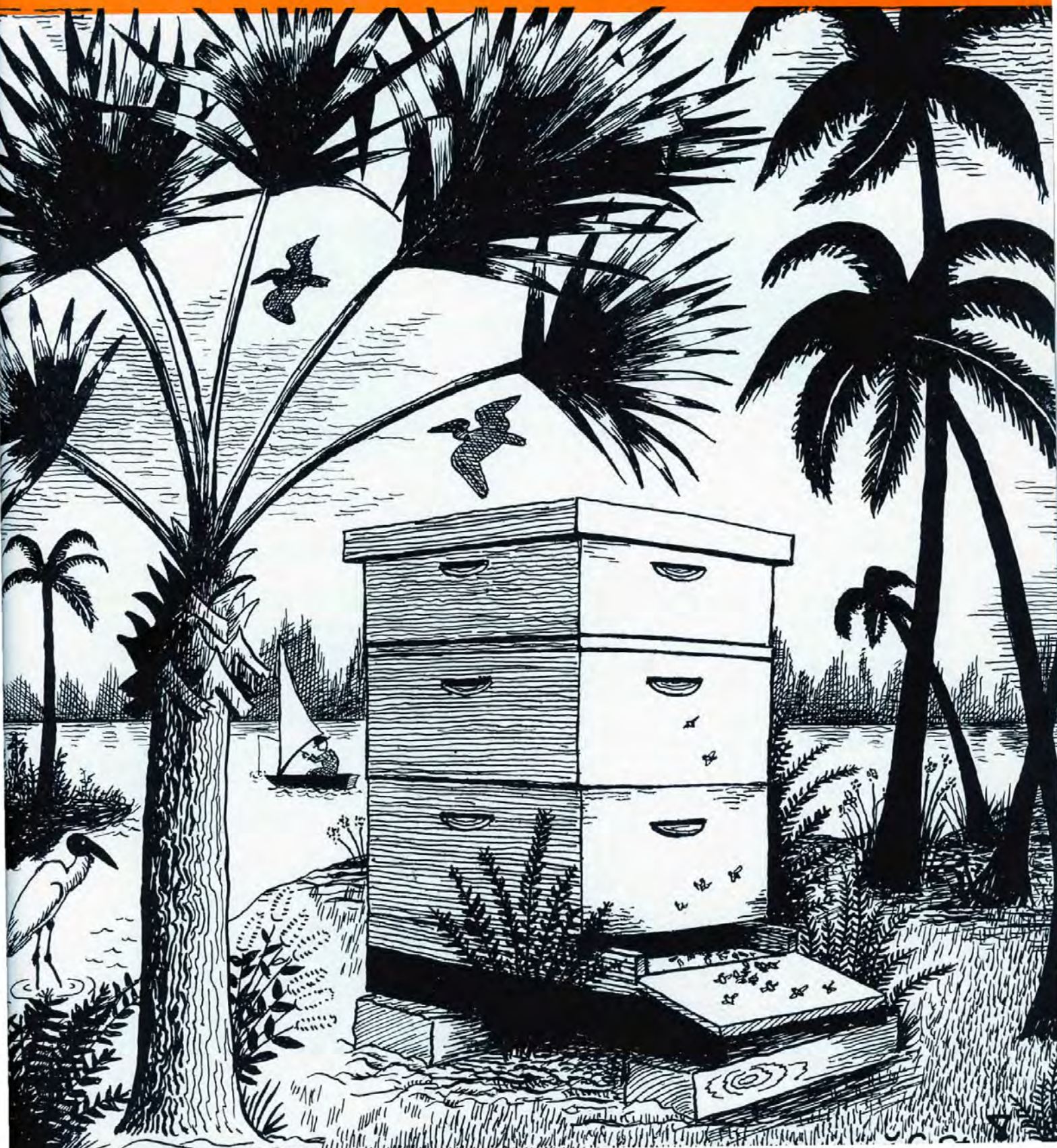
Gleanings in

APRIL 1979

BEE CULTURE



A comparison between Mother Nature's Colonies and Ours

HERS		OURS	
Easily accessible to beekeepers	NO	Easily accessible to beekeepers	YES
Portable	NO	Portable	YES
Over 100 years of experience	YES	Over 100 years of experience	YES
Supply Guarantee	NO	Supply Guarantee	YES
High yield of honey possible	NO	High yield of honey possible	YES
Long life expected	NO	Long life expected	YES
Swarming expected	YES	Swarming expected	NO
Protected from elements	NO	Protected from elements	YES
Guaranteed pure & natural comb wax	YES	Guaranteed pure & natural comb wax	YES
Combs strong & straight	NO	Combs strong & straight	YES
Pleasing to the eye	YES	Pleasing to the eye	YES

Dadant & Sons, Inc.
HAMILTON, ILL. 62341
Phone 217-847-3324

Everything for the Beekeeper

BRANCHES

P. O. Box 7996
2534 Airways Drive
Fresno, Calif. 93727
Phone: 209-292-4666

Rt. 2 - 186A
P. O. Box 267
Waverly, N. Y. 14892
Phone: 607-565-2860

1169 Bonham St
P. O. Box 146
Paris, Texas 75460
Phone: 214-784-6145

P. O. Box 270
Umatilla, Fla. 32784
Phone: 904-669-2622

722 W. O'Connell
Watertown, Wi. 53094
Phone: 414-261-5363

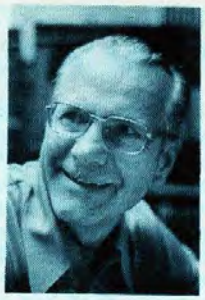
2425 Carroll Ave.
Lynchburg, Va. 24501
Phone: 804-846-0666

1318 - 11th St.
P. O. Box 575
Sioux City, Ia. 51102
Phone: 712-255-3232

P. O. Box 397
162 Tillman St.
Hahira, Ga. 31632
Phone: 912-794-2785

3603½ N. Main
Wayland, Mich. 49348
Phone 616-792-9540

John Root



Lawrence Goltz

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

John Root, Associate Editor
Dr. Roger A. Morse, Research Editor
Joan Stopke, Advertising Mgr.
Mary Louise Robinson, Sub. Mgr.

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

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

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

Microfilm copies available at University Microfilms, Inc., 300 North Zeeb Road, Ann Arbor, Michigan 48103.

Advertising rates and conditions will be sent on request.

Advertisers' Reliability: While the publishers do not guarantee advertisements in this journal, over the years very few complaints have been received.

Second Class Postage Paid at Medina, Ohio

POSTMASTER: Send Form 3579 to
623 West Liberty Street
P. O. BOX 706
Medina, Ohio 44256
Phone: (216) 725-6677

COVER STORY

Lone Hive On A Florida Lake Shore is the title of this drawing by J.G. Stevens of Roanoke, Virginia. This composite drawing was inspired by a Florida vacation last fall.

Gleanings in Bee Culture

April 1979 Vol. 107, No. 4

Created to Help Beekeepers Succeed

106 Years Continuous Publication by the Same Organization

CONTENTS

BEEKEEPING COURSES OFFERED IN TENNESSEE

MIDDLE Tennessee State University in Murfreesboro is offering a beginning course which began February 8th and will continue through April 26th. Leslie Little who served for twenty-three years as state apiarist is the instructor. A second course, on advanced beekeeping, is being taught concurrently with the beginner's course. Both are non-credit, but a two hour course for undergraduate and graduate credit is associated with these courses.

Information about future courses may be obtained by writing to the Office of Continuing Education, Middle Tennessee State University, Murfreesboro, Tn. 37132. Phone 898-2462. For information on credit courses contact the Dept. of Agr., MTSU, Ph. 898-2523.

REMEMBER!
Ad closing date is
5th of every month.

BEE POISONING SURVEY

A SURVEY of various states by Dr. Carl Johansen, Washington State University, Pullman, Washington reveals the extent of damage caused by micro-encapsulated methyl parathion to honeybees. Methyl parathion ME is essentially the only material currently used in commercial agriculture which has been proven to remove toxic to bees in stored pollen in beehives from one season to the next, according to Dr. Johansen.

A state-by-state summary of the survey is available from your state apiarist.

Monthly HONEY Report

LAWRENCE GOLTZ
March 10, 1979

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

Wholesale Extracted	Reporting Regions								
In 60 Lb. Cans	1	2	3	4	5	6	7	8	9
White (per lb.)		.55	.53	.50	.53	.50	.48	.46	.46
Amber (per lb.)		.52	.53	.47	.50	.47	.45	.43	.44
1 lb. jar (case 24)			20.95	18.75		20.00	19.10	17.85	18.35
2 lb. jar (case 12)			19.20	18.00		19.50	19.70	17.35	18.00
Retail Extracted									
8 oz. jar		.59	.65	.57	.59	.60	.55	.65	.69
1 lb. jar		1.20	1.22	1.02	1.19	1.05	1.10	1.04	1.12
2 lb. jar			2.15	1.95	2.30	1.95	2.20	1.98	2.10
2½ lb. jar		2.35		2.63					
3 lb. jar			3.35			2.98	3.25		2.95
5 lb. jar			4.85	4.65		4.58	4.39	4.70	5.15
16 oz. Comb			1.75		1.42	1.30			2.00

Beeswax — Light $1.70 — Dark $1.60

Misc. Comments:

New York-Bees confined during much of winter. Price of honey firm, good demand.

