Gleanings in

September 1978

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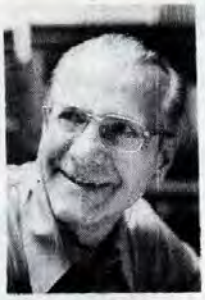

Lawrence Goltz

Gleanings in Bee Culture

September 1978 Vol. 106, No. 9

Created to Help Beekeepers Succeed

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

John Root, Associate Editor
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Mary Louise Robinson, Sub. Mgr.

Subscription Rates: United States subscribers, one year, $7.00; two years, 12.50; three years, $18.00. Single copy, 75¢. Other countries including Canada, Pan American countries and Spain (U. S. Currency only) 85¢ per year additional for postage. Published monthly. Discontinuance: Subscriptions stopped on expiration. Change of Address: Give your old as well as the new and write the name to which the journal has heretofore been addressed. Remittance should be sent by post office money order, bank draft, express money order or check.

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

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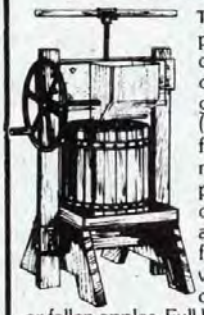

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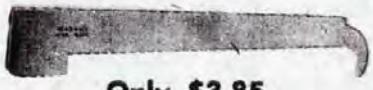

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Monthly HONEY Report

LAWRENCE GOLTZ
August 10, 1978

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

Wholesale Extracted	Reporting Regions								
In 60 Lb. Cans	1	2	3	4	5	6	7	8	9
White (per lb.)		.55	.53	.48		.48	.47	.46	
Amber (per lb.)		.52	.52	.46		.45	.43	.42	.46
1 lb. jar (case 24)		19.00	20.50	17.75	19.20	19.00	19.10	17.75	
2 lb. jar (case 12)		18.00	18.50	16.50		18.50	19.50	17.25	
Retail Extracted									
8 oz. jar		.58	.63	.55		.59	.57	.60	
1 lb. jar	1.25	1.06	1.08	1.00	1.25	1.06	1.12	1.06	1.15
2 lb. jar		2.08	2.04	1.87	2.40	1.96	2.23	2.00	1.99
3 lb. jar		2.80	2.89	2.59	3.25	2.85		2.85	2.79
5 lb. jar	5.50	4.28	4.73			4.37	4.45	4.12	
Creamed 16 oz.		1.55	1.55		1.45		1.30	1.50	1.75
16 oz. Comb		1.15	1.15	1.13					

Beeswax — Light $1.70 — Dark $1.60

Comments:

Vermont - Short honey crop due to dry spell. About 30-50 lb. average. Recent rains have helped clover recover from dry spell. Bees in good condition.

New Jersey - Excessive rain in N.W. New Jersey practically ruined tulip-poplar flow. Beekeepers hoping for good fall flow to make up for shortage.

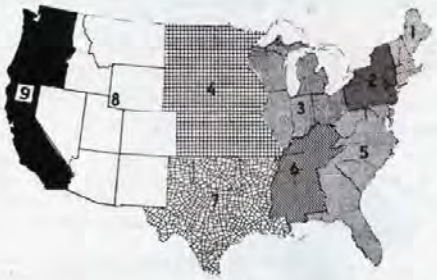
New York - Weather was ideal up to August 1. Best crop in ten years in many parts of state. Colonies in Ithaca area averaging 80-100 lbs. early in August. Prospects for fall flow good.

Pennsylvania - Above average crop from black locust. Plenty of rain. Bee Bee trees did not bloom last two years but loaded with blossoms this year. Retail honey sales fair.

Ohio - Many colonies with 80 lb. plus surplus of light-colored honey. Soy bean yield promising. A different soy bean being grown in northern Ohio known as longleaf, which blooms for a long time.

Indiana - Bees working soy beans beginning in early August. Clover honey crop good and good quality. Honey sales good with new crop coming in. Wholesale demand very good.

Michigan - Good rainfall in some areas. Some parts of northern Michigan very dry. Looks like a good honey crop.



Special honeys (ie., alfalfa) more expensive.. Very meager showing in supermarkets.

Illinois - Honey flow in most parts of the state has been very good with excellent quality. Soy bean honey flow started in early August, should be good, and should last longer due to staggered planting.

Wisconsin - Honey flow spotted. Need warm dry days. Hives averaging about 75 lbs. May be a good honey flow through August.

North Dakota - Rain fall has been plentiful and good honey flow in progress through July.

Minnesota - Colonies that achieved full strength by honey flow time have a pretty fair crop. Basswood yield spotty, sunflower flow started first of August. Clover and alfalfa yield good in northern Minnesota. Southeast Minnesota had too much rain but late alfalfa may help make a crop.

Nebraska - Best honey crop in years. Rainfall has been good. Good honey flow from alfalfa.

Virginia - State had a good honey flow in most sections. Had some sourwood honey which is selling at $1.25 to $1.50 per lb.

North Carolina - Good demand for local honey. Water-white sourwood flow good and selling at up to $3.00/lb.

West Virginia - Good crop year. Honey sales good.

Kentucky - There has been a light flow of surplus honey in July but crop still below average at first of August. Weather had been hot and dry, but good precipitation came at end of July.

Tennessee - Best crop in several years but color is darker than usual. Flavor is good. Prospects are good for a fall honey flow.

Alabama - Colonies in good condition statewide. Moisture conditions good.

Arkansas - Soy beans could make up for a short spring crop if rain in central and southern parts of state is received. Honey sales are average.

Oklahoma - Bees doing well on alfalfa and cotton. Honey crops spotted—some doing well, others poorly. Ground moisture short.

(Continued on page 435)

Gleanings Mail Box

Dear Editor:

I am compelled to come to the defense of an excellent Canadian product: The electric welded all-steel queen excluder.

Early in the fifties I obtained several hundred of them on recommendation by my initial employer in this country, a beekeeper who took his profession very seriously and taught me the finer points of apiary management. Though heavily used, the same excluders are still as good as the day I bought them. I prefer them over many other types, and so do a lot of professional beekeepers.

I consider it unfair to condemn any product after only one or two simple tests on a small scale.

I am referring, of course, to the July article of the gentleman who writes the monthly column on plastic foundation.

If the author is willing to apply a certain skill in handling a hive tool, I guarantee him a better time to separate the supers from the excluders on the next occasion, even with flush bottomed supers and weak bottom bars.—K. Bosch, Haileybury, Ont.,Canada.

Dear Editor:

I am a novice beekeeper with five colonies and four years experience. I have read numerous times in **Gleanings**, the last time within the last two or three months that bees do not or will not work crown vetch **(coronilla varia)** for nectar. I have an area planted in crown vetch in its fourth year of growth that until now I had never noted bees working it. However, I did see bumble bees working on it.

As of July 15th and 16th of this year I can say this is no longer true. On these two days I noted numerous honeybees in the crown vetch. My wife also observed this—D.H., Wisconsin.

Dear Editor:

My "Honey Root Beer" article in the July, 1978 issue caused more comments than all the others in the past fifteen years. It seems root beer extract is hard to find and if anyone is having this trouble, they should write to Mr. Mike Brady, Sales Service, Fountain Division, Crush International Inc., 2001 Main Street, Evanston, Illinois 60202. Mr. Brady will ship **Hires** root beer household extract in a minimum quantity of twelve 3-ounce bottles. Just the right size for the recipe and enough to make about 24 gallons of root beer. The price is $8.25.

The root beer flavor in my recipe can be varied by adding or subtracting the amount of extract utilized. I find that about one and one-half ounce of root beer extract gives a good flavor. Of course, the type of honey adds to the flavor and I am fortunate to be in a concentrated sweet clover alfalfa mild honey plant area.
Albert G. Bell, Billings, Montana.

NEW BULLETINS & INSTRUCTION MEDIA

Feeding Sugar To Bees by Dr. T.S.K. and Mrs. M.P. Johansson (M92)

THREE articles from **Bee World** are now combined in this useful reprint. The first describes the general principles of feeding sugar or syrup, and the different types of feeders and their use. The second explains the various circumstances in which colonies should be fed, and gives details of the most successful methods. The final part deals with dry sugar and candy feeding.

The whole reprint provides the thorough coverage of the subject that we have learned to expect from Dr. and Mrs. Johansson. The price is 50p or $1.20, including surface postage.

The Pollination of Crops by Bees by Dr. J.b. Free and Dr. I.H. Williams

THIS JOINT publication of IBRA and Apimondia is now available from the International Bee Research Association. It is an advisory bulletin for international use, describing the needs of crops for insect pollination. It suggests ways in which bees can fulfil these needs and gives information on colony management for pollination. 126 crops are listed, with their pollination requirements.

The price of the publication is 35p or $.80, plus 10p or $.25 to cover postage and packing.

Both reprints are available from International Bee Research Association, Hill House, Gerrards Cross, Bucks SL9 ONR, England.

NEW U.W.E.X. FILMS

THE UNIVERSITY of Wisconsin-Extension has just release two educational films on bee management that provides recommendations and professional information on proper procedures.

The first "Bee Management in Fall, Winter and Spring", contains two 10-minute films on a single reel. The first segment shows preparation of bee colonies for overwintering. The second segment shows how to build and maintain a large, healthy bee population.

The second film, "Bee Management: Honey Handling", 17 minutes long, provides information about protective equipment, proper timing and procedures for honey removal, grading, bottling and storage and wax recovery.

Both films are suitable for Junior High School through adult audiences. Each film comes with a teacher's guide and narrative script.

The films are available for rent from the UW-Extension Bureau of Audio-Visual Instruction (BAVI), PO Box 2093, Madison, Wisconsin 53701.

Rental fee for BAVI #1761 "Bee Management: Fall, Winter and Spring", is $6.00 for Wisconsin residents. Rental for BAVI #1762, "Bee Management: Honey Handling", is $5.50 for Wisconsin residents. Out of state residents should contact the BAVI office for rental information.

LIFE HISTORY AND ACTIVITIES OF THE HONEYBEE

Photographed by Ray Williamson AIIP. 42 remarkable color slides chosen from over 1,000 photographs taken during 1977, illustrating the bee's life history as the beekeeper would see it. Special close-up techniques have been used to secure the finest clarity and detail obtainable.

A booklet of outline notes indicating the main features of each slide is included.

Life History and Activities of the Honeybee is published and distributed by Ray Williamson, 40 Newbury Road, Lytham St. Annes Lancashire, Great Britain FY8 IDG. Price $14.00 including air mail postage to anywhere in the world.

MOSQUITO CONTROL DOESN'T HARM BEES

HONEYBEES EXPOSED to an aerial application of fenthion, used to control larval mosquito populations were only slightly affected by the spray. Only a partial, non-incapacitating loss of bees that were out foraging for pollen and water was experienced, and that effect lasted only one day.

This means that beekeepers needn't move their hives out of areas being sprayed for mosquito control where this chemical is used.

The control program using 1/20 pound per acre of liquid mixture of fenthion caused little harm to the bees, and was successful in controlling the mosquitoes. Liquids are less toxic to bees than dusts, wettable powders or dry flowable materials. The chemical, which decomposed rapidly was toxic to honeybees for only 24 hours, but effectively controlled mosquito larvae—From **Agricultural Research** U.S. Department of Agr. Publication, May 1978.

Protecting Honeybees

RESEARCHERS IN a program that was aimed at solving honeybee and natural pollinator kills by pesticides during citrus bloom found that catastrophic bee kills in citrus can be eliminated while protection of citrus against citrus cutworm and fruit tree leafroller is maintained.

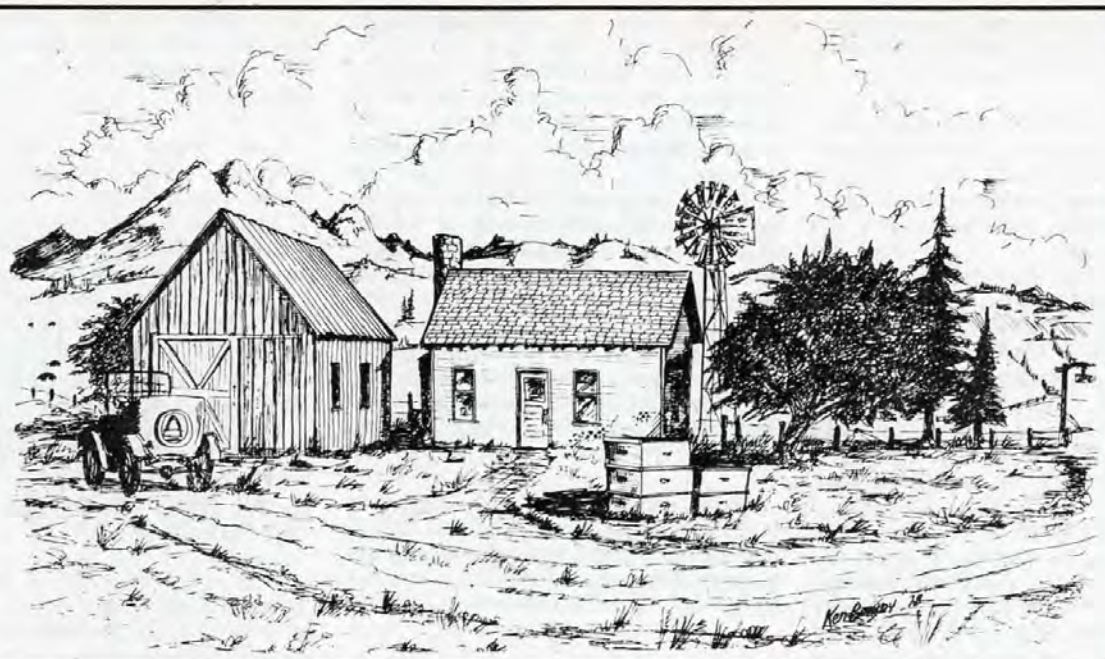
This central San Joaquin Valley, California, safety program had support from the beekeeping and citrus industries, pest control advisers and operators, as well as the state department of agriculture, country inspectors and chemical industry technical specialist.

"We had a dramatic switch in pesticide use that has helped protect beneficial insects—in this case honeybees," reports Don Flaherty, University of California Extension entomologist. "It has been observed that citrus bloom treatments have resulted in less bee kill than we had formerly experienced in Tulare County during the late April-early May citrus bloom period."

Long residual chemicals are effective in controlling cutworms, but they pose problems for foraging bees during bloom. It was discovered that Lannate (methomyl) would control cutworms, leafrollers and other damaging insects without harm to non-target beneficial insects. "A key to the honeybee safety program in citrus has been early morning and night applications of Lannate," says Flaherty.

An initial honeybee survey in 1974 plus those that followed in 1975 and 1976 were closely coordinated with a monitoring program on the need for cutworm control.

The initial survey involved 250 bee colonies. Thirteen of these were badly damaged. Besides establishing this unnecessary bee kill by pesticide application, the survey also confirmed the need for cutworm control during the citrus bloom period. In 1975 a total of 160 colonies of honeybees were checked weekly to monitor pre and post bloom condition. There was continuing pesticide damage to honeybees, although severe damage was limited to only one apiary. The following year there was no severe damage reported in a total of 120 honeybee colonies. This positive report was concurrent with an increase in Lannate usage.—Courtesy of Agrichemical Age, 5/78.



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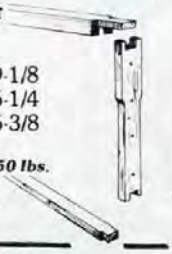

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W-23-S	5-3/8

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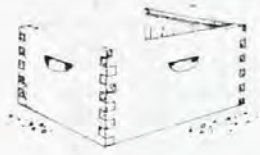

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IN MY semi-retirement I find time to indulge myself in activities that a former, more demanding, life denied me.

Among other efforts, I participate in a group of 12-15 men who meet during the six cold months of the year bi-weekly for luncheon, followed by a discussion led by a different member each session.

No two of these participants followed the same calling prior to his semi-retirement. All were successful individuals in their pre-tirement work. For example, one is a DuPont research chemist; another is a retired Admiral from the U.S.Navy; a third is an investment advisor in Florida waterfront property; still another is a magazine writer of both prose and poetry.

Our discussion this week centered on two Kiplinger letters that presented the relative strengths of the United States and of the USSR. During the discussion one member of the group declared that our Federal Government should be financing more basic research if it wishes to maintain parity or better with the Russians.

Meanwhile our government in Washington is financing many research projects that make little sense to some people, for example: $193,000 for "three coordinated versions of a teaching film on the behavior of the ring dove" in East Africa. Or take this one:$136,000 for "a study of social consequences of the adoption and use of CB radios". Or, $18,601 for a history of the US synthetic rubber industry, 1925-55. These are a few of the 14,000 grants the National Science Foundation makes yearly. These data are presented through the media, including the March 31, 1978 issue of the Stuart News, Stuart, Florida.

To get back to the words "basic research", I become a bit weary of listening to the fellows who talk over television and who say: "**re**seach", instead of "**research**". A "**re**search is a second effort; a **research** is a repeated probing, if necessary, to find out what is needed to be learned.

Basic research is different from much commercial research in that it seeks to gain information on fundamentals irrespective of the immediate applicability of the findings to a practical use. The word basic may be applied to such studies as those in the field of genetic inheritance by Mendel, or the mathematical research of Einstein eventuating in his Theory of Relativity.

Actually, basic research often is applied to a specific use almost as promptly as research of a more narrow nature that has been performed to provide a solution for an immediate commercial purpose.

In the field of beekeeping, basic research is the term that should be applied, for example, to a study to determine the time periods at which drones of the Asiatic honeybee species **[cirana, florea, dorsata]** fly for mating purposes: or a study to determine the chemical constituents of honey (without any money advantage being in mind). Such information may have an immediate and practical application for beekeepers, or it may not.

A good example of basic research about honeybees is that currently being carried on at Cornell University, Ithaca, N.Y. on wild nests (in tree cavities) by Seeley and Morse.

