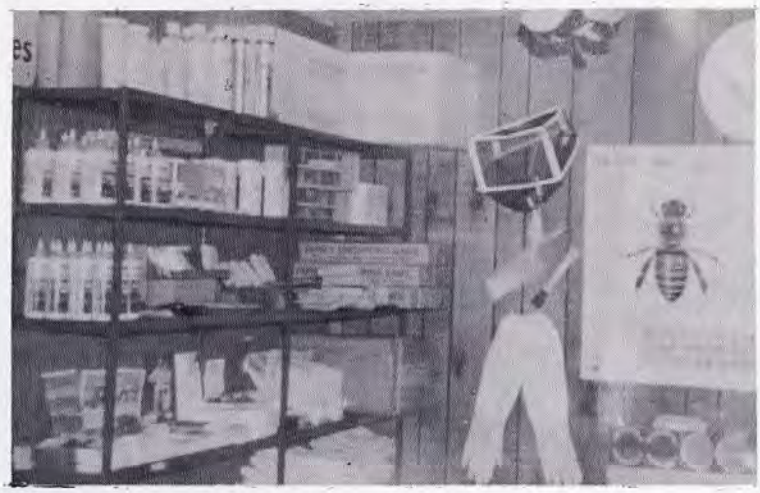
7:30 a.m. — 8:30 a.m.	Breakfast in Dining Commons
9:00 a.m.	Announcements and Raffle
9:15 a.m.	"Disappearing Disease" — Dr. Walter Rothenbuhler
10:15 a.m.	Coffee Break
10:30 a.m.	Business Meeting and Elections
11:45 a.m. — 12:45 p.m.	Lunch in Dining Commons
1:00 p.m.	"Tour of Huston-Ferguson Apiaries"
6:00 p.m.	"Social Hour"
7:00 p.m.	"Awards Banquet"

Friday August 21

7:30 a.m. — 8:30 a.m.	Breakfast in Dining Commons
9:00 a.m.	Delegates Meeting
9:30 a.m.	Directors Meeting

Index to Display Advertisers

The A.I. Root Co. Georgia Branch



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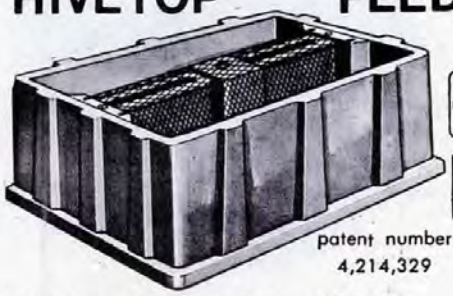

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