New Jersey-Bees wintering well through end of February. Feeding began as soon as snow melted.

Ohio-Bees had limited flights in early March. Condition of bees is from fair to good. Some colonies low on stores.

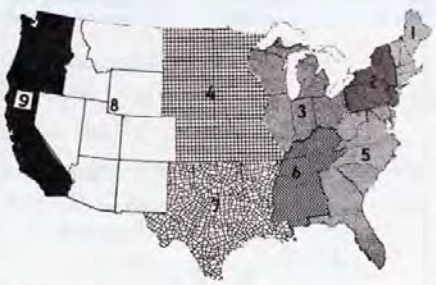
Indiana-Bulk honey very scarce. Bees consuming stores at an alarming rate during early spring. High percentage of colonies were fed. Expect higher loss than last winter.

Illinois-Heavy snows and below normal temperatures have been very severe on bees. Northern Illinois has had most snow, some beekeepers had to check condition of colonies on snowshoes.

Iowa-Very cold winter but at end of February the losses do not appear to be excessive. Very little bulk honey for sale. Demand is very high. Retail honey sales are good. Demand for amber honey is good. Some packers paying as much for dark as white.

Minnesota-Colonies fed Fumidil B in sugar syrup in good condition. Colonies with poor winter stores have dysentery and heavy winter loss. Honey sales good at retail. Moisture conditions good.

Nebraska-Cold and heavy drifting snow confined bees during long period of winter. Good moisture conditions.



Virginia-Bees in better than usual condition. Some feeding is being done. Honey is selling well. Colonies light in stores and spring feeding necessary in many areas.

Florida-Orange honey flow is promising. Bees in fair condition.

West Virginia-Limited flights in late winter but bees in good condition.

North Carolina-Weather very changeable during early spring. Winter losses may be heavier than expected, bees in fair condition. Moisture conditions are good as a result of rains in early March.

Kentucky-Despite a very cold winter checks in early March are showing light winter losses. Weather moderated in late February and bees became active. Honey sales are good, stocks depleted.

Tennessee-Bees have wintered well. We were concerned about long cold spell in January and first part of February. Consumption of stores has been light but will require some feeding before the honey flow. Prospects are good for the spring honey flow.

Alabama-Bees in good condition generally with early nectar and pollen flows in progress at end of February.

Arkansas-A shortage of bulk honey. Honey prices going up. Good demand for queens, packages and nucs. Most packers out of honey. Prospects are for good spring crop.

Texas-Bees in good shape. Honey stores good, very little feeding needed. Early honey prospects promising. Brood rearing well underway since end of February.

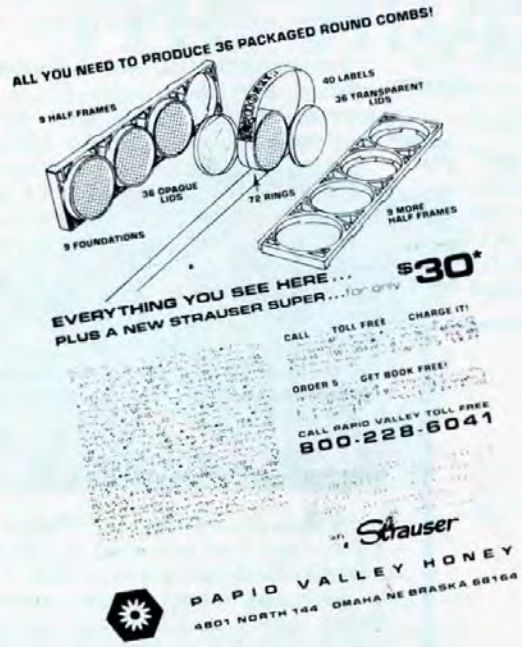
Oklahoma-Bees bringing in pollen in early March. Honey sales slow. Demand for queens and package bees on increase. Bees in fair condition. Moisture conditions good.

Montana-Bees had cleansing flights during middle of February. Possible shortage of irrigation water in western part of state due to low snow cover in mountains. Lower levels and eastern part of state had good snow. Bees in good to fair condition.

Colorado-Some bees still snow covered at the beginning of March, but are in good condition with plenty of honey. Shelf prices of honey are showing some increase due to higher container costs. Demand is strong, supplies adequate.

(Continued on page 200)

THANK YOU



. . . we are so very grateful to so many of you . . . for your patience and your understanding. If there was only time enough to send each of you a note of apology, but this is such a busy time of year for us all. We owe everyone an explanation for our tardiness in shipping your orders! We tried our level best to predict the number of orders and to have on hand *more* than ample supplies to fill all orders the same day we received them . . . just as we promised in our ad. We underestimated your needs. Orders poured in and we fell far behind. We feel so strongly that the *quality* of our products *must* come first . . . even before promptness . . . so we refused to hurry the plastic molding or fabrication of supers. We want to say right here . . . if *any* of you received any item from us in imperfect condition, please pick up the phone and call us on our WATS line at our expense. We insist on making things right with you.

WE HOPE THIS WILL BE GOOD NEWS!

To all those who ordered a single super, and then because of the short wait until it arrived and you had opportunity to check it over and discover you liked it and wished you'd ordered more but assumed you were now too late and the offer had expired . . . YOU MAY RE-ORDER NOW AT THE SAME $30 DISCOUNT PRICE! Simply note on your check or payment "RE-ORDER" . . . or tell us it's a re-order when you use our Toll Free 1-800-228-6041 and give us your BankAmericard; Visa; or MasterCharge. We hope you'll re-read our Jan-Feb ads in this magazine first so we don't tie-up the lines too much . . . we understand some of you have had to re-dial several times to get through.

FREE INSTRUCTIONS! We hastily prepared new instruction sheets to explain how easily our NATUREL round comb sections work. We've had many requests for them. You may have a copy . . . FREE . . . whether you order from us or not. We ask only that you send us an ordinary business envelope with your name and address and postage and we'll send you two copies. It's very simple, one-sheet, two-sides, but we're told it's the best explanation of round-comb honey available.

WHAT TO DO IF YOU HAVEN'T ORDERED BEFORE . . . we hope you'll get out and read our February ad which looks like the one we've reproduced here. Read our guarantee . . . our offer to buy your honey . . . and how you get an assembled super . . . complete . . . ready to set on the hive . . . as well as all lids and labels to package 36 NATUREL round combs for use or sale . . . all for just $30.

If you could read the letters or talk to the beekeepers who re-ordered after they received our first shipments, you'd know for certain that this combination of a Strauser Super and Papio Valley Naturel round comb sections is the finest honey collecting and packaging offer of the year! We'll keep the offer open a short while longer, but please hurry and order before this insane inflation we're hoping to avoid gets to our plastics and lumber. We want to see as many of you as possible all set up for a great honey season at a down-to-earth, sensible price!

CALL PAPIO VALLEY TOLL FREE

800-228-6041

8 5 p m weekdays NOON Saturday NEBRASKA CALLS 402 493 3461 collect

we are FULL TIME—FULL SERVICE
BEEKEEPING SUPPLIERS and
NEW FACTORY OUTLET OFFERING

BEE SUPPLIES

SBS Strauser

PAPIO VALLEY HONEY

4801 NORTH 144 OMAHA NEBRASKA 68164

Gleanings Mail Box

Dear Editor:

The following article appeared in the January 23, 1979, Washington Post newspaper amid the highlights of President Carter's budget proposal for FY 1980:

A Budget Axe For Beekeepers

The Federal Government once again is trying to get out of the business of paying beekeepers for damage to their swarms of bees from the use of pesticides on nearby land.

Congress set up the program which cost nearly $4 million last year,in 1970 and has extended it through fiscal 1981.

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

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

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

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

It is imperative that these individuals be solicited for their support for and apprised of the critical need for the continuation of the Beekeeper Indemnity Program as it is vital to the survival of many beekeepers as well as much of the industry. We all know that the loss to beekeepers doesn't just impact upon the beekeeper and the industry but rather on much of agriculture and its economy. however, as an industry, we are obligated to keep our Congressional representatives in Washington attuned to our industry's needs.—Ronald G. Nygren, Springfield, VA.

Dear Editor:

As State Apiary Inspector in Maryland, I notice each year an increased number of advertisements for the sale of nucs. A nuc with adequate frames of comb containing brood, honey and a young egg-laying (mated) queen is an excellent method of starting a new colony and under favorable

(Continued on page 199)

Spring Examination & Manipulation of Colonies

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

A HIVE OF honeybees should not be opened for examination in the spring until a day arrives that is warm enough to assure no damage to its brood from exposure.