Today, much of the basic research in the United States is promoted and funded by private corporations whose officers know that much of it will yield them little early financial advantage.

Basic Research

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

In the field of beekeeping, basic research is only partially funded by the Federal Government. It is extensively carried on by the apiculture departments of our universities.

Here are some usable facts shown by recent research—or by research recently reported. Most of it is **not** basic in nature.

Feeding Pollen Substitutes

Like finding substitute energy sources to take the place of oil, the determining of satisfactory replacements for pollen in the supplementary feeding of honeybees is difficult.

The Johanssons (T.S.K. and M.P.) recently reported in **Bee World** (1977) their reading of 125 written sources regarding the value of pollen substitutes. Here, in substance, are some of their gleanings.

Some pollens are much richer in manganese and zinc ingredients than others.

Colonies deficient in pollen resources during the winter months may catch up if fed pollen at the end of March. This is the time in the northern part of the U.S., and in Canada, when plentiful supplies of pollen are available to bees if outside temperatures permit their going afield.

Pollen can often be provided to a needy colony from one that has a surplus, taking proper precautions against spreading disease, of course.

Fresh or frozen pollen has greater nutritional value than that kept at room temperatures. Covering pollen with a layer of sugar helps to avoid incidence of mold. Pollen may be mixed with disease-free honey, or covered in a crock with paraffin.

Pollen added to a pollen substitute is believed to be necessary to make the substitute of considerable value. The substitute then becomes a supplement.

A colony should have the equivalent of 4-6 combs of stored pollen to begin brood rearing in January.

Brewers yeast is now regarded as the best pollen substitute. Seven times as much soybean flour cake was consumed when 25% brewer's yeast was added.

Dried skimmed milk protein produced brood effectively.

Mixtures of well-selected foodstuffs are better than any one substitute alone.

Feeding inside the hive is less wasteful than when attempted from the exterior.

Dry feed may be advantageously mixed with honey or syrup, and then covered with waxpaper to discourage drying.

Various experiments seem to indicate that feeding pollen supplements (containing small quantities of natural pollen) considerably increases honey production.

Times of Drone Flights

The sex attractant appears to be the same in all four species of the honeybee: **Apis cerana, Apis florea, Apis dorsata, Apis mellifera.**

The first three mentioned here are largely confined in their habitat to the Asian region. Two researchers, N.

Koeninger and H.N.P. Wijayagunasekera have researched the time of drone flight in the three Asiatic honeybee species. The flight periods of the first three of these four species were found to be well separated.

Apis dorsata drones flew latest in the day: only between 18.00 and 18.45 h. (workers of this species flew even later—up to 22.00 h.).

The **apis florea** drones flew earliest in the day: between 11.30 and 14.45. The **cerana** drones flew only between 16.00 and 17.15 h. These flights were observed in the Asian area.

Apis mellifera drones were observed in the Louisiana, U.S.A. area where they typically began flight soon after the noon hour. Flight hours may very well vary according to geographical area. This has not been well documented.

In areas where any two of these four species fly at the same time—and in the same area, as they tend to do—the numerically stronger species substantially prevents drones of the species present in lesser numbers to mate. This was confirmed by Ruttner (1973) who demonstrated that **mellifera** drones (in Germany) prevented copulation by drones of **Apis cerana** which were present in smaller numbers. In Asia there are indications that the reverse is true.

Bee Sting Allergy

One of a beekeeper's chief worries, if he is of the worrying type, is that his bees may sting an innocent person with consequent serious physical effect.

Dr. A. W. Frankland in an article on Bee Sting Allergy reported in the **Bee World** (1957) gives some valuable information on this subject. He defines an allergic reaction as "a specific reaction depending upon previous sensitization" It is, he says, "immunity gone wrong".

The author states that very rarely the reaction following a sting is not immediate, but comes on 10 days after the sting when the symptoms occur.

Dr. Frankland says that although a sting is always a little painful, the amount of substance injected by a bee sting, or even a hundred stings, is not enough to kill a man—unless he is allergic to bees.

He states: "Most beekeepers handle bees with impunity, and they generally become desensitized, but a few become dangerously sensitive i.e., allergic to bees".

The author declares that a bee sting has nothing to do with pollen.

In cases in which a patient becomes progressively more allergic to stings as they occur, he should try to avoid their incidence.

In the period 1962-1971 in England and Wales bee stings were reported as responsible for only 11 deaths over the ten year period; wasps were reported as responsible there for 33 deaths during the same period.

As beekeepers know, it is urged that a bee sting not be left in the flesh, but pried out promptly with the edge of the thumbnail.

The author says: "A local application of ice-cold water and rest to the affected part constitute simple first-aid treatment". He says further: "It seems probable that the local pain that follows a bee sting is due not to histamine but to other substances. The irritating hot welt that forms later may, however, be due to the production of histamine, and it is reasonable therefore to take an antihistamine tablet by mouth after a sting, as this will help to prevent local or general irritation becoming troublesome".

I recommend that anyone who is allergic to stings, secure a copy of this article by Dr. Frankland and read it in its entirety.

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Heating Tapes Keep The Honey Flowing

By FREDERICK H. THOMPSON
Grand Island, N.Y.

WHEN THE FALL weather sets in, extracting honey becomes more difficult because of the cooler temperatures. The combs may be close to 40° by the time they are brought indoors for extracting.

The combs may be warmed several ways before uncapping and extracting. The small beekeeper usually does not store his crop in a room above 70° F. To raise the temperature he may blow hot air over the combs or warm them over an empty super containing a light bulb. However, by the time the combs are uncapped and placed into the extractor, they have again cooled down somewhat.

By wrapping heating tape around the outside of the extractor, the wall and

interior temperature can be controlled so that the frames can be spun out easily. The honey will run down the sides of the extractor and flow out freely. After all the honey has been extracted, the tank can be washed and dried thoroughly using the heating tape.

Care should be taken whenever using electrical tape. It should be approved for temperatures above 100° F. and not contain any exposed wire. Plastic containers should not be wrapped with heating tape. A thermostatic control would be helpful. However, some tapes containing built-in thermostats that are only activated at temperatures slightly above freezing cannot be used.

When the heating tapes are properly used, they can be of great help when extracting honey.

Notes On Fall Feeding

By DR. ROGER A. MORSE
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THOUSANDS OF colonies of bees starved to death during the 1977-1978 winter because their owners failed to provide them with sufficient food. In most of the northeastern United States the honey flow was poor in the fall of 1977 and bees did not store adequate food. A two-story, 10-frame, Langstroth hive, including the cover, bottom board, supers, frames, bees and honey, should weigh 130 to 135 pounds in the late fall. A colony of this weight will have 60 to 65 pounds of stored food, an adequate supply for winter.

Weighing Colonies

The only accurate way to determine how much food a colony has is to weigh it. Despite what old-time beekeepers say about being able to judge a colony's weight by hefting it, there is no accurate method other than using scales. It is, of course, not practical for a person with one or two hives of bees to buy a set of scales just to weigh colonies. However, beekeepers' associations could buy scales for their members to use. One method of weighing colonies is illustrated, but one man could weigh colonies by using a tripod, or by using two support poles on the opposite end of the cross bar from which the scale hangs.

What to Feed

The best winter food for bees is ordinary table sugar fed in syrup form. Many beekeepers believe that honey is better than sugar as a winter food for bees. Although bees will winter very well on very light, mild-flavored honey, such honey is now commanding a price three times that of sugar. Dark honeys, such as goldenrod and buckwheat, make very poor winter food as they contain a larger proportion of indigestible material, which accumulates as fecal matter and fills the bees' abdomens. This causes no difficulty if the bees have flights every two to three weeks during January, February and March, but this is not always possible. In the early spring of 1978, for example, bees did not get a flight for over nine weeks in our area.

How to Mix Sugar Syrup

It is recommended that colonies of bees being prepared for winter be fed a sugar syrup of two parts sugar and one part water by weight or measure. Sugar syrup fed in the spring is more dilute, usually one part sugar and one part water. However, if the bees have sufficient warm weather in the fall they can easily ripen more dilute sugar syrup.

When to Feed

In the Ithaca, New York area we find it best to feed colonies between October 15th and November 5th. These dates are approximate and vary from year to year depending on weather conditions. Our frost-free date in this area is September 20, though in some years aster yields nectar for another two or three weeks after the first frost. It is best to delay feeding until mid-October so there is no competition with other food sources. Also, at this time of the year the bees will have gathered the pollen they are planning to use in the spring months, and the sugar syrup will then be used to cover and protect the stored pollen.

Another reason for delaying fall feeding until mid-October is the fact that it is during October and November that bees rear the least amount of brood. If the sugar syrup is fed in September it is possible that the bees may be stimulated to rear more brood, perhaps more than they can feed during the winter.

How to Feed

For many years beekeepers used tinned pails that held five or ten pounds of sugar syrup for fall feeding. However, it is difficult to find pails that are tinned sufficiently to resist rusting.

We are now using one-gallon, glass, wide-mouthed mayonnaise-type jars for feeding bees. Breakage is always a problem when one uses glass jars, but we have made some wooden carrying cases. Since we have been using these to carry both empty and full jars, we have not broken any.

The jar covers are punctured 30 to 40 times with a threepenny nail. Some beekeepers have told me they are drilling holes in these caps with 16th-inch drills. The advantage of the drill is that the caps are more easily cleaned. The caps with drilled holes do not have the jagged edges found on those when the holes were punched with a nail. Bees will attach a great deal of burr and brace comb to feeder-jar caps and caps must be checked periodically to make sure the holes are not plugged.

The jars of sugar syrup are inverted directly over the frames in the upper super and an empty super is placed around the feeder jars. At one time we placed one or two burlap sacks over the feeder jars to help retain the heat in the brood chamber. I would still prefer to do so but we have no source of cheap burlap bags.

When we start to feed bees we prefer to get the job done rapidly. A normal colony of honeybees will empty two to four one-gallon jars of syrup in three to seven days, depending upon the temperature. It is easiest to dissolve sugar in warm water; and, if the sugar syrup is slightly warm when the jars are first inverted over the frames, the bees will usually start to take the sugar syrup more promptly.

Weighing a two-story colony. This is the only certain way to determine how much feed is needed. The weighing device is made using a steel strap attached to short pieces of angle iron which are placed under the colony's bottom board.

A wooden case made from scrap, half-inch plywood for carrying glass feeding jars. Plywood dividers in the box prevent the jars from touching each other.

Other Types of Feeders

In California I observed beekeepers using square, one-gallon metal cans for feeding bees. These cans had small caps, about an inch and a half in diameter into which four or five small holes had been made. The wooden hive covers had a hole into which the can cap was placed when the can was inverted. These cans worked very well. These cans were coated on the inside with hot paraffin, which protected them against rust.

Division-board feeders are popular for both spring and fall feeding. I don't care to use them because some will leak. I understand the plastic division board feeders work well in this regard, but most plastics have a short life; I don't care to use plastic materials in beekeeping operations if I can avoid them.

Boardman feeders are one of the most misused tools we have in beekeeping. They were designed for feeding small colonies, especially mating nucs, in the South, and they work quite well for that purpose. However, here in the North they are useless. They are too far removed from the active nest for the bees to find them and to take food from them, and they hold too little food to be at all important. Under no circumstances should they be used when one wishes to feed colonies for winter.

Packing Bees for Winter

We recommend that colonies of bees in the northern states be given some kind of winter protection. In areas as far north as New York State, colonies should be wrapped in a light-weight, black building paper. We usually put six to ten inches of dry straw or leaves over the inner covers leaving the inner cover holes open so that excess moisture can escape. Packed bees wintered better in the 1977-1978 winter than did unprotected bees.

Further information about wintering may be found in Information Bulletin 109, **Wintering Honeybees in the Northeast**, by E. J. Dyce and R. A. Morse, available for $.50 by writing to Mailing Room, Building 7, Research Park, Cornell University, Ithaca, N.Y. 14853.

The colonies are fed by inverting filled gallon jugs over the exposed frames. The cover and inner cover are placed on top of the hive in the normal manner after the feeding jars are in place.

Honey Has A Solid Reputation

By HOWARD J. ROCK
Dale, Wisc.

WITH THE PASSING years my vitality has diminished, disturbingly, and as a consequence I am subject to many vexing infections, not dangerous but which require professional help.

An unusual nasal infection, which I first considered a cold, sent me to the internist. The infection was noteworthy because it gave me the constant sensation of smelling unusually pungent AFB scales such as I had encountered many years ago in such places as Minnesota, Montana and New Mexico. The affective connotations of the infection brought into vivid focus the fellows I had worked with in digging large pits and watching large bonfires of infected equipment late into the night. For the first time in many years I remembered amusing incidents involving Bob, Fergie, Sonnyboy, Norberto, Geraldo and others who would now be older men.

After the internist's examination and diagnosis, this learned physician took me by surprise. He pulled up a chair beside mine and with his characteristic penetrating glance asked, "Do you think that honey is a better food than granulated cane sugar?"

He really caught me off balance, but instinctively I replied, "Yes, I'm sure that it is much superior."

"Why do you think so?"

I didn't know whether to be flattered or to brace myself for a very scientific squelch. Here was this brilliant internist with three university degrees and several honorable recognitions from his professional peers asking me, a small town slob who knows a little about honeybees, about matters of nutrition.

I tried to recall everything that I had ever read or experienced concerning honey. Being forty years out of school, the suitable chemical terminology came rather hard. I reminded him of all the analyses of honey, by Brown, Lathrop, McCollum and others. I dwelt on the trace minerals of honey and their absence in cane sugar off the grocery shelf. I quoted Solomon, more to impress him than anything and I told him about the superiority of goods baked with honey and of successfully treating bad burns with honey that might otherwise have put me in the hospital. I even reminded him of the basic digestion of honey and sucrose and the ease with which the fatigued body can assimilate honey where a heavy sucrose ingestion under like circumstances might result in a digestive upset. The good physician smilingly concurred.

"You aren't going to tell me that honey is a panacea for such things as diabetes or arthritis, are you?"

I let him know that I didn't think any such thing. I reminded him that honey was a delicious food and that there were many exotic flavors, calling to mind such honeys as tupelo, snowberry, fireweed, orange and many others. His reply was interesting and many a honey bottler could take note of it to their profit.

"All the honey I buy in the supermarket tastes very much the same. Now, when I go directly to the beekeeper's house and get "raw" honey, it has a distinctive, exquisite taste. How about that?"

I told him that if he ever tasted "raw" honey, honey that was extracted before it was all capped over, he would never want to taste it again. He was referring to honey that had not been heated or filtered to its own detriment. That pure honey contained fragile flavor oils that were easily broken down, molecularly, was a revelation to him.

It was self evident that this physican was genuinely interested in honey but he was turned off by all the extravagant claims that had ever been made over the long years.

His opinion reminded me of a long conversation I once had with the late Dr. M. C. Tanquary when I was an employee of his. Tanquary was fascinated by all the legends that had been built up around honey. I was young then and his attitude was a revelation to me. He said, "All legends, however immoderate, have their basis in some truth." He was so convinced of this that he encouraged his many influential medical friends in diverse universities to initiate detailed experiments in honey nutrition.

I was called back to the present by a question from the internist that really startled me.

"How soon will the killer bees in Brazil arrive in the United States?"

I hastened to assure him that there were plenty of bees right here now that would "kill" if they were mismanaged or abused. I made a mighty effort to impress on him that the opinion of substantial people who had direct experience with African bees were of the opinion that the whole matter was much overblown by a "sensation happy" press and Hollywood writers who didn't know a bee from a housefly.

The internist wasn't feigning interest when one of his nurses came in to chide him, "Doctor, you have kept six other patients waiting for over one-half hour!"

"We will talk again!", the good doctor smiled as he rushed out of the room, following his flustered, indignant nurse.

I left his office with the pleasant certainty that I had made another good friend for bees and honey. May it be ever thus.

An Autumn Nectar Source

By FRANCIS O. HOLMES
Henniker, N.H.

A VIGOROUS hybrid mint that shares the pleasing odor of one of its parents, spearmint (**Mentha spicata** L.), and the stronger growth of its other parent, Mentha suaveolens Ehrh., has proved very attractive to honeybees in my nectar-plant garden. Although it is said to have been much cultivated in Western Europe, it seems to have no well recognized common name. Technically it has been known in the past as Mentha alopecuroides Hull, and more recently as **Mentha** x **villosa** Hudson nm. **alopecuroides** (Hull) Harley. The meaning of "nm." seems to be "hybrid form", and the meaning of the epithet **alopecuroides** is "like foxtail", in reference to its long flower spike, which resembles the cylindrical inflorescence of the foxtail grass, **Alopecurus pratensis** L. Hence this robust mint might well be called "the foxtail mint".

This vegetatively-propagated, hybrid mint sets no seeds. It grows to be from three to six feet in height and has a prolonged blossoming period extending from the end of July to early October. During all but the first three weeks of this long blossoming period last summer my plants consistently attracted honeybees to collect nectar, not only on sunny days but also on some days when clouds and even light showers prevailed.

Locally available nectar sources frequently become scarce in autumn, but this hybrid mint, growing close to the hives, continues to attract honeybees to collect its nectar until severe frosts occur. Young leaves of this plant are used to garnish glasses of iced tea because of its spearmint-like taste and odor. In fact, my stock of this vigorous mint was derived by rooting the tip cuttings that had been used in a glass of iced tea at a local restaurant.

SPEARMINT

The hybrid relative of spearmint may be useful in another way to beekeepers in addition to its importance as a nectar source in late summer and autumn. There have been reports that ants dislike to live near spearmint plants and that when such a mint is planted under the kitchen windows of a house the ants will become less of a domestic nuisance. Related mints that share the odor and flavor of spearmint may also repel ants and it might be worthwhile to plant any clone of such mints close to the beehives in an apiary. Ants are often attracted to beehives to raise their brood between the inner and outer covers, where it is dark and warm. It would certainly be a boon to both beekeeper and bees if such mint plants would keep ants away from the general area of the hives.

Beekeepers may be well advised not to plant any of the more vigorous species of the genus Mentha in, or near, their flower and vegetable gardens, lest these take over the cultivated area and become troublesome weeds. Ordinary control practices often fail to control their growth. If the mints are hoed out, or spaded out, broken pieces of the rhizomes by which the mints spread underground will promptly send up new shoots and develop heavy foliage. Wet spots along roadsides, on the other hand, are ideal planting places. Even mint plants that develop long stems have a fortunate tendency to lodge easily and so would not, in general, interfere with the clear vision of motorists on the roadways. At the edges of ponds or brooks such mint plants are not likely to prove objectionable to anyone and honeybees are sure to find them soon after they begin to blossom.

To ensure an extended season of bloom, the blossoming spikes may be clipped away from some of the plants when they first begin to produce flowers. Side branches will promptly lengthen and bloom heavily a little later in the season, when unmodified plants are producing new flowers sparingly.

The late blossoming of these hybrid mint plants is uniquely valuable when goldenrod species have finally stopped attracting honeybees in autumn, especially in years when asters are not abundant. The easily available mints planted near apiaries tend to eliminate the need for long flights of scout bees, and then of field bees in general, at times when weather is becoming distinctly colder but before severe freezing puts an end to the nectar-gathering season altogether.

BEES FLOURISH ON POTATOES AND POLLEN

BOILED POTATOES can provide a basis for a nutritionally sound and economical meal for bees, according to research by Floyd Moeller and Emmett Harp, USDA-SEA entomologists, University of Wisconsin. They found that bees thrived on several different concoctions made from boiled potatoes. Both potatoes, and royal jelly, which bees feed on when they're in the hive, contain about 5 to 7% fat and about 12% of the right kinds of proteins.

"The best mixture we've tried so far seems to be a combination of about 10% bee pollen and 90% boiled potatoes," Harp says. "There's a beekeeper in Florida who has already successfully fed about 1,200 lbs. of this mixture to his colonies."

Wisconsin-grown Russet Burbank potatoes were used in the experiments. Different potato varieties may contain more or less moisture, so the entomologists recommend that beekeepers use their own formula when they mix the feed. The mix is usually fed in cakes that have the consistency of soft putty. The potatoes can be boiled with their jackets on. "Bees even feed on larger chunks of the boiled potatoes," Moeller adds, and they clean up anything they don't eat."

Honey Frame Rack

By JOHN R. CAULK [1]
Wooster, Ohio

IN A RECENT article by James Tabor[2] which appeared in the June, 1978, issue of the **American Bee Journal**, a "new" approach was discussed concerning the marketing of bulk comb honey. That is, the merchandising of a complete frame of honey—frame and all!

This has great sales appeal to the general public, particularly in those areas near cities. This type of bee product is unique and different. After all, how can one obtain a purer product? It is straight from the bees to the consumer. At the same time, it drastically reduces labor, equipment investment and packaging costs for the beekeeper.

I was most intrigued by Mr. Tabor's idea of a spring-loaded rack for holding a frame of honey so that it can easily be wrapped in polyethylene film which can be a most difficult task, to say the least! However, he did not describe the rack in detail so that one could go right out and build one.

After a little experimenting I devised a suitable spring-loaded rack (see photograph). Please keep in mind that you may make modifications to suit your own needs.

Simply take your base board and make two dado cuts so that you can securely attach the two upright pieces of wood. I suggest that you both glue and screw these two pieces to the base board.

Next, drill a hole in the middle of each upright piece. Take two screw eyes and grind a point on each end. Now you are ready to assemble your rack.

Bill of materials:

1 2 x 4 x 27 inch piece of wood
2 1 x 3 x 8 inch pieces of wood
1 6 x 1/4 inch screw eye
1 3 x 1/4 inch screw eye
5 Nuts
1 Lock washer
5 Washers
1 Spring

This device certainly makes life easier and more enjoyable when it comes time to package your bulk comb honey for market!

References

1Former faculty specialist, The Ohio State University's Agricultural Technical Institute, Commercial Beekeeping Technology, Wooster, Ohio 44691

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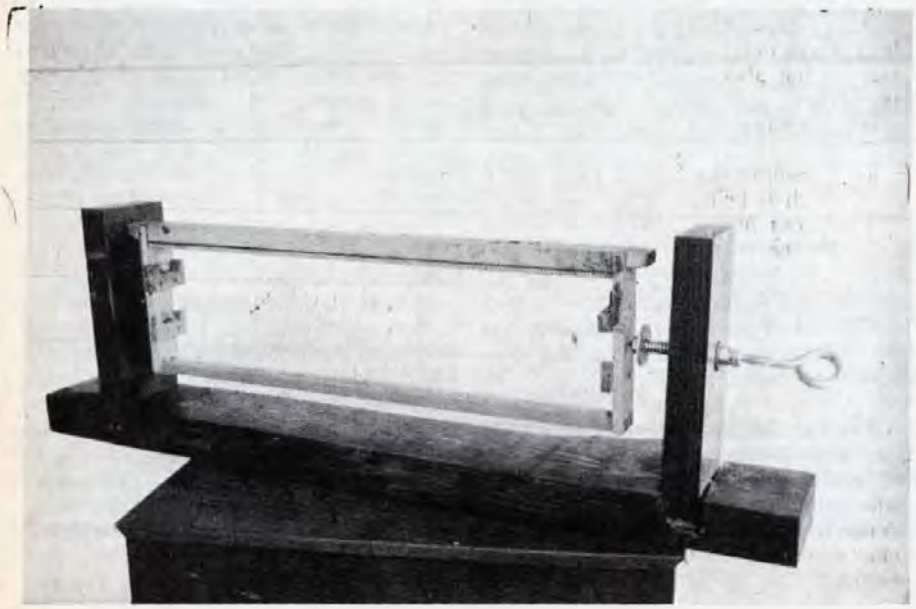


Book Review

The Beekeeper's Handbook by Diana Sammataro and Alfonse Avitabile. 131 pages including appendices, references and index. Paperbound $7.95, clothbound $14.95. Available from the publisher Peach Mountain Press, Ltd., 9245 Huron River Drive, Dexter, Michigan 48130.

The Beekeeper's Handbook has more substance than some of the beekeeping books for beginners published the last few years. Extensive research proceeded the writing as shown by the substantial number of references to scientific journals, bulletins and catalogs as well as bee journals and texts. The obvious thoroughness of the research by the authors gives the text depth without sacrificing straightforwardness.

The many diagrams used to illustrate various hive manipulations, special equipment and other beekeeping management instructions are excellent.

The subjects of **The Beekeeper's Handbook** range from what a beginner should first know on through seasonal and special management problems. Particular care is used at the beginning of the book to introduce the reader to the fundamentals of the beekeeping experience; something left to chance by some authors of beginning bee books and to a degree by the advanced texts.

Authors Sammataro and Avitabile did well to team up to produce this fine book. Alphonse Avitabile is professor of biology at the University of Connecticut and Ms. Sammataro is a Peace Corps worker teaching beekeeping in the Philippines. Her background is derived from a beginning as a beekeeping hobbyist and includes degrees from the University of Michigan.

A foreward by Dr. E.C. Martin, Director, beekeeping research, ARS, USDA points out some interesting sidelights to understanding and improving our environment of which beekeeping has been a part.

POSTAL RATES INCREASE

EFFECTIVE AUGUST 1, 1978, Postal rates on second class mailing **(Gleanings)** increased 72%. The increase is due to the phased step increase of July 6, 1978 according to the United States Post Office.

Honey Marketing Tips For The Small Beekeeper

By SIDNEY A. GROSS
St. Charles, Ill.

"In marketing you want to let as many people as possible know about what you are doing."

MOST OF THE current beekeeping literature is concerned either with honeybee research in academic or industrial laboratories or with innovative techniques for manipulating the bees at various seasons of the year. There is another element to beekeeping which has been largely ignored: certainly, the actual sale of the honey is of paramount importance to most of us unless we are either so small that we only produce enough to supply our own immediate needs, or else so large that we simply wholesale our entire crop. I imagine that most of the readers of this journal fall between these extremes, not being commercial yet producing more than enough honey for their own use. For those of us in this situation, our main concern after we harvest the crop is how we can move it from our storage containers to our customers' shelves and make some money in the process. I myself am a small beekeeper with fifty hives. I generally produce in the neighborhood of 3,000 pounds of extracted honey and several hundred comb sections. There has never been a season when I have failed to sell out my crop, usually several months before the new crop materializes. I'd like to share some of my marketing techniques with you.

The most important factor in successful selling is your own positive self image. You and your bees, through an enormous amount of mutual labor, have produced a commodity of which you can justly be proud. Because the harvest is often enough very small, many beekeepers have trouble convincing themselves that they are actually in business. Because of insecurity and inexperience, many beekeepers sell themselves short; they leave themselves open to bargaining over prices and perhaps even giving their product away. Remember, it's sad but true that people place no value on what they get free of charge. If you give away your honey your friends, relatives and neighbors will soon think that it's coming to them. If you sell your honey too cheap you are doing a disservice to yourself and to other beekeepers in your locale. Imagine how sales would slump if it were known that someone in your vicinity were selling extracted honey at $.50 a pound or comb honey at $1.00 a frame (frame and all!). Obviously, such unsophisticated pricing is the mark of someone with just a few hives who has had a good year and now doesn't know what to do with his crop. Whatever your reasons for being in beekeeping, you have an investment in time and money. Your harvest allows you to recoup this investment and more. So whatever else you do, don't sell your bees, yourself, or your fellow beekeepers short.

Like mine, your retailing area may simply be part of a room in your home. Preferably it should be located near an entrance door so that your whole house is not on display to your customers. The sales area should be clean, well lighted, and uncluttered; you are selling food and although you may want to project the image of a small time agriculturalist/-craftsman you also want your customer to feel that he is buying something wholesome and palatable. I have my honey displayed in a paneled room right off my front entranceway. Although the room is used for other purposes, there is nothing extraneous in the honey sales area itself. On my shelves I display honey in a variety of different sized jars along with pure beeswax candles and other honey related items. Surrounding the honey display are clippings from several local newspapers which describe my bee operation and photographs of some of my yards taken at different times of the year. My purpose here is not only to provide conversation starters but also to show my customers that they are indeed buying locally produced honey from "the source".

Let's assume that you have a honey crop which is being displayed in a sales area of your home. The next step is to bring in the customers, to market the honey. Business textbooks describe marketing as the process whereby a product is made available to an audience who wants it, and at precisely the moment that it is wanted. It sounds easy—you have something available that somebody else wants, and they simply gobble it up. But what if you have something and nobody wants it, or not enough people want it? Then it's up to you to **create** a demand, and this is the hard but very challenging part of marketing. The small beekeeper in the United States faces a marketing problem. If you would dispute this, the comparative shelf space given to honey and sugar in you local supermarket ought to convince you. Americans simply do not consume honey in anywhere near the quantities that people in some other cultures do. If we want to sell our wares then we have to create the market ourselves. This is not as diffuse a problem as it might seem at first glance. There are two factors (and maybe others as well) at work in contemporary American society which aid the beekeeper:

1. The small family farm is rapidly disappearing and is being replaced by a more efficient agri-business conglomerate. At the same time, the public at large is becoming ever more nostalgic for "the good old days" and the "simple rural life". Whether the good old days were ever good and rural life ever simple is debatable, but the beekeeper can nevertheless capitalize on this popular attitude. In many ways the beekeeper fits the idealized image of a farmer; his work is tied to land and climate. He is in this country usually a small operator who uses a great deal of hand rather than machine labor. His ability—seemingly mysterious—to "handle bees" puts him in the layman's eyes close to nature.

2. In recent years the American people have expressed strong concern over the quality of their foodstuffs and the seemingly wholesale use of chemical additives. Health foods have become widely respectable and not merely the passion of a minority of faddists. Certainly honey, processed with the respect that most of us give it, falls under the category of a pure food; many of my customers buy honey not for its own sake as a food but because they think it will do something magical for them. It seems to me that in trying to develop a public image the beekeeper can and should utilize both of the factors just discussed. He ought to combine the small agrarian nature of his occupation with the intrinsic purity and wholesomeness of his product. If this is what the public wants, this is what we can offer it, and we don't have to

stretch a point to do so. Each of us must produce an appealing image in his own way, the above are the basics from which we must start.

A major problem that we as small businessmen have is to let it be known that we in fact do have honey for sale. The immediate solution would seem to be advertising, i.e., making it publicly known who and where you are and what it is you have available. Although classified ads may seem to be the obvious approach in my personal experience they are ineffective. There might be several reasons for this: maybe people are wary if they know that you are paying to toot your own horn, maybe the ads didn't run long enough for a fair trial, maybe they were poorly worded. In any event, I have abandoned paid advertising and have resorted to other forms. One type of free advertising is free publicity in the guise of a newspaper story. This is not as hard to come by as many people think, especially urban areas with less than 100,000 people. Imagine the following possibilities just for starters: maybe you took a swarm near a public building and a reporter happened to be on hand or contacted you later. Maybe you have some special angle on beekeeping like cooking with honey and you can get space on the food page. Maybe, after you've been in the business for a couple of years, a newspaper will actually solicit you because you have developed a local reputation. At any rate, any kind of write up you can get in a local newspaper or bulletin will prove excellent for your marketing purposes.

While it may not strike you that newspaper publicity is easy to come by the next marketing device I'll mention can be used by one and all. Have a "Honey for Sale" sign in front of your house. For years when I lived on a state highway I had a reflectorized metal sign near the road. This could be seen day and night and worked very well with a self service display which I had on my porch. Now that I live in a more suburban location I display a routed redwood sign. Whichever type you choose, a sign is essential if only to help individuals locate your house. Some people will be worried about complaints from neighbors or violations of city ordinances with regard to signs. Your best bet is to hang the sign and see if somebody yells; they probably won't, especially if the sign is unobtrusive.

Your own honey label is excellent publicity for you. You might want to use a preprinted label, readily available from supply houses. In this case save much time and labor by imprinting your name and the other vital information with a rubber stamp. If you have any flair for artwork you would do well to design your own label. I printed my own on gummed goldenrod color paper using an electric mimeograph machine. The label is neat and I feel that it projects my image as a small beekeeper better than could be done by some of the commercial designs.

Besides the sign in front of your home and your label itself, you may want to tack 4x5 index cards to the community bulletin boards found in supermarkets, offices, schools, and recreation centers. In any of these locations your card will be removed eventually. When this happens, simply replace it with a new one. Even a single section of comb honey sold through this type of advertising will pay the cost of a generous supply of index cards!

In marketing you want to let as many people as possible know about what you are doing. This may involve selling your honey through outlets. When you do this you will have to give the cooperating retailer a discount. In figuring the discount do not be guided by the wholesale prices for honey quoted in the **USDA Honey Market News** and in the bee journals. These prices usually apply to honey shipped FOB in carload lots, containers exchanged. True, you are producing the honey yourself but in all likelihood you are not purchasing your honey containers at wholesale prices. The cost of the container simply must be taken into account in pricing. I give my outlets what amounts to a 25% discount off my regular prices. If a merchant complains that such an arrangement will not allow him enough of a mark-up, point out the following: 1. you are not charging him freight, 2. you will take back any unsold merchandise in undamaged condition, 3. you are in a position to process his orders promptly. If this doesn't work go elsewhere, but don't go broke selling your honey too cheaply. Strictly speaking, you are not wholesaling in the situation described above but are selling on consignment. What is the purpose of using commercial outlets? For me, it's to get wide distribution of the honey so that more people will learn about me. Remember that regardless of who is selling the honey, your label will have your name and address on it. A satisfied customer who buys through an outlet will no doubt look you up personally when he needs more; the 25% discount is a small price to pay for the opportunity to swell the ranks of your good customers.

Outlets which are available to you in most communities include health food stores, college book stores, churches and clubs which usually run fund raising bazaars, and the newer breed of gas station which has a small "fill-in" type store on the premises. You will certainly be able to think of other outlets available in your own unique location.

If you live in a rural or suburban area I strongly recommend selling at one or more of the local fairs held throughout the year. In case you've never tried it, this is very hard work because it involves being on your feet for hours on end and simultaneously keeping up a constant chatter (about bees) with the customers. On the positive side of the balance sheet, you will sell a lot of honey in a short period of time and you will be letting a lot of people know that you exist. Depending on the individual circumstances you may have to pay a token amount for booth space, but it's usually worth it. For fair type sales dress very casually—remember that you are projecting a country image.

A word or two should be said about how to display at a fair. After you've tried it once or twice you'll have a pretty good idea of the proportion of different size bottles you should have. Take along some of every size, of course, but weigh it toward the one pound jars. Many people will buy the honey as a souvenir and don't want anything too expensive. Almost universally, they will tell you that they don't want to carry around anything too heavy. Be sure to have some squeeze bears on hand as they go over real well with kids. In fact, the bears should be displayed at child's eye level—just the way it's done with gum and candy at the supermarket. Three pound jars go better than two pounders in my area because many people ask for a quart of honey.

Emphatically, I do not advise you to have an observation hive in the honey booth. Live bees will detract from the attention getting qualities of your honey display and that should be the focus of interest.

Thus far I've talked about various places where you might sell your honey. Now let me make some suggestions as to how you can maximize your sales. One very important technique is to learn your customers' names and perhaps some personal but trivial fact about them is that you can make conversation when they are in the salesroom. I wish I could tell you how to associate names and faces; it's certainly not a talent which all of us have. All I can say is that it's very important. Having a talent for remembering names may be innate, but no truly successful salesperson can function without it. One technique which is sure to help along these lines is to keep a card file on each customer who is a regular. In my filing system I record the name, address and phone number as well as the amount of honey purchased in a particular month and year. As soon as I get a fresh crop I send these individuals post cards announcing the fact and listing my current price schedule. With the filing card system you also have a record of an individual's particular likes (e.g., comb honey, cappings, dark honey, beeswax candles, etc.).

The key to success in any small business is to strike a balance between personalized, friendly service and over attentiveness. In my own mind, whenever a person is buying honey, the question is not "How much can I sell him", but rather "How can I get him to come back again".