How warm is that? Keep in mind that the temperature in the brood nest of a colony of honeybees is approximately 90-93°F. If there is a too considerable difference between those temperatures and that of the air outside of the hive, exposure of brood should be very, very short, or avoided altogether. Remember, it isn't how the beekeeper feels about the temperature, it's how the bees, especially the unhatched brood, feel.

If hives have been packed all winter, there should not be too great haste in removing the protection unless the time has arrived to perform certain details of examination whose neglect might be damaging, for example, a shortage of stores.

Examination of the Exterior

Until temperatures outside encourage an examination of the brood nest, even a beginner can tell much about internal hive conditions by examining the outside of the hive.

If the workers are flying in good numbers and with vigor, some idea of the population of the hive can be gained. If more than one hive is present, a comparison with the busiest one will give a good idea of which ones are comparatively weak. If pollen is being brought in by several gatherers, it is rather good evidence that the colony has a laying queen. A hooked wire briefly inserted into the entrance will show whether the hive bottom is littered with dead bees or other debris. Colonies that pass these superficial tests need not be opened until the temperature outside the hive assures that it is safe to do so.

Hefting the hive by lifting it from the rear will give some idea of the weight of honey stores within, though this is not too reliable a method for an inexperienced operator. A two-story Langstroth hive with 18-20 frames of bees will weigh approximately 70 pounds, not including the honey stores. It should contain at least 2-4 frames of unused honey to meet requirements for the next 2-3 weeks. A good frame of honey weighs 5-6 pounds. Not everyone can distinguish between 70 and 82 pounds by hefting.

At the initial examination, an observant beekeeper always glances at the alighting board of the hive to see if skunks are at work. If so, steps should be taken to eliminate them.

Examination of the Hive Interior

Once it is warm enough to risk an examination without undue danger of cooling the brood, a frame at the side of the hive may be lifted out, then the next one or two frames carefully moved over into the vacant space. Now a frame from near the center of the hive may be lifted out and briefly examined to determine if freshly laid eggs are present, and whether there is any suggestion of the presence of disease such as AFB, European foulbrood, or sacbrood.

If AFB is found to be present, or suspected, the hive should be closed promptly, the entrance reduced, any instruments used by the operator sterilized by washing with water and detergent soap, and the hands likewise cleansed with soap and water.

If the colony is found to be queenless, or headed by a failing queen, it should be requeened at the time or marked for later but early treatment. Many operators have nuclei in their yards for use in such cases. If desired, a nucleus can be placed above such a failing unit (if the operator wishes to continue it in operation on the basis of its numerical strength or its food resources or both). A sheet of newspaper which nearly all beekeepers carry in their work basket or workbox for use in such events, can be placed between the colony and the nucleus, the nucleus always being on top. A few holes should be scratched or torn in the sheet to allow for the passage of air, and for the fairly prompt intermingling of the two units.

If few eggs are found, it is almost certain evidence that the queen is either absent or weak—unless the number of workers is so small as to prevent the queen from laying any goodly number.

At this examination it will be readily evident whether mice have invaded the hive and built a nest. Such an occurrence should seldom take place, but hives whose entrances were not properly restricted are quite likely to have invited such intrusion. The nest should be removed, of course.

At this time, the true proportions of the honey stores can be determined. It is a general rule that approximately a frame of honey is necessary to enable a colony to rear a full frame of brood, so between 2-6 frames of honey are desirable as a minimum at this season. It is an old truism that many colonies die in June in the North when a beginner assumes that a unit can bring in all needed food. During cold or wet weather in late May and in June this is often not true. Of course, it is not necessary for the examiner to see the queen at such times, though many commercial operators are so skillful in judging a queen's qualities by her appearance that they like to see her in order to pass judgment.

Many operators like to glance at the bottom board at this time of examination. If it is not clean, it is desirable to clean it, or else to substitute a different one. Damp bottom boards should be replaced.

Reversing

If the colony has normal strength, most of the brood of the unit will be in the upper hive body. Most operators reverse the two at this point. If the colony is numerically strong it may be desired to add a third super of brood combs (not foundation). A strong colony will likely need such extra room for brood rearing; it should not have difficulty in keeping the area warm. A weak colony may not be able to do so. It will not need a third super, of course.

If the colony is extremely strong, some operators elevate two or more frames of brood and accompanying bees to the third hive body at this time. It reduces congestion to some degree.

Giving a Second Queen

But even elevating brood, still leaves all of the bees in contact with each other, and to some degree congested.

Accordingly, some operators like to place an inner cover above the second or third hive body (the hole in the inner cover being screened above and below with wire cloth fine enough so that bees cannot pass through). Then into still another hive body of drawn brood combs they elevate as many combs of brood and bees as the bottom unit can safely spare, and introduce a queen into the upper unit by way of a cage. They always try to make certain that such brood is given plenty of bees to keep it warm; such a unit needs honey, too. As a further pre-

caution, they stuff green grass into the exit hole that has been provided for the use of the top unit. Otherwise, the bees may leave the brood in the top unit unprotected, and it will become chilled and die. I've had it happen.

Later, when the operator thinks the proper time has arrived, he may wish to remove the inner cover and let the two units reunite. When the first substantial flow is in progress, is the usual time for such unification.

Restricting the Entrance

In the North, nighttime temperatures often drop even in June nearly to the freezing point. At such hours if the entrance cleat has been removed, much effort and the consumption of considerable food are required to maintain adequate brood rearing temperatures near the entrance. Accordingly, most experienced operators do not remove the entrance block until assured it is no longer needed. It isn't easy to visualize such need when the operator observes the colony at mid-day with the sun shining brightly.

Providing Windbreaks

A beekeeper who attempts to winter his colonies in open territory (without the protection of normal barriers such as trees, shrubbery, buildings, or fences), should always provide windbreaks. Of course the time to do so is in the fall.

But suppose the operator failed to provide such protection in the fall? In such a case, he should examine his colonies in the spring with more than ordinary care, for they are likely as a consequence to have developed one of the more damaging diseases that are always ready to intrude themselves.

The Need for Pollen

Honeybees enjoy two kinds of food: honey and pollen. Some geographical areas are much richer in pollen sources than others. In most cases the bees will take care of this matter. They have an instinctual inclination to store pollen adequate to their winter and early spring needs. Nevertheless, they always seem to prefer fresh pollen and so will venture out in spring weather that is not too agreeable in order to secure a fresh supply.

If the beekeeper is operating in an area where early sources are inadequate, he should by all means assist the colony workers by supplying patties of pollen substitute or supplement. Such supplies should ideally contain at least small quantities of genuine pollen.

Some operators gather and store pollen in advance; others purchase it from a supply house. Purchasing pollen carries hazards, for it can contain elements of different diseases. Pollen that is not ground or mixed is a bit safer than that which has been ground. One's own supply is safest.

Adding Numerical Strength

It is all very well to advise a beekeeper who has a weak colony in the spring to give it a boost with brood and bees from another colony. But suppose the beekeeper has only a colony or two?

In such instances a two or three pound package of queenless bees added to a viable but weak colony may give it just the help it needs. But it is wise before doing so to try to determine whether the numerical weakness of the colony in each case is traceable to the queen's deficiencies.

Even a beginner may be able to determine in such cases the correct answer by examining the queen; by checking the compactness of the brood pattern (whether nearly all of the cells in an area contain eggs or larvae or pupae); by determining whether the work force is adequate to support a queen that could lay liberally; and whether adequate honey and pollen stores are present to feed new brood. A good queen will **look** good—good, and rotund, and healthy.

There is no advantage in adding bees to a unit that has one of the weaknesses enumerated here until the weakness has first been corrected.

Beekeepers who make an effort to equalize the strength of colonies in a yard (even if it consists of only 2-3 hives) by transferring bees, brood, or honey, should make doubly sure that disease is not present. The presence of disease, particularly AFB, is not necessarily the fault of the operator (though it is if he fails to detect it through periodic examination). This is especially so because the strongest colonies may be the most likely recipients of disease as a result of their more aggressive robbing capability.

Feeding Colonies

The time to make certain that a colony does not lack food in the spring is through examination and supply in the fall. No colony of normal size should be allowed to go into the winter with less than 60 pounds of honey. More is desirable. Nuclei of less than 10 frames need only a comparative percentage of stores.

But if a colony is short of food in the spring it may be fed either frames of honey (the usual precautions being taken) or supplied with sugar syrup (one part of sugar approximately to one of water, the two being thoroughly mixed while the water is just under the boiling point, and never boiled). This can be fed from containers, glass or tin, in the covers of which several small holes have been punched, the covers being placed face downward over the top frames. If the weather is cool, it is a good idea to place insulation around and over the feeding containers. Crumpled newspaper will do. No entrance other than the main one should be supplied else robbing may ensue. It is good practice to check to see that every feeder unit is actually yielding its syrup to the bees. If the top area of the feeder containers is small, the holes sometimes are not available to the bees whose only access at such times is in the areas between the frames. Failure to provide accessibility can happen frequently, and frequently does.

Making Up Nuclei

If there are no nuclei in your bee yard, consideration should be given to making up a number of them equal to about one tenth of your total holdings.

A good time to make up nuclei is when established colonies have unneeded numbers of workers. This might be after the chief nectar flow in some areas, provided there is time remaining before frost for the nuclei to become well established and be fed either frames of honey or sugar syrup. Another good time is when a colony is found to have capped queen cells. Such colonies are difficult to prevent from swarming and consequently may advantageously be broken up into two, three, or more units. Such units will benefit from being fed until they are numerically strong enough to winter either as nuclei or as full sized units.

It may be desirable to purchase queens from a southern breeder to head up nuclei.

It's not difficult to winter small nuclei of as few as five frames. If they are normally strong and have adequate stores, they can be wintered above a full strength unit, an inner cover with its center hole screened both above and below serving as a bottom board for the nucleus. They can even be wintered on their own standard bottom board, particularly if placed next to a strong colony which supplies a small quantity of heat and insulation on one side. They may also be placed between two regular units. all three being packed together. The entrance should be small (one inch, perhaps), and a very small exit for the escape of moisture being provided above, as is desirable for **all** colonies when packed for winter.

If it is planned in advance that such nuclei shall be packed as described above, it is helpful to establish the nuclei at the beginning in locations almost identical with those they will occupy during the winter, else they may lose too many of their numbers subsequent to packing time. Their workers are no less subject to failure to identify their changed location than those from a larger unit; and they can't afford too great loss of numbers.

Added Precautions in Establishing Nuclei

Nuclei are fascinating units. It is challenging to help them become estab-

lished. There are certain fundamentals that help assure this. One of the first is that the unit should not initially be too weak unless it is started in early spring and has a whole summer and fall in which to gain strength. A minimum of two frames, one of which contains some capped brood, is desirable. There must be a few young workers present to help keep such brood warm, and assist it in getting its start in life. It is not usually profitable to permit such a small unit to struggle for survival and for build-up without giving it some added strength as soon as the new queen proves she is capable.

An excellent way to strengthen such a nucleus is to shake some young bees from the frames of a strong unit in front of the nucleus entrance rather than to give it capped brood in any considerable quantity. Of course care must be exercised to avoid shaking in an unidentified queen.

Feeding sugar syrup is desirable from the start even if an adequate supply of honey and pollen have been given. If nucleus boxes are used, Boardman feeders can be employed. If regular hive bodies are used, the unused area in the super should be filled with packing rather than frames that will not be needed for a considerable length of time.

Establishing nuclei on drawn brood combs of good quality rather than on foundation is highly preferable.

The entrance of a nucleus should be kept very small until its increased strength demands more room for coming and going. And there should be only one entrance until packing time arrives. The entrances of newly formed nuclei should be plugged with green grass with the idea of its remaining in place for a day or two to give the bees more time to acquire loyalty to their new home.

If skunks are in the neighborhood, as they usually are (they will travel three miles during a night) the nucleus entrances should be examined very frequently to make sure they are not being vandalized. Skunks characteristically seek out weaker units for robbing. Drastic steps must be taken immediately to eliminate such plunderers since it does not take them long to destroy a nucleus.

Nucleus equipment should be clearly labeled as well as all other units to help in identification in case of theft. Frames as well as other parts of the unit need identification.

Nuclei, like all other hives, should preferably be placed on supports to keep them dry and warm.

Many commercial operators keep their nuclei in separate apiaries. This practice has the advantage of reducing robbing, and of avoiding drifiting when a nucleus is united with a strong unit. It has the great disadvantage of making the nucleus unavailable without expensive loss of time, trouble, and travel when it is suddenly needed for uniting purposes.

Some beekeepers prefer to start nuclei in small sized equipment. It makes for ease in establishing and transportation, especially if used to house a small swarm. But nuclei will, in most cases, eventually be united with regular size units For this purpose, regular size equipment makes the union easy. This practice, as we said above, does necessitate packing the unused area in the hive body with some such material as crumpled newspaper.

Identifying Units Needing Further Attention

If one has several colonies in a yard, he can usually profit from marking the units needing future re-examination or treatment.

For this purpose many beekeepers early in their careers adopt a system of marking a unit in such a way as to reveal immediately the nature of its need. If weights, such as small stones or bricks, are used to help keep covers in place, their placements on the covers may transmit a multitude of messages.

Some operators place a branch or clump of grass under the weight on the cover. A few write on the inner cover to give details in addition to the other signals. Still others keep a card record on the inner cover.

Clipping the wings of queens according to a definite schedule helps to identify them and indicate their age. Still others employ a bit of fingernail polish on the thorax of the queen. Indicating the age of the queen has definite value at times, particularly if a program of requeening is followed.

Avoiding Swarming

The initial examination of the interior of the hive and the reversal of the two hive bodies constituting the brood nest should usually be followed in ten days to two weeks by a second reversal, and then later, perhaps, by a third.

The beekeeper is, as it were, in a constant balancing act. He must build his colonies up to almost maximum strength, yet restrain them enough to prevent them from swarming. This is no simple challenge unless he knows what to do.

Swarming is a much more insistent threat than even some experienced beekeepers realize. They do not always know how much their honey production is reduced because of this instinctual response by the bees. A colony of good strength and with a queen more than one year of age is going to make every possible effort to swarm.

How do you build up a colony to maximum strength yet restrain it from swarming? You do so by temporarily reducing its strength at the strategic moment. To some degree you can deceive it by spreading the brood over three hive bodies.

The most reliable procedure, however, to prevent swarming is temporarily to reduce its strength yet not give its strength to another unit. This procedure is most readily accomplished, as I have already indicated in this article, by temporarily elevating enough of its strength to an upper unit above an inner cover used as a bottom board. Later when the honey flow commands its attention and effort, a reunion can usually be safely executed. Response to reunion will vary in different parts of the country, largely on the basis of the intensity and duration of the flow. But I know of no other more reliable method of swarm prevention without at the same time reducing the honey production capacity of a unit.

Congestion is regarded by most honeybee authorities as the chief cause of swarming. I like to think of it, instead, as one of the build-ups that the bees instinctively make on their way to swarming. I see it as a result rather than a cause. The cause of swarming, I believe, lies in the instinctual urge of a colony to duplicate itself. In a similar way, the enforced slimming of the queen by the workers is not a cause of swarming; it is merely a part of the process.

The first spring examination of the interior of the hive is an important time in the management process of the beekeeper. It is then that he determines the condition of his colonies, and is able to decide what treatment each one needs.

Honey Plants

By BASIL ADAMS
Monrovia, Ind.

A Good Honey Plant

BUTTERFLY WEED; Butterfly Flower; Pleurisy Root (A. tuberosa) is seemingly a good honey plant.

About twenty years ago while driving in southern Indiana my wife spotted a beautiful little flowering plant along the roadside, growing in clay soil. Being flower lovers we dug up a few plants and transplanted them in our yard. These few plants now have grown to occupy a plot approximately 30 by 72 inches. It was years before we found the true name for these plants.

We paid little attention to these plants until this past summer when we found them alive with bees. They were in full bloom (orange) from mid July to late August with some bloom hanging on into October. The bees worked these plants from daylight till dark, rain or shine.

In checking Mr. Frank C. Pellett's book, **American Honey Plants** we note that one writer states that he would rather have one acre of this plant than three acres of sweet clover.

Butterfly Weed.

This plant is a perennial. However, I understand that if it is sown the early part of September that it will bloom the following summer. We have also found that it does not like to be transplanted.

It is a member of the milkweed family **(Asclepiadaceae)** and produces long pointed pods (approximately 5 inches) in length. In the fall the pods burst open and the seeds drift with the wind the same as with the common milkweed. We do not find this plant hard to control. It will grow in practically any type soil and likes the sun or partial shade.

In early September we sowed another plot of ground, much larger than the original one. Before frost they had sprouted. We sowed another plot the early part of October. If the original plot and the September plot produces seed pods next year as the original plot we must look for more space. The pods contain from 65 to 85 seeds per pod.

Bee Organized

By SIDNEY GROSS
St. Charles, IL.

Part II

The Bee Yard

Shims—Keep a small, neat stack of lumber which can be used for shoring up hives in one corner of each outapiary. The shims should be about four inches wide and of lengths four or five inches longer than each of the standard hive dimensions. Ordinary one inch lumber will do for shims, but even better is the thicker material which is sold at lumber yards to make wooden steps. The purpose of a shim is to prop up a hive that is listing (most likely due to ground moisture conditions). If you prop up a hive just as soon as you notice that it is tilting you will avoid a time consuming mess later on. After all, by the law of gravity an out of level hive is bound to fall over sooner or later.