One sure fire way to get a customer to return is to give him something free with each purchase. In New Orleans they have a word for this "extra something", a lagniappe. I have an electric mimeograph which I use to run off a variety of literature for my customers. Every piece of paper has my name, address, and phone number along with the word "honey". Sometimes this valuable information appears two or three times on a single sheet. Other than this I may distribute a honey recipe or two or some useful (or at least interesting) information about bees and honey. On top of this I publish once a year a newsletter. I run this newsletter off on colored mimeograph paper and pack one with each jar of honey that leaves the house. At county fairs I find that people will take my free literature even if they buy no honey. If only one person in fifty saves the printed materials and subsequently buys honey not only is the cost of the paper covered but eventually it will pay off the mimeo as well.

There is no reason why the small beekeeper should not be able to market his entire crop, whether he has a single hive or fifty or more colonies. You have a product which is pure and wholesome, one which you (and the bees) have worked hard to produce. Never give away the fruits of your labor or people will regard them as worthless. Charge fair prices and don't waffle on them. Cultivate the image of the small independent businessman who has strong ties to nature. Display your honey in an attractive manner and in orderly surroundings. Find creative ways of letting others know who you are and that you have honey for sale. If necessary, seek merchandising outlets in your community. Finally, learn who your customers are and strive for their repeat patronage by providing personalized service to each of them. If you do all this and do it correctly your crop will be gone before you know it. Your problem then will be not how to sell your crop but how to expand your operation to keep pace with sales.

In Defense Of Bee Stings

By BERNIE HAYES
Wellsville, N.Y.

NOW THAT A renewal of interest in bee venom therapy is taking place, stings and their effect are of more than common interest.

First, let us consider the body's normal reaction to the bee sting. At the onset, the body reacts with its extreme consequences, swelling is then at a maximum with often grotesque fleshy appearance, especially with facial stings. (It is perhaps well known that children usually experience more pain and swelling.)

Stinging, to the body, in time becomes a form of conditioning in which the swelling becomes less and less as the body becomes adapted to this outside irritant. This is what Charles Mraz, in his November **Siftings** meant the "greenhand" must endure until his body finally reaches that plateau of reaction typical of a bee man recognized at first sight by fellow workers due to lack of swelling. Charles put it very well, the event in the experience of a beginner after "putting up" with his work-a-day hazard until the day comes when he is recommended as a bee man, and a man, in that business. The statement is worth repeating, as follows: "With us anyway, in the bee yards, you are not a man until you no longer swell when you get stung, even in the eye. So when you work with your bees, let them 'make a man of you'!"

Recently I had occasion to verify the truth of the foregoing statement and also the approximate number of stings necessary to become a beekeeper able to take even a sting in the eye area—without looking like just coming from a fight! For most of thirty years, until just recently, I avoided stings using heavy clothes for protection, plus the usual head and arm gear. This was mostly to prevent disfiguration from swelling since the pain was secondary. Later I dressed in normal work clothes and endeavored to control the sting hazard with a quick wipe-off of the offending bee and used more smoke to keep the bees running to their honey.

So, for most of my beekeeping years I was seriously concerned over the appearance of stinging but in 1977 an event happened that completely changed my attitude towards this problem and I am writing it now because it may be of help to the many readers of the **Gleanings**.

The event in question, was the osteoarthritic attack I suffered in the spring of 1977, at age 66. Fortunately for me, articles on BV therapy were available and I soon began applying at least twelve stings weekly until a total of seventy-five was reached in the fall of that year. This was done following information that Charles Mraz kindly made available to me at that time.

During that period I discovered that the swelling diminished as the treatment continued until finally, on June 1, 1978, I noted a sting close to my eye just raised a slight swelling. (I receive a few stings while in my garden near my apiary.)

Of course, the reader may wonder as to just what is normal in the field of sting reaction and it is a question well put. My experience has been that persons that have any allergies are also prone to a strong sting reaction. For example, my wife has numerous allergic reactions which she keeps partially controlled with medicine. However, if stung, she suffers a severe headache from it. While on the other hand, I have no allergies, eat a full choice of food and feel that my sting reaction is normal for my age. However, I still redden up at the sting site more than I like—possibly due to my arthritis condition, more or less dormant. This red area is about the size of a silver dollar while the welt appears normal. The sting pain is usually much more in muscle areas—also possibly due to the same reason. I usually control this with an ice cube at home and cold water at the apiary, if needed.

In summary, I trust that I have proved my point relative to stinging—mainly that any adult, or near adult, after taking between a minimum of seventy-five to a maximum of 100 stings, will become resistant to sting swelling and in the bee yard be able to withstand normal stinging with a minimum of discomfort.

From my standpoint, the sight of an elderly beekeeper heavily protected against the honeybee, is just not the best of practice. Certainly those that avoid over much run the risk of a sudden case of allergy to stings and the end of their beekeeping days unless undergoing an extensive medical treatment. How much better to gather the advantage of Nature's acupuncture, or inoculation, and build a

(Continued on page 435)

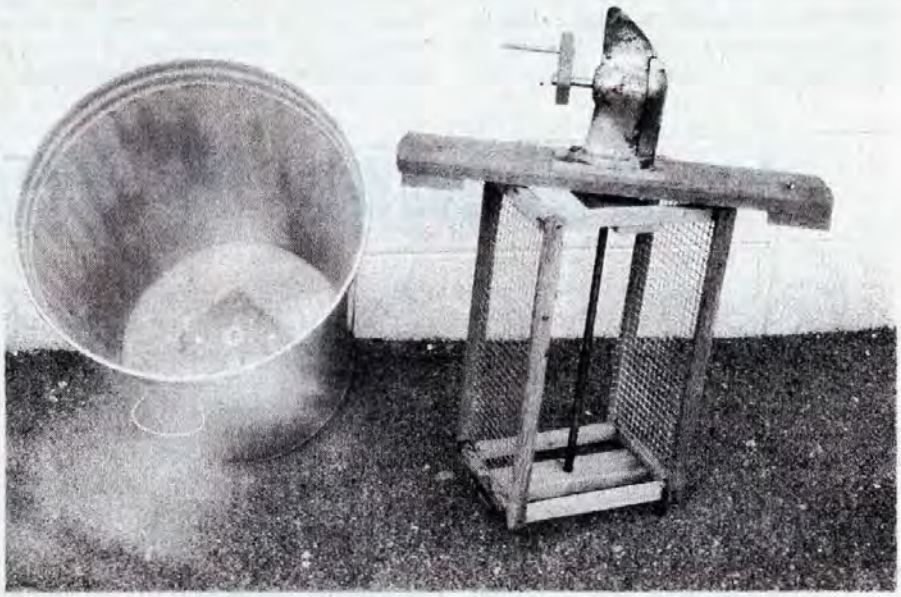
The "Outboard" Extractor

By H. T. KERR & J. D. JENKINS

"Many beekeepers have produced homemade extractors and many ingenious designs have been developed throughout the years."

NEARLY EVERY HOBBY beekeeper has at some time wanted to obtain liquid honey without destroying the comb. Since the simplest commercially available extracting equipment costs about $200, purchasing the equipment is not practical for many hobby beekeepers. In some cases a hobby beekeeper may find another beekeeper with an extractor who is willing to extract the honey for little or no charge. In other cases, several hobby beekeepers may purchase extracting equipment on a cooperative basis. In either case the inconvenience and the hazard of disease contamination may make sharing equipment unattractive to all parties involved. Many beekeepers have produced homemade extractors and many ingenious designs have been developed throughout the years. Some designs required considerable mechanical dexterity to fabricate; some were relatively expensive; and some simply did not work well. The drive transfer mechanism used to spin the baskets presented most difficulties as they were usually crudely built, noisy, and somewhat dangerous for fingers.

A new design is described for a simple homemade extractor that is easily built, smooth running, quiet, and costs less than $25 to make. It also extracts honey efficiently from all size frames without damaging the combs. The extractor is basically a galvanized garbage can with a simple steel or wooden frame basket attached to an easily obtained and completely assembled drive transfer mechanism—the foot section of a small outboard motor. The assembled product is shown in the photographs. The main virtue of this design is the simplicity that results from using the outboard motor foot section as the drive transfer mechanism.



The basket assembly may be constructed of wood or metal. The outboard motor drive mechanism is shown at the top. A 21" or longer drive shaft is in the center.

The extractor assembled.

The foot section can be salvaged from a small discarded outboard motor; it is usually attached by only two or three bolts and is very easily removed. The same bolt holes can be used to attach the foot to the top support of the extractor. The propeller shaft and the drive shaft of an outboard motor are part of the foot section, and each shaft has a grease seal which should be replaced if it is leaking grease. The size and brand of the motor from which the foot section is obtained is not too important except for the drive shaft. The drive shaft should extend at least 21 inches from the foot section and should have at least one small hole drilled which can be used to key the frame basket rigidly to the shaft. Most small outboards are geared so that one revolution of the propeller shaft produces about 1.5 revolutions in the drive shaft. This gear ratio permits complete honey extraction with comfortable cranking effort.

The basic purpose in submitting this article is to describe an extremely useful design concept for a homemade extractor. Complete design details are not provided for the extractor shown in the photographs for several reasons. The specific dimensions of many components (i.e., crank handle, top support bar, bottom bearing structure, key pins, etc.,) depend on the model foot section used. Also the size galvanized garbage can selected determines the frame basket size and consequently the size frames which can be extracted. A standard 20 gallon can is about 17-1/2 inches diameter at the top and can be used if only shallow super

frames are to be extracted. The 30-gallon can is about 21 inches diameter at the top and can be used for all frame sizes. A different kind of tank may be available for which the frame basket must be designed. Too, a functional frame basket can be made of wood as shown in the photographs, but welded steel construction may be preferred by many beekeepers. A simple honey drain should be installed in the bottom of the extractor tank particularly if galvanized material is used. Honey should not be allowed to stand in a galvanized container. If no drain is used, galvanized tanks should be painted inside with an epoxy polyester paint which is approved for contact with foods.

To benefit those beekeepers who may wish to duplicate the extractor shown in the photographs, a schematic diagram is shown with some dimensions. Also a list of components is provided.

List of Components

°Galvanized garbage can

(20 gal. can for shallow super frames only)
(30 gal. can for all frames sizes)

°Foot section from small outboard motor—drive shaft should extend at least 21 in. from the foot

°Bearing/bushing

°Wood (or steel) for frame basket and top bar

°Screen—1/4 in. hardware cloth (20 in. x 24 in.)

°Drain Pipe

°Epoxy polyester paint

°Key Pins

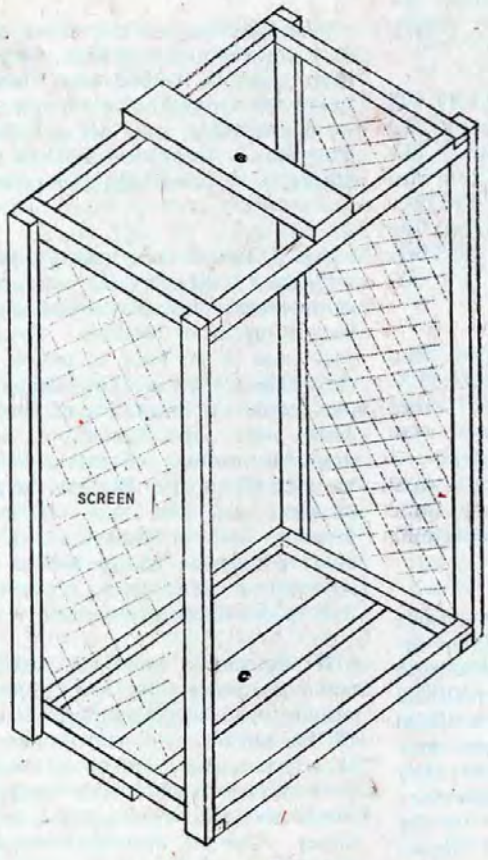
°Screws and waterproof glue (if wood basket)

°Crank handle

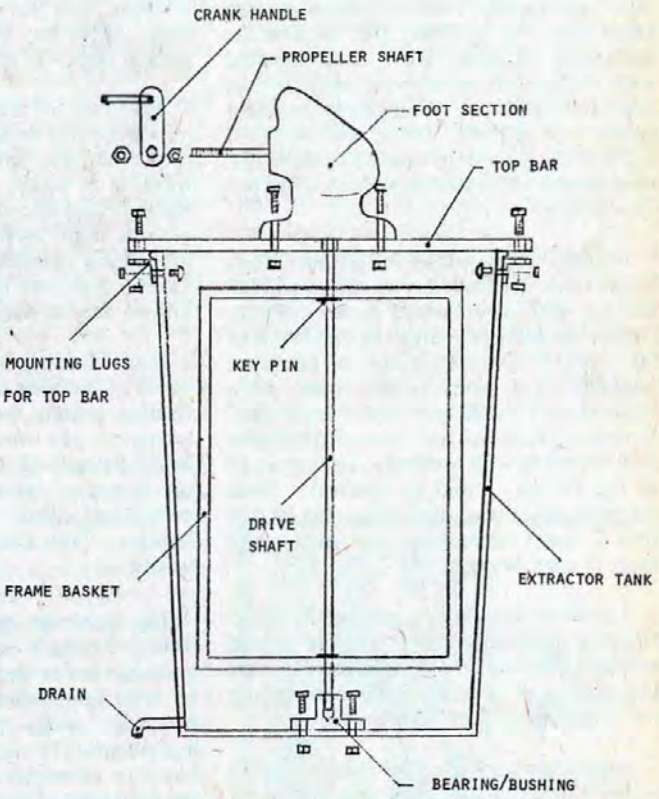
°Mounting lugs for top bar

°Bolts and nuts for foot section/bearing/mounting lugs/crank handle

Editor's note: In our opinion some of the materials used in this extractor would not be approved by a Food & Drug Administration inspector and thus the honey would not be marketable. However, by definition a hobby beekeeper does not sell honey.



The frame basket. The size galvanized can selected for use determines the basket size to build. For use with a 20 gallon size garbage can construct the basket 8 x 12 x 20"; for a 30 gallon can the basket should be 12 x 12 x 20".



A cross section of the "outboard" extractor. The drive shaft is part of the outboard motor foot section and should extend at least 21" from the foot section.

Siftings

By CHARLES MRAZ
Middlebury, Vermont

RECENTLY BEES and beekeeping have been taking a lot of bad, and I believe, slanderous publicity from we don't know who. First it was this garbage about the dangerous African bees as discussed in last month's **Siftings**. Then there was that release about pollen in honey from the Northwest that might be carcinogenic. The latest is that news release by Sioux Bee that honey might contain botulism spores and cause "crib death". These are all nothing but slanderous lies, if you should ask me. It appears to be a deliberate discredit to the "natural food movement" that has made such great returns in recent years.

I don't know about the "tansey" pollen mentioned that is supposed to contain a material that could be cancer causing, but the real facts are, that pollen is not carcinogenic, but in reality is anti-carcinogenic. Many people do not know this, but in 1948, Dr. William A. Robinson of the USDA experimented with pollen on mice with spontaneous mammary tumors. With only one part pollen to 10,000 parts of food, it delayed the growth of tumors by 40% and in a number of cases there was complete remission.

About 25 years ago I treated White Swiss mice implanted with sarcoma 180 tumors with apitherapy; honey, pollen, royal jelly and bee venom. In one batch of 20 mice I had 10 make a complete recovery. I always felt with more experience I could get 100% remission. However, none of the research institutes that I worked with seemed to be interested in the results, I had to give up. Such research takes too much time and money that I don't have from my own small income with bees.

And now this warning put out by Sioux Bee that children under a year old should not be fed honey!! Honey is being made the scape goat to cover up the real reason for crib deaths, I believe.

Honey has been used for infant feeding without question, for centuries, and never a word about crib deaths until about the last 20 years or so did it become a problem, from what we read. What is difficult to understand is why milk is not also implicated as a carrier of botulism spores? Since botulism spores are everywhere in the air and ground, milk is a much more likely carrier of botulism than honey which is collected from freshly opened blossoms and not contaminated as much as milk is with cows, hay, mud and so on. It does mention all raw foods should not be fed to infants as they could be contaminated. Actually, never before have I heard botulism poisoning being caused by raw foods. Up until now botulism has been caused by **processed foods**, especially canned foods.

From what little I know about honey, it is impossible for botulism spores to develop or grow in pure natural raw honey. It is too acid; it doesn't contain sufficient protein, the osmotic pressure of the levulose prevents growth in honey and most important of all, pure, natural raw honey contains the enzyme, glucose oxidase. This valuable enzyme is removed or destroyed by over heating (120°F.) and by filter presses used by most commercial packers of honey today. Glucose Oxidase has the interesting property of maintaining a 33 part per million content of H202 in honey, even when diluted. No parthogens or disease causing bacteria of humans, can possibly live in honey for long. This has been known by experimental data for at least 50 years.

The truth of the matter is, honey will not cause crib deaths, but I am convinced it will actually **prevent** crib deaths. The levulose in honey goes immediately into the liver and stored as glycogen. The liver with a high level of glycogen has the interesting property to protect the body from toxins and poisons. This is a well known fact in pathology.

Many feeding experiments have been made in the past in Europe and the U.S. feeding infants honey in place of other sweetners. In every case the results were by far better with children and infants fed on honey. Never was a word ever mentioned about crib deaths in these babies. Only that they were unusually healthy.

The past 20 years have seen some drastic changes in infant feeding, the greatest change perhaps is the latest push by food processors of prepared artificial formulas with all sorts of artificial ingredients. To me, their use seems most likely to coincide with crib deaths; they started about the same time. Even more evidence is the recent warning by the government against the use of "liquid protein" diets used by many women to lose weight. The reason for the warning is that there have been deaths of adults as a result of excessive use of their "liquid protein" diet. Something like crib deaths perhaps? From what evidence I am able to observe, there is not much difference between "liquid protein" and "infant formulas" that so many unfortunate babies consume as their main diet.

I have seen neighbors with babies on these formulas terribly sick. They vomit, have diarrhea, sour stomachs, crying all the time, a real problem. Several of them I suggested they try some real milk and honey. In every case, with the first bottle of real natural food, the babies quieted down with no more digestive problems. Some of these infants are now healthy children. My five "infants" were all raised on honey modified formulas. In fact the doctor of my first two boys, 40 years ago used honey in formulas exclusively. He told us, "You put a baby on honey and you have a new baby". He also used honey exclusively on "premies" (premature babies) with great success. He told us they would be normal weight and size in a very few months. One of these "premies" still lives in Middlebury, a healthy, big over six foot young man. He was three pounds at birth.

This horrible publicity about botulism in honey will mean perhaps many babies that could be helped with "milk and honey", a symbol of health and prosperity in the Bible, may not get this help. They may be forced to take these horrible formulas with their digestive problems.

As if this is not enough evidence, recently, a food processor was accused of giving mothers in undeveloped countries a week's supply of formula. Then, when they tried to go back to breast feeding their babies, their milk had dried up and they could no longer breast feed them. They were then forced to buy the prepared formulas with money they could not afford to spend. Perhaps the greatest problem was the bad effects these formulas had on the babies, it created many problems. Things got so bad in some places the company promoters had to stop this deceitful practice.

If Sioux Bee had only used some common sense and had been aware of the wonderful work of Jonathan White of the USDA and his work with honey and of experiments and research that has been done in the past with infant feeding, they would not have fallen for such lies about honey. After all, who knows more about processing food, God and Mother Nature, or food processors? It would be interesting to see baby formulas checked for botulism spore contamination. Botulism seems to love processed foods, not natural foods.

(Continued on page 435)

BEE TALK----

By DR. RICHARD TAYLOR
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THERE ARE A couple of things I'd like to talk about this time. Trouble is, there is little connection between them, and I was once told that when you write a piece, it shouild all be one connected whole. This one will be somewhat disconnected.

First I want to say something about foundation, and that is, that bees really don't care much for it. Since it is pure beeswax, you would think the bees would treat it about the same as they do drawn comb, but that isn't so. I do not mean that they are repelled by it, but only, that you cannot count on them being attracted to it. If you hive a swarm on just foundation, the bees sometimes fly back out, whereas, they are much more likely to stay put if there are drawn combs in the hive.

What reminded me of this is that the other day my friend, Kevin came by and saw me putting up comb honey. He had decided that bees don't like comb honey supers because, he said, he had put one **underneath** a super of drawn combs, and the bees had filled the drawn combs with honey before they even touched the comb honey super. He thought this proved an aversion to comb honey supers. But that's not so. I once put a whole hive body of foundation under a super of drawn combs, and the bees filled the drawn combs before they would have anything to do with my foundation. They just used that hive body as a passageway to the drawn combs, until these were filled with honey, and then they finally went to work on the foundation.

I thought this was worth mentioning, because I'll bet hundreds of beekeepers have drawn the same conclusion Kevin did, and for the same reason. I find that my bees go into comb honey supers about as soon as any others if there are bait sections in them. Sometimes I put on a whole super of bait sections, that is, a super that was started the year before but not finished, and the bees go into this right away. (I always make sure there is no **honey** in such a held-over super; I let the bees rob it out dry at the end of the preceding season.) So the point is, that it is **foundation** that the bees tend to ignore, if given a choice, rather than comb honey supers as such.

The other thing I wanted to talk about is what I think is a good way to become a good beekeeper, and that is, to read, listen and keep your eyes open. What I have in mind here is that there are two kinds of beekeepers—those who like to talk, and those who like to listen. Of course, there is some of the talker in every beekeeper, for who does not enjoy the sound of his own voice when there is someone willing to take his seriously? But alas! A lot of beekeepers take such delight in talking that they never hear a word. While anyone else is talking, they are simply biding their time and thinking about what to say next. The result is that they don't learn much, and tend to repeat the same opinions, even, sometimes, after it has been pointed out to them that they are mistaken. I have even seen writers on apiculture **repeat** factual errors in print. Some beekeepers of long standing even boast that they rarely read books about bees, implying that they already know so much that there is nothing more for them to learn. They are right about this, that they are not going to learn anything more, but that is not because no one has anything to tell them. They have simply isolated their brains from the learning process.

I have a tendency to listen and ask questions, but not, I will confess, because I am less fond of my own opinions than others. It is often because I tend to be reticent in the presence of people who talk loudly and with great assurance, even when what they are saying is plainly foolish. But I am glad of this, for I have learned quite a lot by keeping my mouth shut and my eyes and ears open. Nor do I learn only from those who are wiser and more learned than I. I often pick up splendid ideas from beginners. In their presence I could easily sound off with great confidence, and maybe this would be rewarding to my conceit, but I would pay a price for it: I wouldn't learn a thing. And it is what you **learn**, as you go along, that is of lasting value, not the impression you have made on this or that audience; for in spite of their polite attention, they are really far less impressed by you than you are yourself, and are apt to see right through your pomposity.

And this brings me to a closely related subject, which is, the apiarist who thinks of himself as a Very Important Beekeeper. Now of course, there really is no such thing, at least in the eyes of the general public. To be sure, there are beekeepers whom other beekeepers admire, and even some, like Langstroth and Miller, whom subsequent generations of beekeepers venerate. But this does not change the fact that, to the public at large, we are all of us quite ridiculous people. Anyone who wants to impress the world can almost certainly find a better vehicle for this ambition than apiculture. The very thought of anyone keeping bees raises a smile everywhere. You can be the greatest physician, a famous clergyman, a renowned engineer, a greatest anything you please; but if you are **also** a beekeeper, then everyone receives this information with amused astonishment, and will forever smile when they see you on the street. Totally oblivious to any other distinction or achievement, they will say, "How are the **bees**?", almost as if they were making a joke. A beekeeper is a very funny person. He wears a screen cage over his head and mingles with stinging insects. In the minds of others this image is as absurdly amusing as any clown stumbling over his own feet. A beekeeper who, oblivious to that invincible impression of himself in the minds of the public, tries to appear as a Very Important Beekeeper only succeeds in making himself the more ridiculous. There is no harm in this, of course, for each of us has the right to be anything he pleases; but the pity is that just as the Very Important Beekeeper doesn't give himself a chance to learn very much, by talking a lot and trying to cut a fine figure, he also misses the opportunity to laugh at an exquisitely good joke, and to realize that the joke is himself.

From the West

By CHARLES KOOVER
1434 Punahou Street
Honolulu, Hawaii 96822

Waxless Foundation

IF THAT DOESN'T make you wonder I don't know what will. It's an actual fact and the best brainstorm I have come up with so far. And there is a reason for it. It was reported to me by way of a tape recording, which I still have, that one molded plastic foundation manufacturer had a truckload of dark unprocessed cappings-wax standing in his driveway. The thought came to me that this was a perfect way to spread foulbrood to all the hives in which this wax-covered molded plastic foundation is introduced, unless that cappings-wax was first processed and sterilized, for if only a smear of honey remained on this wax when it was applied to the molded plastic foundation, foulbrood could be carried far and wide. So the question plagued me, will bees build comb on unwaxed molded plastic foundation and draw it all out into perfect worker cells? The bees would furnish me with an answer so a frame of unwaxed Australian molded plastic foundation went into my experimental hive. A week later, before the queen would lay eggs into the drawn-out comb, the frame was removed from the hive. Lo and behold. My eyes were greeted with the most perfect all worker cells you will want to see. All built by the bees from wax produced in their wax glands. Whole patches of it and also unworked base foundation, so as to prove that bees will draw out unwaxed molded plastic foundation. Not only that, they had stored honey in the cells, which I removed under the water faucet, for that frame of partially drawn out comb on unwaxed molded plastic fondation is my prize exhibit. If you ever get to Honolulu I will show it to you.

This led to other questions. For instance, would it be possible to give molded plastic foundation a tooth, so to speak, by making it softly grainy so that the bees could make their newly drawn out wax adhere to it with a good bite, thus preventing it from ever coming loose from its base? I posed that question to a plastics manufacturer and although it is a trade secret it can be done in the manufacturing.

Bees love to draw comb. It is natural to them. Why not let them do "their thing" and believe you me, they do it with gusto! Who are we to tell them what kind of wax to use? Man-processed wax, which often has been bleached with acids, or has been damaged by the beekeeper, by letting it become saponified in the boiling process, or their own natural, freshly manufactured wax from their wax glands. The thing to do was to give them a whole super of unwaxed molded plastic foundation. When there is a flow on, bees can draw comb and store nectar unbelievably fast. It is also a good swarm deterrent. All facts you can read in your **ABC & XYZ** of beekeeping. I keep mentioning that encyclopedia of beekeeping because it is all inclusive on any subject of beekeeping you want to study.

The upshot of all my experimenting is, that the new molded plastic foundation will be sold unwaxed and will be softly grainy. Makes you wonder what I have to do with the manufacturing of this new molded plastic foundation. The answer is, everything. For it is my baby and although I don't get a cent out of it, I want it perfect before it gets on the market. I am having the time of my life and since the manufacturer will listen to me, Ihave made two trips to California at my own expense to be in on the manufacturing. When you get old, I will be 82 in July, you go crazy unless you have something on your mind. It's so much on my mind that it keeps me awake many a night. Don't feel sorry for me, for at night I do my best thinking. And you have to get old before you can learn to think. I have forgotten what that old Swede said about getting old and getting wise. It takes you a lifetime, I know that.

I got a letter from a beekeeper I want to share with you. Here is what he writes, "I have followed your **'From the West'** column for several years and appreciate your willingness to be frank where products are concerned. A member of one beekeeping association recommended the plastic frames as he had success using the medium depth size. When he came out with the standard brood frames this year I decided to try some out. The price and 'already assembled" feature were deciding factors. Some of my colonies refused—in the height of the honey flow—to draw it out, but readily worked the standard wood and wax combs I gave them after taking the plastic ones off. The two colonies that did work it, would draw out part of the combs perfectly, and then connect them together with cross comb making a big mess of the hive body. Clearly from my experience the style 9-1/8 inch foundation isn't much good if you want to have a movable frame hive. Do you think the problem lies with the frame (as mentioned in your article) or in the actual foundation not being accurate enough? Could I use it if I cut the foundation from the frame and put it in wooden frames spread 11 to a hive body? Otherwise I'm hoping I get a refund." **My answer to all this is, reread my articles on the subject.**

Let the Buyer Beware

On the subject of queen introduction he has this to say. "The only problems I've ever had with queen introduction have been in trying to introduce queens from the particular breeder advertising queens at a very high price. Both times I tried to introduce these queens. I used the same method of introduction as I used with queens arriving from different breeders on the same day. Somehow these certain extra special queens were either rejected, superceded, or just didn't lay a single egg. The only one that was actually accepted could only lay drone eggs! Meanwhile, on first inspection the queens from the other breeders (I bought at a lower price!) were laying perfect patterns of worker brood with a 100% of acceptance. Well—I know you are a busy man. Hope you can find time to respond to my letter".

Somehow, being a Dutchman I don't respond to the power of advertising. I am deadly afraid of it for I know it is loaded with fish hooks I can't see, but they are there. So I just don't bite. Saves me a lot of money and disappointment. I love that slogan, "Satisfaction guaranteed or your money back". Especially if it includes the mailing charges both ways. Only the better beekeeping supply manufacturers and their dealers state that in their advertising and that's what I go fo, for I can't lose. The fact is, that their wares are A-1. They have to be or they would soon be out of business with such a guarantee.

And now something else. I have never yet advocated something in my writing that I didn't try thoroughly myself first. I have to or my name as a columnist would soon be mud. And it also makes me sleep better.

Research Review

The Botulism Story

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

BOTULISM IS a disease caused by a bacterium that is normally found in the soil. Botulism organisms are common. It would be difficult to pick up a handful of soil anywhere on earth that did not contain some of the spores. The spore is the highly resistant resting stage.

This organism is peculiar in many ways. It can grow only where there is no oxygen. In the normal course of events it grows in soil when surrounded by other bacteria and microbes that have removed the oxygen from the immediate vicinity.

When the botulism organism grows, it produces the most toxic substance known to man. The toxin has no special purpose but is merely a by-product of the bacterial growth. Since the botulism bacteria are found in the soil, they may contaminate many raw food products. However, when we eat raw foods with these bacteria, the microbes pass on through our digestive systems and cause us no harm. Since the spores are heat resistant they may be found on cooked food as well. Many of us ingest some botulism bacteria every day, and certainly no one escapes doing so at least once a week.

Botulism is not an infection. The bacteria live and grow on the foods prior to their being ingested. This is the general statement about botulism one will find in most textbooks on the subject.

Researchers in California have found there is an exception to this presumed fact. It appears infants under six months of age are different. It has been suggested that the botulism bacteria may sometimes, somehow remain in their intestines long enough to produce enough toxin to make the child ill. The first case of infant botulism was discovered and reported in 1976.

A California researcher reported on four cases of infant botulism in 1976. In two of these cases, the infants were breast fed. In the third instance, the child and its parents had been on a camping trip. Honey was used in the child's formula. When the child became ill, what remained of the food the child had eaten was examined, and a jar of honey which had been taken on the trip was found to contain the botulism endospore. Other food might also have been contaminated, but because of its nature was no longer available for test. Botulism bacteria cannot grow in honey. No bacteria or micro-organism can grow in natural honey, because it is protected by its acid nature and osmotic pressure. However, botulism spores, like the spores of many bacteria, may remain alive in honey as they do in many foods. Those of us in the beekeeping industry were naturally alarmed by this 1976 report, and have followed the matter closely ever since.

In 1977, the **Journal of the American Medical Association** carried a detailed report on six case histories of infants with botulism in California. All of the affected children were five to 20 weeks of age. The symptoms included constipation, weak suckling, weak crying, and generalized weakness. Some had been breast fed exclusively.

A more detailed report on infant botulism appeared in June, 1978 in **Lancet**, a British medical publication. Tissues and bowel contents from nearly 300 infants who had died of "crib death" or unknown causes were examined. Botulism bacteria were found in ten of the 300. It should be emphasized that most infants affected by botulism recover. The death rate is perhaps in the vicinity of five per cent, but I have seen no precise data and it is probably too early in the investigation to be more exact.

Honey lends itself to examination when a case of infant botulism arises. Few food products are so stable. Most jars, cans and packages from which an infant might have fed are used completely or discarded by the time botulism is suspected in an ill infant. Thus, simply because the honey is still in the home, it is logical that it should be one of the foods examined. I understand that a number of honey samples have been examined and that something in the vicinity of two per cent of the samples contained the bacterial spores. However, I don't believe samples were taken nationwide and the figure may be higher. My friends in bacteriology tell me the figure is as high, and often higher, in the case of many foods. We can reasonably expect that nearly all fresh vegetables are contaminated.

Infant crib death is a sudden and harsh affair. Infant botulism explains a small part of the syndrome. Botulism is not the only cause, nor is it the most important so far as we are now aware. Now that we know this one cause, and the medical field has been alerted to that fact, we should be able to take steps to better care for those infants that become ill.

But what about honey? One individual suggested honey should carry a warning label indicating it should not be fed to infants under six months of age. The reports I have seen indicate it would be as logical to tatoo the same message on every mother's breast! According to reports I have seen and heard, officials in the Pure Food and Drug Administration and the Public Health Service's Center for Disease Control in Atlanta, Georgia have been asked if so labelling honey would be reasonable. They have replied that it would not, and that at this stage what is needed is more research and study. In the Center's July 21, 1978 report they state it is clear that honey is "not the only risk factor".

Officials and, I understand, attorneys for the Sioux Honey Association, the country's largest honey packer, thought differently. They gave a story to the **Washington Post**, and there has since been a rash of publicity on the subject casting honey in a bad light.

Did the Sioux officials act hastily? I think so. Honey has been implicated in only a small number of cases. In California a recent report indicates that of 43 known cases of infant botulism the use of honey containing spores was confirmed in three cases. And, since honey is a stable food and not one to throw away a few days after the jar is opened, we can expect it will be implicated in cases in the future. Since over 90 per cent of the cases known to date involve some other source, it is not unreasonable to suggest that honey may not be even one of the risk factors.

One of the great strengths of this nation is our research program. Discovering one

(Continued on page 437)

Fundamentals for All

"1978—A Good Year"

By W. A. STEPHEN
Worthington, Ohio

WHAT A YEAR! As I write, in early July, there is more honey in the hives around Columbus, Ohio, than there was at the end of the 1977 season. In fact, in checking back on my records, I find that on July 1 last year, my colonies had no honey—and I mean **no** honey. I recall making the statement that it would be hardly possible to get ten pounds of honey from the whole yard and some hives were quite dry. The bees were just subsisting on what came in daily.

The year 1978 is a different story entirely. In spite of the snowiest winter on record here, and one of the coldest, colonies came through in quite good condition. I fed a pollen substitute in March, by but mid-April the weather was such that they got enough pollen and early nectar to stimulate and sustain a fairly good rate of brood rearing. In fact, in late April, after a flush of nectar, there was a week or more of rainy, cold weather, when bees were confined to their hives. This inclement weather delayed fruit and dandelion bloom, but not colony development. And here is something beekeepers need to keep in mind: during inclement weather bee development goes ahead, while blossoming, the visual evidence associated with plant reproduction is delayed.

If a good, healthy population of bees has sufficient stores (pollen and honey) and has gained momentum in brood development, then, with a good queen and adequate comb space, bad weather does not hinder colony growth. In fact, it will result in a much larger colony than there would be if the weather were good.

Let us suppose that a queen is laying two thousand eggs a day. (Under optimum conditions she may exceed three thousand.) It takes the eggs three days to develop. The six days following the hatching of the eggs are crucial for the larvae, the grubs seen as open brood. Colony food requirements are greatest at this time. Just as a milking cow, or sow with young pigs, or any other lactating female, must eat more to provide for her young, so the nurse bees in a honeybee colony must have sufficient pollen and honey to enable them to feed their young adequately. For each developing larva, it requires two cells of stores—one of pollen and one of honey—to meet colony needs during development. Of course, after six days, the larva becomes a pupa. It spins a cocoon within its sealed-over cell and will emerge in another twelve days as a full grown bee.