Parts Hive—A parts hive is an empty hive consisting of a hive stand, bottom board, deep box, super, inner cover, and telescoping top. It may contain two or three assembled frames of both the deep and shallow varieties. The frames should not be fitted with either comb or foundation, which might be destroyed by wax worms or rodents. The purpose of a parts hive is to allow you to quickly replace any piece of equipment which has become irreparably shattered. One part hive per yard of twenty colonies is adequate. Once you use a part, bring out a replacement on your next trip. Take the damaged part back to your workshop; perhaps what can't be salvaged on site can be renovated at home using more sophisticated tools.

Super Support Stand—In the course of many years' usage, some wooden equipment becomes so badly battered that it will only serve for firewood—or at least so it seems. If you own any deep boxes which are beyond redemption, securely cleat two of them together using hive staples. This will provide an easily moveable stand on which you can stack honey supers in the course of hive manipulations. Leave one stand in each yard and save your back by not having to put full supers on the ground each time you remove them.

Swarm Boxes—I've known many beekeepers who increase their colonies each year simply by placing swarm boxes strategically close to the apiaries of their fellow enthusiasts. It seems that even the most conscientious attempts to control swarming are never entirely effective. You can make the best of this situation by keeping several swarm boxes around your

own yards during the swarming season. One type of swarm box is like a single story parts hive except that it contains one or two frames of drawn comb, the remainder of the frames holding fresh foundation. Place such a box or series of boxes in line with your existing hives and the chances are good that a swarm will hive itself in one of them. You can modify the swarm box so that it can be hung in the trees several hundred feet from the apiary. Cut a standard ten-frame hive body to half its width and do the same with the bottom board. Attach the bottom board to the hive body with staples. You can improvise a flat protective cover. The modified box will hold four frames comfortably. Attach a large screw eye to each side and run heavy rope through the eyes. Because of its smaller size, the modified box can be hung and later removed easily from a tree branch. During the swarming season you will also want to keep a full size swarm box in the bed of your truck so that you are ready to go out on swarm calls or even remove a swarm that you happen to sight in your travels. Once the season is over, dismantle all your boxes or you'll be inviting wax worm problems.

Brick Weights—Every beekeeper I know caps his hives with a weight of some kind atop the outer cover. The purpose of these weights is ostensibly to keep the tops from being blown away by gusty winds. Given the generous lips on all sides of the standard telescoping cover I'm not sure that the weights are really necessary. Still, if like myself you're used to placing an object of this sort on each colony, you'll feel strange without them. Anything in the way of a medium sized stone will do to hold the lids on. I suggest using old bricks not only because they are heavy but because they can be the basis of a rough and ready flagging system for each yard. Since the bricks have flat sides they will stay put in any position. Let's say a hive is normal; you can put the brick on its wide face dead center on the cover. If something is happening in a hive which should be checked on your next visit, set the brick in a vertical position or place it on a diagonal to one of the corners of the cover. You can invent your own code. The important thing is that the bricks afford a marking system which tells you at a glance the condition of each colony as of your last inspection. You need not trust to memory with a device as cheap and easy to use as the brick system to jog you.

Your home base is where you put everything together. Here is the place where you can sit back, without bees buzzing all around you, and take stock of how well your operation is functioning. In short, your home is the place to gain some perspective on what you're doing, and this means some form of record keeping.

At Home

The Notebook—One of the best and cheapest investments that you as a beekeeper can make is a small format spiral bound notebook. Mark the notebook BEES and don't use it for any other purpose. Each time you go out to a bee yard note the date and make a general observation even if it's as simple as "7/28/78. Compton's yard. Everything O.K." If something is amiss, mark it in the book and if possible correct it on the spot. Make it a habit to review the last entry in your notebook before your next visit to a particular yard. In this way you will not leave home unprepared to rectify any abnormal situation you couldn't handle the last time you were out. One device which works very well in conjunction with the notebook is to paint a number on the top cover of each hive. In this way the needs of each specific colony can be pinpointed. Thus an entry like "8/15/78. Compton's yard, #28 needs super.", tells you exactly what you must bring to this colony on your next visit. At the end of the season you will have a permanent record of the goings on at your yards. Notebook entries take only minutes but they may save you hours.

Key Board—If you have a lot of hives to keep track of you might like this suggestion: Buy a key board at any office supply store. A key board is a rectangular piece of metal with integral hooks on which you can hang labeled keys. These boards contain hooks for fifty or more keys. They come with little plastic tags and wires which are meant to be attached to each key. Hang the board in your honey house and divide the rows of hooks to correspond to each of your out locations. Number each plastic tag on one side and hang them, numbers faced in, on the appropriate section of the board. When you visit a yard mark down the number of each hive which requires attention or a follow up. Back home, turn over the corresponding plastic tag so that the number is visible. In this way, whether you have ten hives or a hundred, you will see at a glance which ones need attention. All you have to do is cross check with your notebook entry to see specifically what has to be done.

Organization is the essence of beekeeping. Even if you are the best technician on earth you can become better if you know explicitly what you want to do and when you want to do it. Simple organization of your operation makes beekeeping easier in the long run, saves time, and gives you as much control over the bees and the honey crop as is humanly possible. An organized beekeeper not only does his job right, he does it right the first time.

Chinook!

"At daybreak the full impact of the catastrophe struck us collectively."

By JOHN THURSTON
Yarrow, B.C., Canada

THIS STORY came into being when the Missus said, "I can't ever remember a year going by without something out of the ordinary occurring in our lives, and sometimes its a whole string of noteworthy happenings". I had to agree wholeheartedly recollecting that early last year for instance, while outside a blizzard raged, twin calves were born to one of our milk cows amid warm peaceful surroundings. Those two little ones (the Missus named them Betty and Veronica) are the life of the farm as they grow to maturity. Then as a special highlight we were honored during the summer by a visit from a very kind gentleman—our editor, Larry Goltz. I'm sure that everywhere he stopped to "yarn" some of his good nature and wisdom rubbed off. (John and Mrs. Thurston were the most gracious hosts, especially considering the imposition of an extra days stay due to the air lines strike. Ed.)

Whoops, I forgot to mention that the second "out of the ordinary" last year was a trip to the still partly white clad far north with a load of bees, 10 of which were mine, all well filled with spring stores from our valley. We, Bert and I, become "turned around"—O.K. then, lost—on an old road up there in God's country, which we both took for granted as being the right one (but wasn't) terminating ten miles further on at a dead end which was an abandoned homestead. Among the buildings, some which had fallen in decay, was a good livable but door-less cabin containing of all things the skeleton of a horse in the cellar and an amazing collection of honeybee equipment, **all** handmade with axe and buck-saw. However, that's another story as I don't want to stray from the one I've already got in mind.

Early last fall, with preparations for winter almost complete on the farm I would, every two or three days, drive to a nearby mountain retreat for a load of stove wood which I had cut and piled through the year as opportunity presented itself. Now this wood hauling is not a top priority (the wood shed at home still has a few cord two and three years old) so when our neighbor Ken Byornson, asked if I had time to bring down the rest of his hay,

I said, "sure thing, and the sooner the better before the snow gets too deep". With still a few tons of alfalfa and grass mixed which he had done up on his brother's place in the interior, he calculated one more load using my truck pulling his flat-bed trailer would do it. The place in question was about 400 miles north by northwest and no doubt winter would be well under way with snow and below zero temperatures, so the afternoon before departure anyone would have been astonished at the great number of articles which disappeared behind and under the truck seat and tied to the back deck. Most of this might have seemed unnecessary for just a two day excursion but I've learned to put great store in being prepared for every possible emergency. Then again, why be uncomfortable if it can be avoided, hence the down filled sleeping bags, parkas, chains, axes, saw, matches, the inevitable tea pail, you name it. Yes, and even a gallon jar of comb honey. As you know, a degree of comfort is necessary if one is to work efficiently or even to just enjoy one's surroundings. As we hitched up the trailer next morning—Saturday—Ken mentioned optimistically, "We 'll be up there with enough time to get a good comfortable night's sleep in Charlie's barn, then with an early start loading next morning we should be home here about chore time Sunday evening". So much for the plans of mice and men, for little did we know what was in store for us before this "simple" journey wound to a close.