If you are good at figures, and feel so inclined, you can figure the amount of brood area required to accommodate the brood from a queen laying two thousand eggs a day. I have done it many times and it comes out to almost seven combs. Some beekeepers use this as an argument that a colony only needs one brood chamber, forgetting that it requires two cells to hold the food supplies needed for each one cell occupied by a developing bee. If you like to think of it as each developing bee requiring one cell for itself and two for growth food, it may help you to get a clearer picture. In terms of comb space, this means a hive of twenty-one combs for the development of seven combs of brood. This actually results in two 10-frame standard Langstroth hives being scarcely large enough to provide room for brood and food to last three weeks—the time from egg laying to emergence of the bee.

We never see seven combs full of honey and seven combs full of pollen in hive at any one time, but if you remember that food-storage space may be twice the brood area in your hive, it will help you appreciate how much total comb area is needed. It may even help you to convince the single-story beekeeper of the need for double brood chambers.

Now, we're able to consider the effect of confinement due to weather conditions on a colony. If the queen laid two thousand eggs three weeks ago today, there will be two thousand young bees emerging today. This will be repeated each and every day, so that the total population will be increasing at a rate of two thousand bees a day. Those who have purchased package bees have a good idea of what two pounds of bees look like. In five days of non-flying weather, our colony will have a 10,000 increase in population—about equivalent to adding a two-pound package.

All of this increase in young bees results in what Gerstung's theory (1) suggests is the main cause for swarming. This goes along with overcrowding. And we had plenty of swarms this year. This, of course, has resulted in weaker-than-normal over-wintered colonies and has reduced the amount of surplus honey in the hives. Colonies which did not swarm, and with good queens, have increased as much as 150 pounds (70 kg.) in weight, while those which swarmed have less than half this increase.

My colonies which swarmed are not the only ones with little surplus honey. When I checked my colonies in early spring, I marked a couple which had brood that was not so good. The queens looked all right, but they were either not laying in every cell, their eggs were not hatching, or the larvae were dying. This showed up particularly in the sealed brood which was not compact. There were too many "skips". Of course, on closer examination, this could be seen in the open brood, too. Well, these colonies now have one super on them. My best colony has five.

Evaluation of these colonies on the basis of surplus honey production would indicate that it would have been good economics to replace the poor queens with six, or seven dollar queens early this year. Last year, it would not. And the year before it would have been even less profitable, so what is the lesson to be learned? It is best to sum it up in the Boy Scout motto—"Be Prepared". Nevertheless, results point up the reason for jubilation this year. Superior colonies are always the best indicators of production potential. We have enough of these so that if no honey comes in from now on, we shall reckon 1978 as a good honey year.

(1) Gerstung's theory dealt with an imbalance of age groups in the colony—too many nurse bees crowding the brood nest.

MISSOURI PASSES BEE INSPECTION LAW

A permit to move bees into Missouri will be required after August 13, 1978. Applications for permits may be obtained by writing to the State Entomologist, Missouri Department of Agriculture, P.O.Box 630, Jefferson City, Missouri 65102. A health inspection certificate must be furnish along with the $5 application fee before permits will be issued. Inspections must be done within 90 days prior to the proposed date of movement.

Questions and Answers

Q. In the May, 1978 issue of Gleanings I read the fine article "What is Bee Poisoning?" by Carl Johansen. It pretty well confirms what I have suspected for some time—that some of my colonies have suffered pesticide damage. I suspect Sevin and think that some may have occurred last season and the effects are still carrying over. In the past when one colony became queenless I simply combined with the one next to it but now I think I may have helped kill off some more by simply giving them poisoned honey and pollen.

The above mentioned article, as well as others that I have read does not say what to do with the frames, drawn combs or, for that matter, the hives themselves.

Is there a time limit beyond which the chemicals are no longer effective or should the equipment be destroyed?—H. B., Missouri.

A. Insecticides which affect bees act in different ways and result in various degrees of bee kill. Sevin (carbaryl) is a very toxic insecticide and remains so for seven to twelve days after spraying, depending on temperature and other conditions. After bees contact the spray they are either killed or live to carry poisoned pollen or nectar back to the hive. They begin to show the effects of poisoning immediately; disorganization and odd behavior ending in killed adults and brood. After field bees cease to bring in the poison and are no longer being killed in the field the hive may recover its strength if the damage is not too severe.

The long-term damage from microencapsulated pesticides may be greater than from Sevin because encapsulated pesticide contamination extends the killing potential into the next season by being stored with the pollen.

In your case it may call for more investigation to be certain that insecticide damage occurred and from what source if possible. We do not think that any equipment need to be destroyed except possibly combs of pollen if you are certain that your bees were in an area sprayed heavily with encapsulated insecticides. You must remember that your bees would have had to be within flying range (three to four miles or closer) of a sprayed field or orchard to have received damage. Microencapsulated pesticides are a relatively new form, not everywhere in general use and, thankfully, under use restrictions.

Many common causes of colony loss such as loss or impairment of the queen (other than by pesticides, supersedure for example), swarming, starvation and disease may have the same total effect as poisoning, showing a loss of strength and even death of the colony.

We suggest you ask your apiary inspection service for assistance in finding the cause of your colony losses, particularly if you suspect spray poisoning or disease. Register your colonies with your county ASCS office at the beginning of the season to be eligible for beekeeper indemnity payments in the event of pesticide losses.

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Q. Since honey is stored in barrels, what is the coating used to paint the inside of these barrels. Is the product found in the local paint stores or does this require special treatment?

Which government agency has information on the type of paint coatings for food containers such as honey?—J.S., Texas.

A. One of the barrel refinishing businesses we contacted told us they used an epoxy phenolic resin paint on the inside of the barrels which were to be used for food. This coating is approved by the Food and Drug Administration. This answers the second paragraph of your inquiry.

This epoxy phenolic resin paint can be purchased wherever industrial metal coatings are sold; most local paint stores probably do not carry it.

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Q. The label on some honey offered for sale by dealers reads "Tame Sunflower Honey". The color is about the same as clover honey and the texture also. The taste is just a little sharp.

I am wondering if this is an imported honey, or are sufficient fields of tame sunflower being grown in this country to supply enough nectar to the extent that it can be called tame sunflower honey?

If there are sufficient fields being cultivated in this area [United States], do you know what states grow these tame sunflower in large acreage?

From the above description of the honey that I have observed does it fit the description of tame sunflower honey, or is it different for sunflower honey? I have never observed any of it granulating on the shelf. Does tame sunflower honey granulate readily or is it like tupelo honey?

Do you know of any foreign countries importing honey gathered from sunflowers?—E.W., Arkansas

A. Sunflowers are grown quite extensively in southern states, including Alabama, Georgia, Mississippi, South Carolina, Texas, Tennessee, and possibly your own state. Another important growing area is the Red River Valley of Minnesota, and in Kansas.

We are not familiar with the characteristics of sunflower honey except that it is amber and it does have an identifying taste. Sometimes it is mixed with other honeys which will cause variations in what is commonly labeled as sunflower honey. We are not familiar with the granulation rate, but believe it to be average. Mostly hybrids are used for planting for the harvest of the seed crop which in turn is processed into sunflower oil. Bees placed in fields of sunflowers increase the yield by insuring a better job of pollination.

Honey from sunflowers is usually from fields grown for agricultural use, but some sunflower honey may also come from wild sunflowers where they are prominent along the fall wild flowers. Some sunflower honey may be imported from the western provinces of Canada or from the countries of eastern-central Europe.

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Q. I kept bees until year before last when I became sick and had to sell. I will start again but first perhaps you can answer several questions for me.

How well does the bee escape work as compared to smoking and blowing?

For mobile [trailer] conveyance should the hives be banded with steel bands such as used in lumber yards?

What is the approximate weight of [1] a full depth super, [2] an empty shallow super, [3] a full shallow super, [4] an empty section super and [5] a full section super?

I've heard, but can't remember—do bees work upward or downward in a hive?

(Continued on page 443)

The Collector's Corner

by DARL and IVA STOLLER

WHEN I READ for first time in **Gleanings in Bee Culture** the article by Darl and Iva Stoller the **Collector's Corner**, I have been fascinated as this is my special interest.

I became a beefather in 1975 when I moved from the big city of Hamburg to a small village near the North German lake district, called Holsteinische Schweiz, where we buiilt a house of our own. I must have had the bee feeling in the blood as my father and both grandfathers have been beekeepers during their periods as Dorfschlmeister (teachers in small villages) in Pomerania and Eastern Prussia. Starting as a beekeeper I became also interested in literature concerning the subject and one day I had some older issues of **Gleanings** at hand and I found an article (I don't remember the issue but I do remember the contents of the article) in which it was described how an old beekeeper got some honey dishes as a birthday present for his collection. The idea to start a special collection came to me and to it was added the special bee collections of stamps and cancels, coins and medals, post cards and letters.

Now I began hunting at household shops, jewelries, and ancient shops in Hamburg and some other towns around, and also at the holidays at some other places in Europe. My joy was greatest if the hunting was successful, but sometimes we had to hesitate when we found some nice pieces as our budget is not unlimited. One day we saw a very nice tiny honey dish made from silver and crystal and the bee on the cover had a head made from a diamond. The eyes were envious but we had to pass it up. We have had also some very funny events. In a big household and hardware shop in a small town on the west coast of Denmark, we were told in excellent German "in Danmark is no need for special honey dishes, the Danes are able to put their honey in any clean dish!" (How true, I never knew before!). By this time we had found about four dozen different dishes, but it gets more and more difficult to find new ones. From twelve of the most interesting items from our collection photos were taken to be the pictures on the front page during this year of the monthly German beekeeping paper **Die Neue Bienenzucht**.

The photos here show a German dish with the wording honeypot (in German) and colored flowers in so-called countrymen painting; the other one comes from Russia. It is carved from wood "basswood" and the wording says (in Kyrillian letters) "Bashkirian Honey" (with a taste of a very high quality, we were told).

Finally, a few words about the other collections. We have about 80 different postage stamps on this subject. The recent issues came from Poland, Uruguay, Rumania and Yugoslavia. Beside these there are about nearly as many special postal cancellations. Very interesting is also the field of ancient and modern coins. Most people know the coin of

Ephesus/Greece, about 200 years B.C., but there are also some coins from Dyrrhachium, nearly unpayable. There are also some from here and there dated throughout the centuries. From this century we have some from Bolivia and Italy and emergency money from some German places at the end and just after World War I. Still valid are the coins of Malta, Norway and San Marino. Immense, nearly without any limitation, but not less interesting is the field of commemorative medals. Most curious of this collection are a few German medals made for some carnival purposes.

Our library contains quite a lot of periodicals, most in German and from the beginning of our century, but there are also some complete collections from foreign countries, such as Great Britain, Australia, Russia and Poland. The books are mostly from the same period and countries. The oldest item was printed in 1721, quite a nice piece, which begins in the preface, "There is nobody who became rich by bees!"—Signed Arno Bederke, P2071 Hoisdorf, Ladestrabe 1, West Germany.

We are very thankful to Arno Bederke of West Germany for this most interesting

(Continued on page 435)

Notes from the Straw Skep

By BESS CLARKE
Canton, Pa.

PENNSYLVANIA'S Mansfield State College hosted a Homsteaders' Festival this summer which included classes in beekeeping (of course), livestock farming, four season gardening, heating with wood, masonry work, log cabin building, wiring, welding, plumbing, calligraphy, wood stove cooking; and, in the late afternoons, bluegrass music workshops. The event was attended by 200 persons from all over the U.S. and drew nationwide attention when it was televised on the CBS Sunday night news.

The Beekeeping Course was taught by Lee Hoar, a commercial beekeeper in Tioga Co. Hoar was a hobbiest beekeeper for many years in Lancaster Co. Pa. where he worked as a photographer for the New Holland Farm Machinery Co. This is his second year as a full timer. An enthusiast in whatever he does, Hoar organized a short course in beekeeping held last May, and scheduled again for 1979, at Mansfield State College.

The Homesteaders' Festival, sponsored by the college's department of continuing education, was held on the perimeter of the athletic field. Tents were set up to accomodate the workshop groups. The attendance of 200 was twice the expected response and officials are optomistic that the festival will expand during the college's three year commitment to host the affair.

A temporary camp ground was set up on a tree lined hill above the stadium and many of the participants set up their tents, trailers and campers there. Dormitory accomodations were also available. A free day care center kept the children amused while their parents learned new skills.

I'm still not doing much cooking since my surgery. After all a 1,200 calorie salt-free diet isn't much of an incentive, and I've always found it extremely difficult to cook without tasting. Bill says that I'm my own best customer. He also says the he has to get invited out to get a decent meal these days. It's a tough life.

Instead of a recipe this month I offer you a cereal box. The most recent box of Quaker 100% natural cereal with raisins and dates which we purchased has a beautiful recipe for **Honey Cheese Pie** printed on the back. It uses 3/4 cup honey, and the exciting thought is that it will be seen, and hopefully used, by large numbers of people who are not beekeepers.

4-H BEEKEEPERS WIN GOLD CERTIFICATES

ERIC RIESENHUBER and Andy Riesenhuber are brothers who keep bees as their 4-H projects. They recently entered a display entitled "General Beekeeping" which was awarded a gold certificate at the 4-H regional beekeeping demonstration. The two boys have a chance to compete at the state level. Eric and Andy are in the Highland Del 4-H Club of Santa Cruz County, California. Louis Schuesler is their 4-H leader

FILM OFFERED

A 14 MINUTE film presented by the Science and Education Administration of the United States Department of Agriculture is designed to present a factual analysis of USDA research of the African bee. Primary footage was shot in French Guiana at a USDA-sponsored research project. Additional footage was shot in Baton Route, Louisiana; Tucson, Arizona; LaBelle, Florida; and Berkely, California.

Dr. E. C. Martin, ARS, USDA suggests showing this film to groups to counteract the false impression of Africanized bees gained from seeing the film **"The Swarm"**.

Information relative to borrowing a copy of this film may be obtained by writing to: William E. Pemble, Information Officer-TV, Film, Radio, Information Publications Staff, Science and Education Administration, Room 5142 Sou. Bldg.—USDA, Washington, D.C. 20250. Tel. (202) 447-3414.

Foster Honey Ranch

By ROBERTA DONOVAN
Lewistown, MT.

"After expanding his production by two-thirds in the past three years, Don felt that the logical focus should now be on marketing."

DON FOSTER, a fourth generation beekeeper, has been around bees all his life, so when he started thinking about constructing a new office and sales building adjacent to his honey plant at Lewistown, Montana, he took a tip from the bees themselves. His new building is hexagon-shaped, like the structure of a honeycomb. He calls it his "Honey Hut".

The building was recently completed and Don is finding that it is very practical. Although it cost about 25 percent more to build than a traditional square or rectangular design, its efficiency and utilization of space more than make up for it.

The hexagon design also adapted well to the limited space that was available. Don explained, "We have a municipal water pumping station on the north of us and two main water lines that come between the building and our plant. We have a railroad right-of-way on the other side and a county road on the south, so we are totally surrounded. This meant that our land area was very limited. And we had to be able to get to our loading docks and honey shipping tank at the plant".

Since the area available for the building was basically round, the hexagon design fitted perfectly.

The building, with center support and radial beams to the six corners, is composed of six equilateral triangles. Two triangles make up Don's executive office; two triangles are used for the restroom, coffee room and front entry; one triangle serves as the manager's office; and one triangle is the reception and sales area (with a little space borrowed from the bathroom area). There is not one square corner in the entire building.

The long halls usually found in traditional buildings have been avoided and access from one area to another is easy. Several outside entrances make it possible, for instance, for Don to come in from the plant in his coveralls, change to business suit and greet his business callers in his office.

Because the new building at Foster Honey Ranch is six-sided, sunlight streams through the windows all day, reducing heating bills during Montana's cold winters. Each room has its own thermostat to control the electric hot water heat and the building is air conditioned for summer days.

The frame building with tile roof has simulated stone siding to blend with the nearby plant, a 75-year-old structure of native sandstone, once used in early days as a brewery.

But perhaps the most unique feature of Don's new building is the perpetual observation hive where visitors can watch bees working every month of the year. It is patterned after an experimental observation hive Don saw at the University of California at Davis.

The indoor portion of the hive in the reception-sales area is four standard depth frames high with full plexiglass on each side.

"The size", Don explained, "is for the purpose of being able to maintain a colony through the winter, as well as summer, in the observation hive."

Bees enter the hive from outdoors through a straw skep hive fastened to the south wall of the building. The skep hive was imported from Holland.

Don Foster admires his new wrought iron sign after workmen finish putting it up. Below the sign is a wrought iron bee especially made for Don. — Photo by Roberta Donovan.

The frames can be removed from the office area for manipulation purposes.

Don anticipates that it will be a favorite attraction for school children and other tour groups.

"We've always had quite a few requests for school tours," he said, "but normally we don't have too much to show them in February and March, the months when they usually want to come. With the observation hive, we can show them our honey and the bees working any time of year. We can show them the queen and the things that they are basically interested in."

The Foster Honey Ranch, established by Don's father in 1946 and operated by Don since 1964, has grown in recent years. This is one of the reasons the new building was needed. But Don also wanted it in order to coordinate the different functions of his business.

Before building the Honey Hut, Don was maintaining three separate offices—two in the honey plant and one in the basement of his home, where his records were kept. This inconvenience is now eliminated. Don also needed an executive office, away from the plant, where he could transact business with bulk honey buyers and those who own the land where his apiaries are located.

The building also serves as a salesroom for Don's small retail honey business, primarily local people who drop by to purchase honey. The counter in the reception area doubles as an attractive display case. Don's bookkeeper-receptionist, Mrs. Elaine Jordan, handles the local honey sales.

Don Foster stands in front of his new six-sided Honey Hut. The skep hive through which bees can enter is seen on the right. In the background is a portion of the 75-year-old native stone building that serves as Don's plant. — Photo by Roberta Donovan.

Don purposely made sure that the Honey Hut was not attached to the main plant. He explained, "There is always a certain amount of bee activity around the honey plant during most seasons of the year and people who come to buy honey or do business otherwise don't always like to be so intimately related to the bees."

Most of the Foster Honey Ranch production is marketed in bulk shipments to Ohio and Wyoming. In addition, Don has an active market in California, where he also winters about two-thirds of his bees.

Recently he has been exploring the possibility of selling his honey overseas. With the encouragement of the Old West Regional Commission, he has exhibited his honey at international marketing shows in New Orleans, Puerto Rico, Holland and Belgium during the past year.

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Mrs. Elaine Jordan, bookkeeper-receptionist at Foster Honey Ranch, holds one of the honey bear dispensers marketed by the company. She is standing behind the display case filled with Foster honey products.—Photo by Roberta Donovan.

How Much Is A Beehive Worth?

By JAY BRODELL☆
Grand Junction, Colo.

"If you can't make eight percent on an investment, put your money in the bank and go fishing."

USED BEEHIVES and beekeeping operations traditionally have been worth what a buyer has been willing to pay. That is how it should be. But many times the buyer is reacting to his dream rather than to sound business sense. He ends up getting skinned, be it on the purchase of two hives for his backyard or on a full-time beekeeping operation.

Or sometimes it is the seller who grossly undervalues his holdings. Beekeepers are notorious for doing this.

Because I have been involved in the sale and marketing of beekeeping businesses, I have had to gather a lot of data. I've also had contact with hundreds of beekeepers and would-be beekeepers and with a number of operators who want to sell all or part of their operation.

Many times I find real confusion and even a little dreaming when the negotiating centers on the per hive price of an operation. Right now I can purchase hives on location at prices as low as $42 or as high as $110.

These extremes in prices are the result of uncertainty of value. The hives in question do not vary that much.

This magazine's classifieds frequently contain prices equally as varied. The problem, of course, is that the term "hive of bees" is not clearly defined. To some it means a deep super, cover and bottom board containing a queen and just enough workers to get through the winter while sheltered in a temperature controlled room.

To another beekeeper, a "hive" might mean a structure three deep supers high stuffed with bees and honey.

In a sense, this is a reflection of the beekeeper's own management practices. Each of the above set ups is fine, depending on what the beekeeper plans to do in the spring.

It may seem elementary that both sides in a proposed purchase define the word "beehive". Still, I know of a small town in another section of the country where the failure to make clear that one word has led to years of legal bickering.

For my purpose here, let us consider a hive of bees to be of 10-frame equipment, consisting of a bottom board, two deep supers each containing nine fully drawn wired and cross-wired combs, an inner cover, a telescoping cover and the equivalent of a three-pound package of bees and queen. The hive is painted and placed on a good bee location.

Well, how much is such a hive worth?

In the appraisal field we use three approaches to determine the value of real estate, businesses and structures. This is an attempt to apply those techniques to a single beehive, as if it were an apartment building or a warehouse.

To actually appraise an existing beehive or group of beehives, very complex methods must be used. Actual production records must be studied. Labor expenses and income must be figured, checked and cross-checked. For example, a beehive which consumes more honey than it produces (we all have one of these) isn't worth any more than the salvage value of the equipment.

But lets take an idealized version of a beehive and apply on it some of the basic methods to see if some guidelines can be developed.

Cost Approach

It is an axiom of the real estate business that no one will pay more for a property than the price for which he can reproduce an identical one. Beehives fall under this rule because they are easily reproduced with all parts usually being of factory origin and available.

The adjacent chart shows a close estimate of what a year-old beehive and bees is worth. The prices are current factory prices for commercial grade, although the lowest prices were picked from several suppliers including a local one near my home. From discussions with other beekeepers, we concluded that a production line setup could nail and prepare a beehive from parts with four hours of labor. (It takes me longer but some of the commercial guys do it in less time, thanks to air nailers and better systems).

We figured the labor at $3 per hour. We also added $10 per super premium included because our idealized hive has fully drawn comb. Everybody pays sales tax and we estimated shipping at $4, although that depends on where you live.

Using these figures, we obtained an indicated value of a year-old beehive, in sparkling condition with bees and drawn comb of $90.12, or rounded off to $90.

Is this then the value of a beehive? Probably not, as explained later.

Price of Beehive Components
[Cost Approach]

Telescoping Cover	$ 5.95
Inner Cover	2.85
Deep Super	3.25
9 Frames	1.98
9 Sheets Wired Foundation	4.50
Deep Super	3.25
9 Frames	1.98
9 Sheets Wired Foundation	4.50
Bottom Board	2.35
Labor (4 hrs @ $3 per)	12.00
Comb in each super ($10 per)	20.00
Nails, wires and eyelets	1.00
Package of Bees	20.00
Subtotal	83.61
Sales Tax @ 3%	2.51
Subtotal	86.12
Shipping (estimate)	4.00
Total worth new beehive	$90.12

CHART ONE

Income Approach

The income approach to appraisal assumes no one will buy an item for income production if it doesn't produce income. And the buyer will only pay a price that is in proportion to the amount of income generated.

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☆ Beekeeper and Colorado real estate broker

MONTHLY HONEY REPORT

(Continued from page 404)

Texas - Mesquite bloom very good. Rains in early August should help fall plants. Cotton crop in west Texas looks promising. Honey sales slow.

Colorado - Early honey being extracted. Bees working alfalfa and clover in August. Flows have been sporadic. Retail honey sales good.

Montana - Eastern Montana had an excess of rain which prevented bees from working. Western Montana had better weather. Good stands of white sweet clover and Russian knapweed. Crop will be spotty, about average.

Washington - Moisture conditions good. Honey sales off.

IN DEFENSE OF BEE STINGS

(Continued from page 421)

resistance to sickness. We should truly believe the words in the Muslim's ancient poetic Koran, which admonishes us that, "There proceeded from their bellies a liquor wherein is a medicine for men!"

Possily I have made a good case for what it takes to become a "Bee Man", as well as a "Man", able to carry his share of the work in a yard.

SIFTINGS

(Continued from page 424)

Roger Morse made some interesting comments in August 1978 **Gleanings** in the increase in the consumption of honey in the U.S. and Japan. I am sorry to see he failed to mention the main cause for this increase in the U.S. and Japan. It was the book, **Folk Medicine** , by my old friend, Dr. D. C. Jarvis of Barre, Vermont who died just a few years ago. **Folk Medicine**, some may remember, was a best seller for some 2-1/2 years in both the U.S. and Japan. It is now being translated in other languages and we hope with just as good results for the bees and the beekeepers.

COLLECTOR'S CORNER

(Continued from page 430)

article he sent us. Sometime in the future he will write another article on bee stamps, coins, etc., and we eagerly await this from him.

Our next article for the **Collector's Corner** will come in the December issue. Due to time limitations, we will bring out an article every three or four months. We welcome any articles or pictures you care to send to us and will try to work them in future articles. Until next time, happy collecting.

HOW MUCH IS A BEEHIVE WORTH?

(Continued from page 434)

A sharp investor will study the books of an apartment complex, do some simple math and in a few minutes he will know exactly how much he would be willing to pay to obtain a required rate of return.

The same is true of beekeeping, except for the situation of the pure hobby beekeeper. The craft often has been characterized as the hobby which pays for itself. But the commercial beekeeper doesn't want a hobby. He wants a business which will pay him a good salary and also supply a good rate of return on his investment.

If you can't make eight per cent on an investment, put your money in the bank and go fishing. A beekeeping business (or any business) should have a rate of return of about 10 per cent per year plus a nice salary to make it worth doing. A $5 per hour salary seems to be fair.

We used just these figures in applying the income approach in appraisal to a hive of bees. The second chart shows it graphically. The average yield per hive in this area is about one 60-pound can a year. That's $27 income based on 45 cents a pound, a fair wholesale rate. Discussions with other beekeepers determined it takes about four hours to care for a hive for a year. That four-hour figure assumes the beekeeper has many more than a single hive and that travel time to and from locations amounts to only a few minutes a year per hive.

A good beekeeper is worth at least $5 an hour, more than the $3 per hour paid someone to nail together hives (although, in practice it may be the same man).

Based on these figures, we determined a net profit of $7 per hive per year. Instead of figuring wax yield or pollinating income, those incomes were allowed to offset the maintenance costs of the colony.

So to obtain a 10 per cent return on his investment our calculating beekeeper would be willing to pay $70 a hive. Remember, that does not take into consideration the condition of the woodenware, the peeling paint or the chewed foundation. Some sharp purchasers of apartment complexes never see the structures. They want to see the books and that's all. They're right as far as straight investing goes.

But a beekeeper also wants to estimate the amount of increased production. From the chart you can see that if the hive's production soared to two cans a year, the value soars, too. A $54 a year income translates to a $34 per year profit. That gives an indicated value of about $340 per hive. Actually, the value is a little less because there would be a slight increase in labor to handle the additional honey and you would need some additional supers (at about $20 per each deep) to hold the honey until extracting.

Income Approach

Average annual production based on 1 60-lb. can at 45 cents per pound	$27
Minus estimate 4 hours of labor per year per each hive at $5 per	20
Wax production offsets any maintenance costs such as paint	0
Total net profit	7
Based on a return of 10 per cent on investment the indicated value of the hive is	$70

That is, a beekeeper could pay no more than $70 to make an annual profit of $7

Note, however, that the value of the hive soars to $340 if the annual production is two cans instead of one ($54 minus $20 in labor for annual profit of $34)

Chart Two

Nevertheless, a hive in reasonable condition which shows production of two cans a year is worth a whole lot more than one producing a single can, perhaps close to the indicated value of $340 this method gives us.

Market Data Approach

Now we come to the nitty gritty. The market data approach is a formalized version of what every supermarket shopper does: compare and then select the best "buy".

An appraiser will take similar structures which have sold, make corrections for differences in location, size and the times of the sale. This will give him an indicated value for the property he is appraising. The indicated value is pretty close to what the property will bring in the open market if exposed for sale. In fact, this is the only appraisal approach used on property on which income figures are not available or not applicable, for example, a single family home.

This is a very localized method and a market data comparison done here in Grand Junction, Colo. will not have much bearing to beehives (or apartment houses) in Flemington, N.J., San Jose, Calif., or even Denver.

Locally, here, we have sales of beehives ranging from $65 to $110. The former figure is a one and a half deep hive and the latter is a beehive with three supers. You can get the same information in your area with a little digging. The important thing is to make corrections for differences in the sizes and locations of the hives. You also have to discount such things as forced sales and those frequent sales to hobbyists for a price far above fair market value.

Conclusion

The true stated in the third paragraph of this (Beehives are worth what someone is willing to pay) has not been dimmed by all this math. Still there are ways of computing the probable worth of a beehive.

These informal studies showed a cost of $90 for a working hive with no depreciation. The income approach showed a hive is worth about $70 if it can produce a can of honey a year.

The market approach used in this area gives a figure near $85.

So if I were going to purchase a double-depth beehive on location here on Colorado's West Slope I'd probably be willing to pay between $80 and $85 per hive.

Naturally, I'd try to pay less if I could. And for the average hive I wouldn't pay as much as the various parts are worth if constructed from new material. That's an indication of a buyer's market.

(The main advantage of building new equipment is the certainty it is free of disease. That's probably worth a little something, too.)

But these are not hard and fast rules.

Show me a thousand hives on location which have a documented history of two cans a year over the last five years. I'll show you some valuable boxes. If the hives were on registered locations with no chance of intrusion from other beekeepers, I would speculate they would be worth very close to the $300-plus we figured with the income approach. And this would be the proper approach to emphasize in appraising this particular batch of colonies.

Obviously, if another beekeeper could spend $90 a hive and move these hives adjacent to the high-producing ones, the high producers would suffer a big decrease in value because the income couldn't be assured.

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FOSTER HONEY RANCH

(Continued from page 433)

One drawback to foreign marketing, Don has discovered, is that the buyers in other countries do not always want to buy the honey at a time when it is available and it is sometimes a problem to carry over as much as an entire year's production while waiting for the market to open. "We hesitate to keep an inventory of a half million pounds of honey on hand for a long time," Don said.

But Don is not totally discouraged. On the contrary, he feels that "the potential for a foreign market for our size business is very good".

Don has also recently started selling his honey to retail stores throughout Montana. After expanding his production by two-thirds in the past three years, Don felt that the logical focus should now be on marketing.

Don's premium honey comes primarily from yellow sweet clover and alfalfa. He also markets a small quantity of chokecherry honey and some from the nectar of Montana wildflowers found at the 6,000 foot elevation in the mountains south of Lewistown.

With a new building and expanding markets, both here and abroad, the future of Don's honey business looks bright.

HOW MUCH IS A BEEHIVE WORTH?

(Continued from page 436)

And the more I write, the more complex the situation becomes. That's because a determination of value is a complex art. The skill of the appraiser determines how accurate the final value will be.

Nevertheless, there are three rules to be gleaned from all this:

1. The value of a hive of bees or a whole bee operation can be scientifically determined to within a reasonable margin of error using the same approaches which have proved their worth on real estate and other businesses.

2. Accurate records over a long period will show better colonies to their best advantage. Good record-keeping is the most important job for someone who hopes to sell his bees or bee operation.

3. Regardless of what appraisers, real estate brokers or Indian chiefs say, the true worth of anything is only what someone is willing to pay for it.

RESEARCH REVIEW

(Continued from page 427)

of the causes of crib death is a great contribution. We now know that infants under about six months of age have digestive systems which are different from those of older children and adults. That knowledge will save lives.

Botulism is not a new disease. It has been with us for many years and the biology of the bacterium is well known as are the dreadful effects of the toxin it produces. Certainly honey is as safe as any food product; in fact, it is safer than most. My children were raised on honey formula and I hope my grandchildren will be as well.

The references mentioned are listed below. I am preparing an annotated bibliography on the subject which will include some of the newspaper articles which have been called to my attention. I'd appreciate having notes about newspaper and magazine articles on the subject as there may be some I've missed.

Anonymous

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Arnon, S., J. Chin, K. Damus, T. Midura, S. Snowden, P. Taylor, B. Thompson and R. Wood.

Honey exposure and infant botulism. Morbidity and Mortality Weekly Report 27:249-250, 255. 1978.

Dixon-Turner, A., R. J. Gilbert, A. C. Ghosh, L. Potaschmacher and K. Jefferson.

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Intestinal infection and toxin production by clostridium botulinum as one cause of sudden infant death syndrome. The Lancet 1978.

NEWS and EVENTS

CONNECTICUT
Bee Course . . .Fall 1978

A three credit, 14 week bee course: **The Biology of the Honeybee**, will be offered at the University of Connecticut, Waterbury Branch, in the Fall of 1978. Lectures every Wednesday evening (7 pm to 8:40 pm) beginning September 5, 1978 with laboratories on Saturdays (9 am to 11 am).

Professor A. Avitabile, the instructor, conducts research on honeybees at the University and has also done research at Cornell with Dr. Roger A. Morse and in Ottawa, Canada with Dr. Rolf Boch. He is a co-author of the **Beekeeper's Handbook.**

Course fee will be $135.00. This course is a 200 level course and can be used towards fulfilling requirement in many fields of major.

For further information concerning enrollment procedures, call Mr. G. Losey or Mrs. D. Martin. Area code 203, 757-1231.

KENTUCKY
Honey Festival

A honey festival is being held in Jackson, Kentucky on Labor Day Weekend, September 2, 3 and 4, 1978. Arts, crafts, flea market, square dancing, music, parades, old country store and fireworks are on the program.

For information contact Breathitt County Honey Festival, Box 227, Jackson, Ky.

ARKANSAS
Honey Festival

The Second Annual Arkansas Honey Festival will be held September 9-10 at Hackett, Arkansas. Hackett is located 13 miles southeast from Fort Smith, Arkansas.

Featured events are The Little Miss Honeybee Contest for 3-6 yr. olds, honey tasting and honey display contest, also a Fiddler's Contest has been added.

Horseshoe Pitching Contest will be held using NHPA rules. Women and men will compete for trophies.

Zorba, the Great, an escape artist, will be there performing a feat which Houdini once performed.

State dignitaries have been invited with state and local beekeepers in attendance.

A parade will open the festival at 10:00 and close at 8:00 on Saturday. Sunday events will start at 12:00 and close at 6:00.

Arts and crafts will be set up on the main street.

Food will be served by Hackett Ladies Club and entertainment by area musicians.

KANSAS
Kansas Beekeepers Assn.

The Kansas State Beekeepers Association will celebrate the 75th Anniversary of the founding of their organization on October 7, 1978, at Abilene, Kansas. The Meeting and Anniversary Celebration will be held at the White House Motel located just south of the junction of I-70 and State Highway 15. Registration will begin at 8:30 a.m. and the Business Meeting will convene at 9:15 a.m. and will include an election of officers. There will be an auction of beekeeping equipment with the proceeds going to the Kansas Honey Queen Fund.

At noon there will be a banquet celebrating the 75th Anniversary of the organization. The banquet will be held at the White House Motel Meeting Room.

In the afternoon the group will travel to the field to learn proper techniques for preparing bees for Winter and other useful information. The ladies will be privileged to see a demonstration on scarves and flower arranging by Miss Beth Haworth, the 1978 Kansas Honey Queen.

A Honey Show featuring honey from all parts of Kansas will be held. Each person is requested to bring a one-pound queenline jar of their honey bearing their label for the display.

IDAHO
Idaho Honey Assoc.

The annual meeting of the Idaho Honey Industry Association will be held Friday, November 10, 1978 and Saturday, November 11, 1978 at the Holiday Inn, Boise, Idaho. Registration Friday morning, general session Friday afternoon, banquet Friday evening and association business meeting Saturday morning.