An uneventful trip up through the canyon country and the fabled caribou plateau where at a junction, 250 miles from home we topped up both tanks (another precaution which was to stand us in good stead later on) turned left onto a little used back country road that wound west and north toward the distant coast mountains. A foot of fresh snow lay across our path and beneath its cold, fluffy whiteness two slight depressions ran ahead of us denoting the passage of a vehicle previous to the last storm. At intervals, animal tracks crossed our way but just now it was deserted as we sped on and on between tall dark spires the engine ticking like a fine watch and wheels splashing snow as we ate up the miles. "Not far now", Ken remarked as I switched on the lights. A few more miles then suddenly up ahead a figure waving and as we drew level I stopped. A stranger to me but not to Ken apparently for with a surprised expletive he opened the door quickly, springing out with an exclamation, "Mac, what the hell are you doing way out here all by your lonesome?", and ushering him into the warm truck cab. After we were introduced, Jim McSweeny removed his mitts and proceeded to roll a cigarette while explaining, "I'm bunking in that old shed across the road there. I was waiting for Carl Thomson to get back from the city. I walked down to his place, about ten miles further on, and his Missus says he took four beef cattle down to market day before yesterday. I was going to get him

"You fellows talk about God's country, well that's where we're going and the road ain't so bad in the summer."

to pick up my bees and maybe pull my old truck home. Its got a busted axle fifty or sixty miles north of here". Putting the vehicle in gear I began to pull off to one side for I could see now that our original plan had been modified somewhat by this new twist of fate. There was no telling when Carl would be back since he could not know of Jim's predicament. He might be a week or more and any day another storm would make travel impossible on the side roads.

To make a long story short, we threw our bed rolls on some old hay piles alongside Jim's in the deserted cattle shed where we had a comfortable night's sleep. Next morning we drove ten miles or so to Carl's place to inform his Missus of our plans, had breakfast, then drove back 25 or 30 miles to a side road so overgrown with brush and trees that one could easily have missed its hidden entrance, and headed slowly—real slowly—into the hinterland north. One word will describe this "road", hideous, eventually prompting Ken to shake his head in wonder and say, "good grief Mac what on earth ever made you decide to put your bees away up in here?". And the reply, "You fellows talk about God's country, well that's where we're going and the road ain't so bad in the summer. Talk about bee pasture? So far as I'm concerned it's a paradise. White and yellow sweet clover by the mile, dandelions, willows and maples early on and your blueberries, you name it, then before those little critters can stop for a breather along comes the fireweed. I declare there must be an acre of the stuff for each bee. I haven't figured out my surplus yet, but it must run to several hundred pounds for each hive because I seemed to be forever running back and forth with loads of honey".

In due course we arrived and as we topped the last rise there was Jim's vehicle, snow covered, looking lonely and forlorn at the bottom of the long grade surrounded by twenty-four 2-story hives. It was getting on in the day so I said, "We've just got time to rustle around for some fir boughs, we'll throw my tarpaulin over them and voila—we'll sleep like royalty. We 'll have plenty of time in the morning to load the bees and hitch up Jim's truck". **Mistake No. 1**. Clouds of sparks and smoke coursed skywards from an extra lavish campfire as we prepared to turn in. There was no wind and the roaring flames gave off tremendous heat coupled with the heady aroma of burning fir and maple. A most pleasing and comforting fragrance in the wilderness. Stars flickered and flashed, the temperature hovered around zero and occasionally a mist of fine frost crystals drifted up from the river and descended over us. Warm and comfortable in my bed roll with just a small opening for air (I always sleep this way, even at home) the last thing I remembered as I sank into oblivion was of a tree snapping somewhere in the distant forest as the thermometer continued to drop.

Sometime during the night a wind sprang up, sweeping down the eastern slopes of the Coast Range. Not as would be expected though—the regular frigid blast snuffling dismally around corners and rattling dry herbage—but instead, a **hot wind**, the fabled chinook. Vaguely, we all felt its presence and stirred uneasily in our sleep. However, other than partially pulling free of our sleeping bags in the extreme heat, we did nothing—**Mistake No. 2.**

At daybreak the full impact of the catastrophe struck us collectively. For most of the night this hot seventy or eighty degree breeze had been licking up the snow and ice in a furious manner turning into a sea of mud any bare ground

and especially beneath and around the vehicles. Thrashing about for socks and boots I yelled, "I'll start jacking up the trucks, you two fellows better split some poles. We'd better get something under the wheels before the whole kit and kaboodle sinks out of sight. We're stuck here now till freeze up again". Sweat flying, ankle deep in gumbo we worked frantically while the hot, dry wind soughed benignly across the land. Not many times in my life have I encountered such a phenomenon and usually of such short duration and in different circumstances as to occupy my head not at all. Breakfast came about noon, during which Jim said with a sigh, "Well if its any consolation to you fellows there's plenty of hardtack, flour and butter in my trappings and the river yonder is so full of fish you can catch 'em with a bent pin or just scope 'em out". I said, "You can't do much about the weather and as far as I'm concerned I've got all the time in the world". So while clouds of honeybees dropped their time honored cargo on everything in sight, we prepared resignedly to wait out the chinook. Looking back I think everyone rather enjoyed it. I know I did as I was given the opportunity to explore yet another hitherto unknown section of God's country. Monday and Tuesday came and went and still the "hot storm" continued. Then Wednesday came with its bright steely skies and roaring insects and three tiny specks of humanity waiting, and waiting and prowling. Then as we prepared for bed late that evening we perceived the tail end of the chinook as it moaned away across the valley leaving a hushed atmosphere and rapidly dropping temperatures. We were on our way. By the morrow a frozen landscape would allow our stalled convoy to once again become mobile. And so it was with Jim and his outfit safely home the following night we continued on to Ken's hay cache where we grabbed off a few hours sleep.

As dawn broke on Friday morning, six of us finally tackled the object of this bizarre episode, a mountainous pile of hay bales.

Then back on the road once more, this time east and then south. Cold weather, no snow. We made good time.

As we pulled into the home yard that evening, dog barking a welcome, cats running for safety, two curious but anxious females of the species hurried out to inquire why it was that a supposedly "simple" two day jaunt had lasted a full week. Alighting rather stiffly from the cab I said, "It might take more than a few minutes so let's have tea while we explain the whole thing".

Rubbing shoulders with the wilderness very quickly demonstrates who is really Master and in time leaves a person with the awesome knowledge of from where he really came.

To Raise Bees or Make Honey?

"As far as I can determine I'll never see summer honey on Long Island."

By FRED MUNZER
E. Northport, L.I., N.Y.

IN THE AREA of Long Island, N.Y. where I keep bees the major honey flow ends by July 15th. Now that might not seem so bad, but it does require some different approaches.

The major theme in bee management is to get your honey early, or you will not get any at all. This requires fast spring build up. Therefore, I provide a full deep of honey for winter stores and must also make sure my queens are good going into the winter. This would seem to be good general practice but it is especially important here. We usually have relatively mild and short winters and the colonies will survive with much less in the way of stores. However, then they will not start to build up in January and February, which is a must if you want to put up surplus honey in May.

The same holds true for my queens. If she is not up to snuff, I will not know it until I give a thorough examination in April. That is too late to re-queen and develop sufficient strength for the honey flows. If a colony is found to have a poor queen the best I can do is unite with a strong colony.

Now we get to May and the fruit bloom is ending. The colonies are up to strength and we will probably get a dearth of nectar and lots of swarms. In a good year with steadily improving temperature and proper rainfall the dearth might not be too bad and a reasonable locust flow may follow. But, I must be continually on guard for swarm signals. Plenty of room and young proven queens are a big help.

So, we get our honey in May and June. Things start to taper off in July. About the 4th of July I can usually remove most of my honey. At this point I must leave a full deep of honey to provide the next winters stores and any honey that is not fully ripened.

The summer period is a tricky one. I don't want to open any hives from about July 15th to September 15th or maybe not at all. If I do work the bees it can be very rough. There is no, I repeat, no nectar flow. The bees are nasty and just love to rob. Another problem is the bees eat even if there is no nectar flow. Also if you have young prolific queens, the bees don't always want to stop rearing brood.

This can be a very serious problem. The first year that I had full strength producing colonies I found out how bad things could be. I took off my surplus honey in July and left winter stores and any frames that were not fully sealed. When I checked in September I found a lot of bees and brood, but no honey. That means no winter stores and extracting supers full of brood. Well, being quite naive, I thought, with all these bees I'll get a fantastic fall honey surplus. Needless to say it didn't work that way. In some areas of Long Island the fall honey flow is dependable and good surpluses are obtained, but not in western Suffolk County. I have since learned that a good fall flow may replace the honey consumed in July and August. Well it wasn't a good fall and all the honey gathered had to be re-arranged and left for winter stores.

As you probably realize I don't use queen excluders under normal conditions. I find that with our light to moderate honey flows they tend to cause congestion in the brood chamber, increased swarming and less honey put in the extracting supers. I felt that excluders could play a good role in this case. So, the second year I placed excluders under the balance of the extracting supers when the honey flow ended in mid July. Of course I did maintain my previous policy of removing all ripe honey about this time. After all, I had people banging on my door for honey and I was out. Well, maybe you guessed what happened this time. I kept the queen out of the honey supers but she filled the second deep with brood. Remember, that should have been winter stores. By this time I was more than a little upset and still short of surplus honey. So I extracted what I could and fed sugar syrup. I put on about three hundred pounds of heavy syrup. I also had a long fall season and the bees were able to replenish much of their depleted stores. The third season of this experiment is still ahead. This time I'll do what I should have done in the first place. That queen excluder is going over the bottom brood chamber, with the

(continued on page 201)

Varroa Disease, a Threat to World Beekeeping

By ROGER A. MORSE
Dept. of Entomology, Cornell Univ.
Ithaca, N.Y. 14853, U.S.A.
And
LIONEL S. GONCLAVES
Dept. of Biology-Section of Genetics
Faculty of Sciences [F.F.C.L.R.P.]
Univ. of Sao Paulo, Ribeirao Preto, SP
Brazil

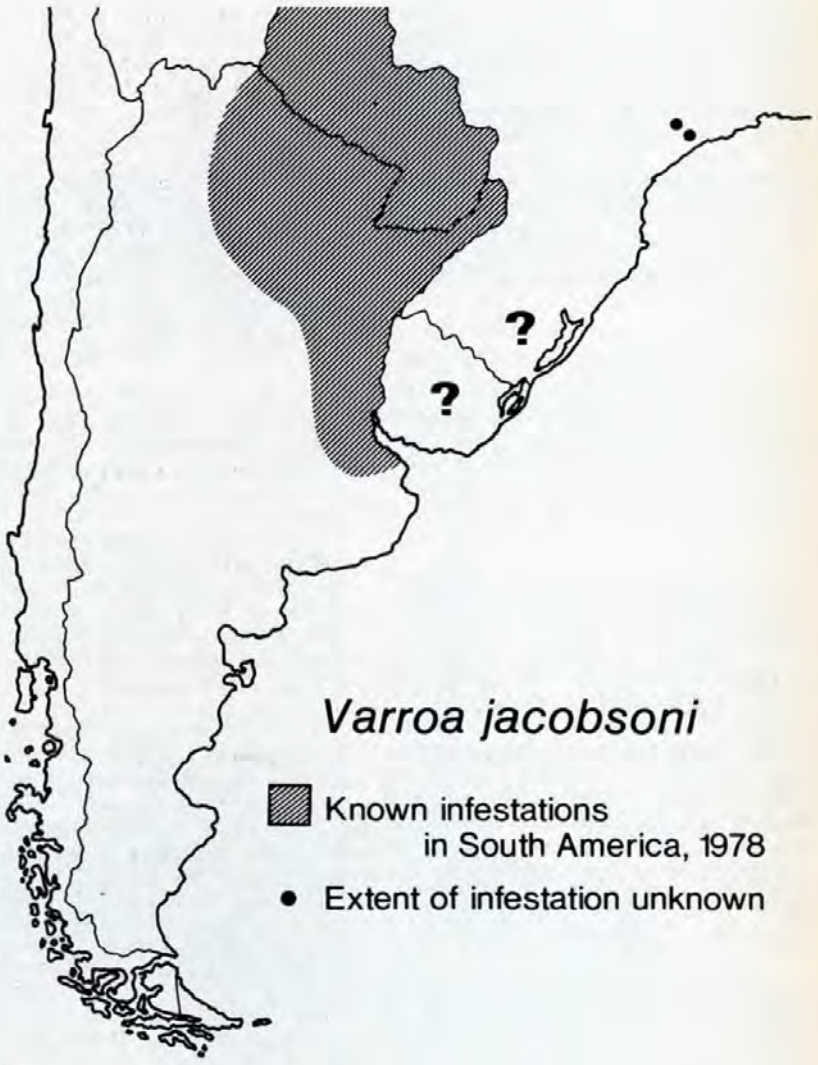
VARROA DISEASE was unknown to beekeepers in the early 1960's. The mite which causes the disease **(Varroa jacobsoni)** was discovered and described from Java in 1904, but its future economic importance was not recognized at that time. It was probably found throughout Asia then as it is now. Today it has spread from its native home to Europe, Africa and South America. In each of these areas it has killed many colonies of bees. People who have had experience with this disease consider it far more serious than American foulbrood.

Cause of the Disease

Female mites lay their eggs in cells occupied by older honeybee larvae. The developing mite feeds on the bee in both the larval and pupal stages. If there are only one or two mites on a developing pupa the bee will emerge from its cell, but usually with deformed wings and/or legs. Four to six or more mites on a developing bee will usually cause it to die in the pupal stage. The female mites seem to prefer to lay their eggs on drone brood; the longer life of drone pupae may enhance mite development. The disease causes little difficulty for the native Asian bee species it infests; however, European honeybees have no natural resistance to it and suffer greatly.

The Philippines

One of us (R.A.M.) observed the varroa mite in the Philippines in the late 1960's. That country had imported bees from the U.S. and had developed a small but flourishing beekeeping industry; there were probably a total of one thousand colonies of European bees owned by many beekeepers. The imported bee colonies slowly became infested with mites, probably as a result of robbing weak colonies of native Asian bees, but this is not certain. As the mite infestations increased the colonies gradually weakened. Soon there were no drones to mate with virgin queens. As a result colonies with supersedure queens died because their queens could not mate. About 12 to 15 years after it was started the once successful beekeeping industry was wiped out. We are aware that the same thing has occurred elsewhere in Asia, usually on a smaller scale. In fact, this mite may be the reason European bees have never been successfully established in tropical Asia.

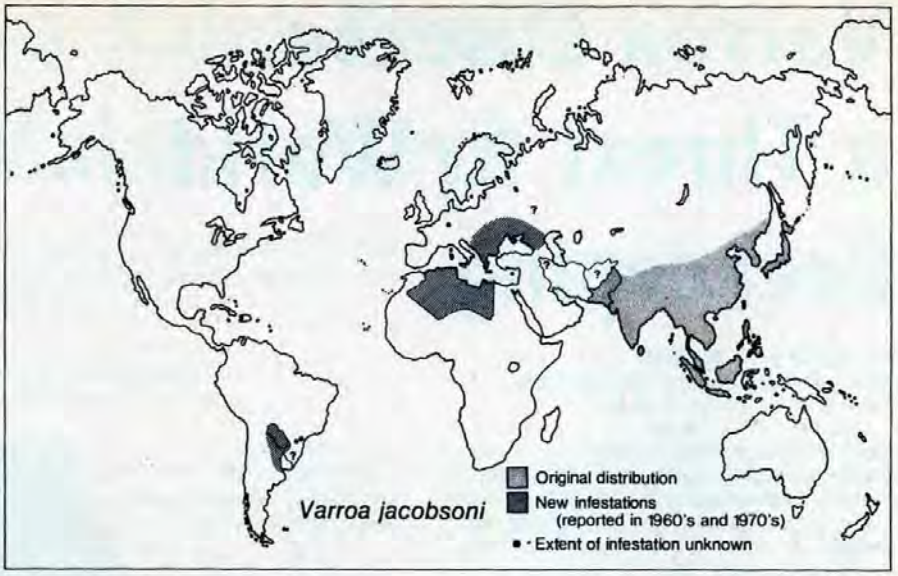


Eastern Europe

Reports of varroa disease in Russia and Bulgaria reached us in about 1965. The mites were brought in Europe from the Russian area north of Vladivostok, which lies east of China. Between 50 and 100 years ago Russian beekeepers carried their European bees to this part of eastern Russia where only Asian bees had existed.

The European bees produced a great amount of honey from trees in the Vladivostok area, which gained a reputation as an outstanding honey-producing region. Some beekeepers must have thought the bees unusual, too, for they were carried back to European Russia; the bees were infested with mites.

The varroa mite is found in both the tropical and colder parts of Asia. However, it appears to cause much less trouble in the colder regions, probably because there is a break in brood rearing and therefore in the rearing of young mites. The Bulgarian infestation appears to have come about as a result of that country's importing bees from Russia. The varroa mites are now found in Rumania, Yugoslavia, Greece, Turkey, and perhaps Iran. Mites apparently spread from Bulgaria to Rumania in about 1972. Infestations in the remaining countries listed were reported only this past year.



At a recent meeting of beekeepers in Florianopolis, Brazil, we were able to talk to persons from Europe and South America and to update our knowledge of the worldwide status of varroa disease.

Germany

In the early 1970's researchers in Germany imported bees from Asia for study. The imported bees, an Asian species quite different from European bees, were infested with mites. As a result, an area at least three by six miles (near Frankfurt) is now infested. This was discovered in 1977.

Varroa mites have been reported from north Germany; however, upon investigation it was found that the "mites" were **Braula coeca**, a wingless fly found throughout much of the beekeeping world. **Braula** larvae and adults burrow under cappings. While they may attach themselves to adult bees to be transported from one place to another, they do not feed on the bees. A report that varroa is close to the French border is unconfirmed and may, again, be the result of someone's mistaking the wingless flies for mites.

Africa

This summer it was reported that the mites are present in Tunisia and Libya in northern Africa. The Rumanians had undertaken a foreign aid project that included the gift of hundreds of colonies of bees to those countries. The gift bees were infested with mites. We have no information about how widely the imported bees were scattered in North Africa.