OREGON
Pacific Northwest Bee School—Oct.19-21

This biennial meeting alternately hosted by Oregon and Washington, has three full days of program scheduled. Concurrent sessions will be offered during most of the three days. On the social side, a Friday evening country and western/bluegrass musicale has been planned. The banquet, to be catered by the O.S.U. Food Services Department, will be held Saturday evening. As this meeting also serves as the annual business meeting for both the Washington and Oregon Bee Associations, Saturday afternoon has been set aside for these functions. Commercial displays from several national and many regional bee equipment firms have been arranged. A Pacific Northwest Honey Show is also scheduled.

The meeting fees are:

$25/person, full three days
$30/family, full three days
$10/person for single (s) participation

Meeting place is at the Oregon State University, Corvallis, Oregon.

Meeting facilities have been reserved in both Memorial Union buildings on campus. Inexpensive dining will be available at both of these facilities. Lodging arrangements can be arranged at the many motels in the Corvallis area.

OKLAHOMA
Oklahoma State Beekeepers Assn.

The Oklahoma State Beekeepers Association will hold its fall meeting October 14, 1978. The meeting will be held at the O.S.U. Extension Center at 930 N. Portland, Oklahoma City, Oklahoma. The meeting is a one day affair beginning at about 8:00 a.m. and lasting until approximately 4:00 p.m. On Friday, October 13, the Central Oklahoma Beekeepers Association will meet at 7:30 p.m. in the same building and same room. Attendance for these two meetings is

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estimated to be about 200 beekeepers. Representatives from seven local beekeeping organizations around the state will be present.

NEW JERSEY
Morris Co. Beekeepers

Mr. John Placko, on left, is receiving a certificate for 26 years membership with Morris County Beekeepers. Mr. Placko is being congratulated by Mr. Rudy Nordman, on right, first Vice-President. The award was presented at the summer meeting in Mendham, N.J.

NEW YORK
Genesee Community College

Packing Bees for Winter [Beekeeping] 1 week, Tuesday and Thursday 7:00-9:00 P.M. $6, October 10 & 12. This course concerns preparing beehives for winter. The two main topics to be covered will be: checking the hives food supply, and wrapping the hive. This course will be of interest to area beekeepers. Freelan Blodgett, instructor, has been a beekeeper for over 30 years. Interested persons may register by mail by sending name, address, phone number and fee of $6 to Records Office, Genesee Community College Rd., Batavia, New York 14040.

MICHIGAN
Macomb Community College Bee Course

Macomb County Community College of Michigan is offering an 8 week course for beginning beekeeping. This course starts September 28, 1978. The course will provide the beginning beekeeper with the knowledge necessary to set up a beehive and manage it.

Interested individuals should contact the Division of Continuing Education, Macomb County Community College, Warren, MI 48090.

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Obituaries

Floyd E, Moeller

DR. FLOYD E. MOELLER, research entomologist at the USDA North Central States Bee Laboratory, University of Wisconsin, Madison, and University of Wisconsin Professor of Entomology, passed away peacefully July 26, 1978 after a brief hospitalization. He was 59.

He was born July 26, 1919 in Milwaukee, Wisconsin, where as a youth living on the outskirts of town he acquired a strong interest in plants and wildlife and a lasting affection for the out-of-doors. During his high school years, he began keeping bees, a practice he continued throughout his life. Upon graduating from high school, he received a University scholarship, and in 1941 he graduated with honors from the University of Wisconsin with a B.S. degree in Plant Science. Shortly after graduation, Dr. Moeller entered military service and after training served in the European Theatre as a navigator in the Army Air Corps. He retired from the Air Force Reserve in 1968 as a Lt. Colonel. Following active military service, Dr. Moeller reentered the University of Wisconsin and worked as a summer employee of the USDA Bee Culture Laboratory, Madison, Wisconsin from 1946-1948. On March 29, 1947, Dr. Moeller married the former Eleanor Johnson of Saginaw, Michigan. In 1949, he became a permanent member of the research staff at the Bee Culture Laboratory, a position he held until his death. Dr. Moeller received his Ph.D. in Entomology from the University of Wisconsin in 1952. The subject of his dissertation was "The effect of stock lines upon the honeybee population-production relationship." In 1966, Dr. Moeller was named Research Leader of the Madison Laboratory. He stepped down from this position in April 1978 in order to devote all of his time to teaching and research.

Dr. Moeller's research sought development of improved beekeeping management methods for increased honey production and pollination. He studied disease control, breeding and selection of stocks, colony behavior, application of repellents for honey removal, and protection of honeybee colonies from pesticides. He was author of many articles on bee management and diseases and was a co-holder of a patent for bee repellents. Dr. Moeller was a recognized authority on the management of honeybee colonies for honey production.

During the past 25 years, Dr. Moeller was a dedicated teacher who took special delight in introducing newcomers, especially young people to beekeeping. Many have begun keeping bees as a result of his encouragement. He always managed to make time in his schedule to discuss beekeeping problems with beekeepers and students to whom he was an inspiration. His avocational interests included hunting, fishing, management of their 50-acre farm, and as always beekeeping.

In 1962, Dr. Moeller was cited for his role in the development of safe bee repellents for use in removal of honey from the colony.

In 1967, he travelled extensively throughout the Soviet Union under a Scientific Exchange Program with the United States. He was a member of Gamma Sigma Delta and Sigma Xi agricultural fraternities, the Entomological Society of America, the International Bee Research Association, and the Wisconsin Beekeepers Association.

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WISCONSIN
ETN Conference

Wisconsin beekeepers can learn about "Fall and Winter Management of Bees" during an Educational Telephone Network (ETN) conference Sept. 28, 8-10 p.m.

Subjects will be winter requirements and colony preparation, including colony size, disease treatment and protection from the weather.

ETN functions like a hugh telephone party line which links listeners throughout the state with speakers in Madison. Listening points are located in every county.

Beekeeping experts from University of Wisconsin-Extension (UWEX) and the USDA Bee Research Laboratory in Madison will present the free program.

The speakers said time will be reserved for questions.

If you would like to participate or listen, contact your local county UWEX agent to make sure a room is available.

WEST VIRGINIA
W.VA. Beekeepers Assoc.

The West Virginia Beekeepers Association Fall Meeting will take place September 21-23, Thursday through Saturday, at Camp Caesar, ten miles south of Webster Springs. Registration begins at 1:00 p.m. Thursday, and the program will begin at 3:00 p.m. Deadline for honey show entires is noon Friday. The program will conclude with the Junior Beekeeper Award Competition. The Award will be presented at noon Saturday.

Full program fees, including room and board, are $30.00 per person. Inquiries and reservations should be sent to Sarah Hutchinson, Secretary-Treasurer, Route 6, Box 32, Webster Springs, WV. 26288.

GEORGIA
W. Georgia College Bee Course

A commercial beekeeping course giving instruction for managment of bees in each season, disease control, instruction in migatory beekeeping and tips on how to get maximum production from your bees. Also methods of Queen Rearing. **Where:** W. Georgia College, Room 117 Education Center, Carrollton, Ga. **When:** Sept. 19-Oct. 24; 8:00-9:00 P.M. (six sessions). **Cost:**$15.00. **Instructor;** W. Calvin Vinson

Send fee or call to reserve a place to W. Calvin Vinson, Rt. 3, Carrollton, Ga. 30117. Phone 854-4629 or register at Dept. of Continuing Education, W. Georgia College.

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Dr. Moeller is survived by his wife, two sons David and Timothy, a daughter Heidi, two grandchildren, three brothers, a sister, and many nieces and nephews. Together the Moellers were foster parents for 32 children.

Dr. Moeller was eulogized as a devoted teacher, and outstanding scientist and beekeeping expert, a dedicated naturalist, and an exceptionally gentle man. This is how he will be remembered.

Oscar Rutland

OSCAR RUTLAND, one of the largest honey producers in Wiscoinsin died June 8th. He worked as a state apiary inspector for 20 years. Mr. Rutland was active in community affairs as well as those of the Bethany Lutheran Church where he was a member.

Surviving him are his wife, Gertrude, one brother, two sons, two daughters, grandchildren and great grandchildren.

Ida M. Kelley

IDA M. KELLEY, wife of WALTER T. KELLEY passed away peacefully on August 6th at the age of 82. Ida was born in Plaquemine, La. but was raised at Crowley, La. near the Gulf coast and first was employed as a teacher and later as a Home Demonstration Agent.

She married Walter in 1926 to which union there was no children. For nearly 50 years she had charge of the office and knew large numbers of beekeepers personally. She and Walter attended many beekeepers conventions and meetings and delighted in entertaining the many visitors from the US and foreign countries that came to visit over the years.

"The Swarm" Gets Bad Reviews

Prominent national publications and local television movie reviewers are giving the movie **"The Swarm"** a lousy press recently. The Washington Star, in an editorial on Friday, July 28th under the title, A Bummer for Bees says—"now, of course, there is a movie about the killer bees. **'The Swarm'** is the worst movie of the decade, perhaps the worst in the history of motion pictures. The notable cast—the biped cast members—has at least the grace to look frequently embarrassed at uttering the dialogue with which they have been afflicted. If the African killer bees were calculating enough to retain an attorney, they could probably win a handsome judgement for calumny."

The Los Angeles Herald Examiner of July 15th in its Movie Review says **"The Swarm"** is "Irwin Allen's turkey that buzzes—paying four bucks for this botched circus would be as decadent on its own scale as spending 12 million or more to make it."

Extension entomologist G.T. Bohmfalk debunks the movie and tells the true, and happier version of the honeybee epic in his column in the Friday, July 21st San Angelo (Texas) Standard. Homer Anderson, San Angelo beekeeper placed an observation hive in his local movie house lobby during the showing of **"The Swarm"**. He says this should help show the true story.

And then there are the movie reviews on TV. Channel 11 news, New Brunswick, New Jersey suggested their viewers visit the flowers if they wished to see **"The Swarm"** for there they will find the bees in their true role. Dr. Radcliff Roberts, Asst. Professor of Apiculture at Cook College, Rutgers University was interviewed on the program in which the beekeepers' and scientists' views were presented. NBC Channel 3, Cleveland, Ohio movie reviewer Adele Silver called the movie "a dud", not worth the price of admission.

QUESTIONS & ANSWERS

(Continued from page 429)

How many colonies adequately pollinate an acre of (for example) orchard, cucumbers, blueberries, strawberries? What is the current rental rate of colonies?—H.L., North Carolina.

A. Bee escapes have the following advantages: their cost is reasonable, about $1.35 each. A whole super of honey can be cleared of bees without handling each frame. Removing each comb is necessary when brushing bees which may also irritate them when it is done clumsily. The principal disadvantage to using bee escapes is that they require two trips to the location of the hives, one to place the bee escapes and a second to remove the honey supers when they are free of bees. Under some circumstances such as when brood or much unsealed honey is in the supers the bees may resist leaving the super. Sometimes drones plug up the escape. During late season honey removal these problems are less likely to occur. Using two bee escapes in a ventilated wire screen escape board will help hasten bee removal.

Removing bees with a bee blower is fast and efficient but the initial cost of the bee blower may be high for the hobbyist.

Smoking bees in a filled super of honey should be done only to assist in the other methods. Smoking may impart an odor or contaminate fresh honey with a fine ash. Keep the volume of smoke low; use it only when installing a bee escape or to move bees out of supers that persist after using a bee escape or a blower.

Steel bands need only be used on hives if the trailer load of bees is being moved over rough ground, although some states may require this type of fastener if moved over a public road. Some beekeepers who use this type of conveyance fasten the hive bottoms permenantly to the wagon bad and use a fastener such as metal clips that fasten the hive components together while being moved and can be quickly and easily disengaged when working the bees. Banding with steel or plastic is a secure fastening method but may not be necessary when the moves are off the road and the route is smooth.

A filled full depth super weighs about 80 to 90 lbs.; an empty shallow super 12-15 lbs; a full shallow super 50-55 lbs.; an empty section super 10-12 lbs.; and a full section super approximately 32-34 lbs.

Bees work upward in a hive.

According to McGregor's **Insect Pollination of Cultivated Crop Plants** apples require anywhere from one colony to two to four acres to, two or more colonies per acre. One strong colony per acre seems to be the accepted standard under normal conditions. Cucumbers—one colony per acre is essential, two or more desirable, or one bee per 100 flowers. Blueberries—not less than two colonies per acre, up to five or more. Strawberries—growers often do not rent bees for strawberry pollination although it may be beneficial. Saturation pollination (five, ten or more colonies per acre) will give a maximum yield of perfect berries for the commercial grower. One colony per acre would be beneficial.

Rental rates vary according to the type of crop, the location and the discretion of the renter and the beekeeper. Rates, in general vary from $6.50 per colony to $12.50 and in some instances up to $24.00 or higher per colony. These rates are for strong colonies.

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MAGAZINES

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

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

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

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.

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BEEKEEPERS PLANNING Guide & Record Book helps keep track of income, expenses, inventory, production, beeyard information. Includes year-round management planner $3.25 postpaid. M. Chatelain, P. O. Box 1373, Baton Rouge, Louisiana 70821.

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

WANTED—Honey Business, 1000-1500 hives. Wyoming, Montana, Idaho, Washington. Reply, Box 19J, Gleanings, Medina, OH.

BABY NUC boxes and other queen rearing equipment. Bruce Rabe, 8923 South Telegraph, Taylor, MI 48180.

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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.

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CLEAR LIQUID Bee Feed. This feed is nature's finest and not man made. You can feed it to your bees for spring build up. Bees will consume several hundred lbs. of surplus honey. they produce one lb. of surplus honey. So you can see the importance of spring feeding. This feed can be obtained in large quantity and fed to bees to produce comb honey. It makes beautiful comb honey. Can be obtained locally. Revolutionary idea in beekeeping. Details $1.25. M. N. Allen, Rt. 5. Box 358, So. Fulton, TN 42041.

FOR SALE: 18 colonies, 10 frame with 6⅝ supers $40.00 each. Electric uncapping knives $17.50 each. Anaheim, CA. Evenings 714/630-2159.

FOR SALE: 36 ft. goose-neck tri-axle trailer. Two Kelley boom loaders. Will trade for supers. Call 617-663-3079 Merrimack Valley Apiaries, 47 Pond Street, Billerica, Mass. 01821.

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600 COLONIES with 6⅝" supers. Excellent equipment. Floyd Soper, 615 S. Bay Shore, Elk Rapids, Mich. 49629. 616-264-8650.

FOR SALE: Two-frame extractors. Phone (319) 556:6023.

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CLOVER and SUMMER HONEY 60's, ties or barrels. Your containers or mine. Pick up or delivered. Phone or write day or night. Paul H. Englehardt 21 Waite Rd., Antwerp, NY 13608 Ph. 315-659-8327.

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

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

Our family of extractors

The Hubbard Extractor comes to you complete and ready to use!! All you do is bolt it down and plug it in. The unit is all stainless steel with heavy welded construction. Absolutely **NO** lead soldered joints. The acceleration and speed are fully adjustable with convenient dial settings. The smooth, gradual acceleration (2 to 20 minutes) prevents costly comb breakage. The raised cone bottom allows free honey flow and easy clean-up inside and out. The Hubbard extractor is a quality food industry product, engineered for extended life and superior performance.

REMEMBER — YOU GET WHAT YOU PAY FOR!!

Model Number	2401	4401	8001
Frame Capacity	24 Deep/44 Shallow	44 Deep/60 Shallow	80 Frames
Voltage Required	110 volts	110 volts	110 volts
Motor Type	¼ Hp.	½ Hp.	¾ Hp.
Drain Diameter	2" FPT	3" FPT	3" FPT
Tank Height	34"	36"	38"
Tank Diameter	30"	38"	55"
Reel Diameter	28"	35"	52"
Shaft Diameter	1¼"	1¼"	1½"
Brake Type		Electric Disc	Electric Disc
Warranty	One Year Complete	One Year Complete	One Year Complete
Catalog Number	**HO 61050**	**HO 61070**	**HO 61040**
Price	$1250 Net	$1795 Net	$2350 Net

FRESH PACKED

Pure Bee Pollen

2 lb. Can $12.95

Postpaid in USA - Canadian orders add $1.

FOOD APPROVED GREASE

For Extractors and Food Handling Equipment. Packed in Tubes for Alemite Guns. *$5.50* per tube

THE FOLLOWING ARE NET PRICES — NO DISCOUNT

			9⅛"	6¼"	5⅜"
100	Hoffman Top Bar Std. Frames	#1	$38.00	$38.00	$38.00
400	Hoffman Top Bar Std. Frames	#1	136.80	136.80	136.80
1000	or more Hoffman Top Bar Std.	Comm. Grade	250.00	250.00	250.00
5	9⅝ Deep Supers, 9⅛ Frame	#1			28.85
50	9⅝ Deep Supers, 9⅛ Frame	#1			280.00
100	9⅝ Deep Supers, 9⅛ Frame	Comm. Grade			375.00
5	5⅛ Shallow Supers, 5⅜	#1			22.00
50	5⅛ Shallow Supers, 5⅜	#1			200.00
100	5⅛ Shallow Supers, 5⅜	Comm. Grade			375.00
5	6⅝ Shallow Supers, 6¼	#1			22.00
50	6⅝ Shallow Supers, 6¼	#1			200.00
100	6⅝ Shallow Supers, 6¼	Comm. Grade			375.00

HUBBARD APIARIES

ONSTED, MI 49265
Telephone 517-467-2051

BELLEVIEW, FL 32620
Telephone 904-245-2461

Root Extractors Are Dependable

L35

L10

L15

Every extractor is built with the same quality standards as our other Root products. They give you dependable service year after year.

For the beginning beekeeper there is the two-frame L10, hand and power driven, and the three-frame L35, with the hand or power drive.

The L15, two-frame reversible extractor is unmatched for speed and convenience. Both sides of the combs can be extracted without removing.

For more information about Root extractors visit your nearest dealer or write one of the outlets listed below.

The A. I. Root Company

Factories at Medina, Ohio 44256 — Council Bluffs, Iowa 51501
P.O. Box 9153, San Antonio, Texas 78204 — Branch at Elizabeth, New Jersey 07201
Distributors in Principal Cities — Dealers Everywhere