South America

There has been an active immigration of people from Japan into South America since the early 1950's. They constitute ten per cent of the population of Brazil. Japanese have also gone to Paraguay, and fifteen to twenty years ago they carried European queens from Japan to that country. Apparently the queens and their attendants were infested with Asian mites; the infestation was discovered in 1973. European bees are not native to Japan, of course, but they have been imported there and are widely used in that country.

Dr. M. Katzenelson, extension specialist for Argentina, told us that varroa mites were found in his country, in Buenos Aires, in 1976. The mites have not yet spread to the major honey producing area in that country. One of us (L.S.G.) observed varroa mites on bees in colonies in La Plata, a city about 50 kilometers south of Buenos Aires, in the spring of 1978. In a recent letter Dr. Katzenelson reported finding a new infestation about 200 kilometers west of Buenos Aires.

Varroa mites are now found in Brazil in the vicinity of Jundiai and Rio Claro, Both in the state of Sao Paulo, where they were discovered in 1977. The source is believed to be queens imported from Paraguay, but this may also represent a second introduction of mites from Japan into South America. Varroa mites have not been found in the Brazilian states of Parana, Santa Catarina or Rio Grande de Sul, or in Uruguay, all of which lie between the northern and southernmost infestations in South America; however, experience indicates that 2,000 or more mites are usually present in a colony before an infestation is noted, even by an experienced observer.

We examined the infestation at Rio Claro personally; we had no difficulty finding mites on adult bees though we estimated there was fewer than one mite per 100 adult bees. In the four colonies we examined, about one worker pupa in ten had one mite in the cell with it. There was little drone brood at the time of our examination but it was much more heavily infested. One of the four colonies had no drone brood and the remaining three had only small patches. We examined 55 drone pupae in the three colonies and found 23 infested with a total of 47 mites. One pupa had seven mites attached to it.

In the Rio Claro apiary none of the mites was firmly attached to its pupa. We dislodged all of the mites by dipping the pupae (both worker and drone pupae) in alcohol. This suggested to us that we did not find all of the mites in a cell and that many may have been dislodged from the pupae as we pulled them from their cells. More importantly, all of the mites we found on pupae were on the posterior half of the abdomen. None was attached to the thorax. We found no adult bees with deformed wings, which is common when the mites are attached to a developing bee's thorax. The beekeeeper we visited had been aware that he had the infestation for nearly two years; and in that time he had not seen any bees with deformed wings. Behavioral differences probably exist in **Varroa jacobsoni** as they do in other animals.

The Biology of Varroa

We believe some Japanese researchers who have been working in Paraguay for the past several years may have more information than anyone else on the biology and life history of varroa. In addition, several papers have appeared recently from Russia and Bulgaria. A recent report indicates 55,000 colonies died from the disease in one year in Russia. Despite the obvious importance of the disease we know very little about it. Precise data on the number of eggs a varroa female produces, how long development takes, etc. are lacking. How the mites are transferred from one colony to another is not clear. There has been more interest in studying the mite by persons in this country recently. Dr. H. Shimanuki, of the U.S.D.A. Laboratory in Beltsville, Maryland, has observed the infestation in South America. Professor Harvey Cromroy, of the University of Florida in Gainesville, made an in-depth

study of the mite in Germany which he published recently. Still, there is no person in this country who is a world expert on this disease. We need such a person badly.

Control

Several researchers have sought control methods for varroa disease. Everyone we have talked to agrees that Folbex (active ingredient chlorobenzilate), which is used to control **Acarapis** mites in Europe, is worthless in varroa control.

Dr. N. Koeniger from the University of Frankfurt reviewed with us what has been tested in Germany. Sineacar, a Rumanian rememdy, was not toxic to honeybees but killed only ten per cent of the mites. Varroastan, a product of Bayer-Japan may kill many mites but it is also toxic to open brood, adult bees and humans! Napthalene and thymol have been tested and are not effective.

German researchers have found that Dicofol (kelthane), a miticide used in greenhouses, is effective in controlling the mites. To be effective Dicofol must be used when there is no brood. No material tested to date will kill mites when they are in the egg stage, or when they are in capped brood cells; thus, the most effective time to treat bees in the northern hemisphere is in October and November when there is the least amount of brood. (Usually only about 20 per cent of colonies have brood at this time of year.)

Rain prevented our testing some Dicofol given us by Dr. Koeniger in Rio Claro. These tests were done for us by Professor A.C. Stort of "UNESP-Instituto de Biociencias", Rio Claro, in November, 1978.

Four colonies were treated with one gram each of Dicofol in 125 ml. of water. One colony was in one standard 10-frame super and the remaining three occupied two supers each. In colonies 1 and 2 an effort was made to treat the hive interior only and not the combs; in colonies 3 and 4 the brood combs as well as the inside of the hive were sprayed. The bottom boards were covered with wire screen with 8 wires per 2.54 cm. so that dead mites would drop from the bees and fall through the screen onto paper beneath, where they could be collected. The numbers of mites collected from the four colonies after 24 hours were 14, 81, 152, and 218 (colonies 1 through 4 respectively). Dead bee traps were not available; however, a visual assessment of brood, the number of bees in the hives, and the area in front of the hive indicated that formulation of kelthane used was not toxic, or had a very low toxicity to honeybees, at least under the circumstances used. Forty days later the bottom boards of three of these four colonies (colonies 2-4) were cleaned and a screen and a sheet of paper put into position as before (colony 1 was not available for observation). Twenty-four hours later 11, 8 and 130 mites were found in each of colonies 2-4, respectively. Kelthane has been in use for over two decades and is known to have a long residual action, as our observations confirmed. These preliminary tests suggest that spraying the bees and combs is more effective than spraying the inside of the hive alone.

Dicofol is a DDT-like chlorinated hydrocarbon. It has good activity against mites but reportedly has no insecticidal activity; the preliminary tests appear to confirm this but we plan more tests using dead bee traps. However, because of its long residual life and chemical nature this is not the type of material we want for mite control. A more suitable control must be sought.

Will Varroa Come to the U.S.?

As international travel increases so does the spread of plant and animal diseases. It is reasonable to expect that varroa disease will reach North America in the not-too-distant future. United States customs and baggage inspection are poor, but we can't blame customs' people exclusively. Many people think their baggage from abroad should not be inspected at all, and that is what they tell their representatives in Congress. Some people think they should be allowed to bring anything into their country. Only about a year ago a researcher from the eastern U.S. brought in some bee stock from Europe illegally. He became upset when the bees were destroyed. Obviously he has no concern about our agriculture or beekeeping.

What to Look For?

A mature adult mite is brown in color and the size of a pinhead. Mites may be found clinging to adult bees but more commonly on the thorax of drone or worker pupae. Immature mites are smaller, white or light brown and more difficult to see. Patches of dead brood are especially indicative of varroa disease.

Diagnosis

The U.S.D.A. bee disease laboratory (Bioenvironmental Bee Laboratory, Building 476, ARC East, Beltsville, Maryland 20705-U.S.A.) is always glad to examine dead brood or adult bees suspected of disease of any kind. In fact, it is only by their doing so that we can be alert to new problems. They will inspect and diagnose dead material from anywhere in the world.

Other Asian Bee Mites and Problems

There are two other Asian bee mites

(Continued on page 202)

Figure 1. A worker bee with an undeveloped wing caused by mite feeding in the pupal stage. This occurs when one, or only a few, mites are present; when more than a few mites feed on a single pupa, it is killed.

Demaree Plan Made Easy

"The important thing is that it is practically 100% swarm proof."

By WESLEY H. DUNHAM
Mendham, N.J.

A GOOD SWARM control method is one of the most important aspects of good honey production. There are various forms of swarm control by manipulations. The methods that have evolved in the last 100 years to control swarming by manipulation, trick hives, gadgets, etc. would fill a large book. They all no doubt had some merit but most of them have long since been forgotten. In the last analysis every beekeeper has to work out the best method suitable to his particular location and his dexterity of manipulation.

Probably one of the oldest and most widely used swarm control practices is the Demaree plan or some variation of it. But all variations utilize the same basic principle of queen and brood separation. My copy of **ABC & XYZ of Bee Culture** (1919 edition) describes the Demaree plan as follows: "A week before the actual honey flow the sealed and hatching brood should be put in the upper story, and the queen and unsealed brood in the lower story, with a queen excluder between." This procedure sounds simple but it is not always easy to find the queen with the hive boiling over with bees. If you are lucky you may find the queen right away, but if not you might as well close it up and try again another day. For those hardy individuals that "never give up" there is another method that works. Take two empty supers and place an excluder between them. You then shake the bees into the top super and with a little smoke force the bees down through the excluder. During this process you sooner or later spot the queen in the top super. I have heard people say, "I used the Demaree plan at one time but it got to be so much work I changed to a simpler plan." I am also sure that I would not use the Demaree plan if I had to go to the difficulty of finding the queen.

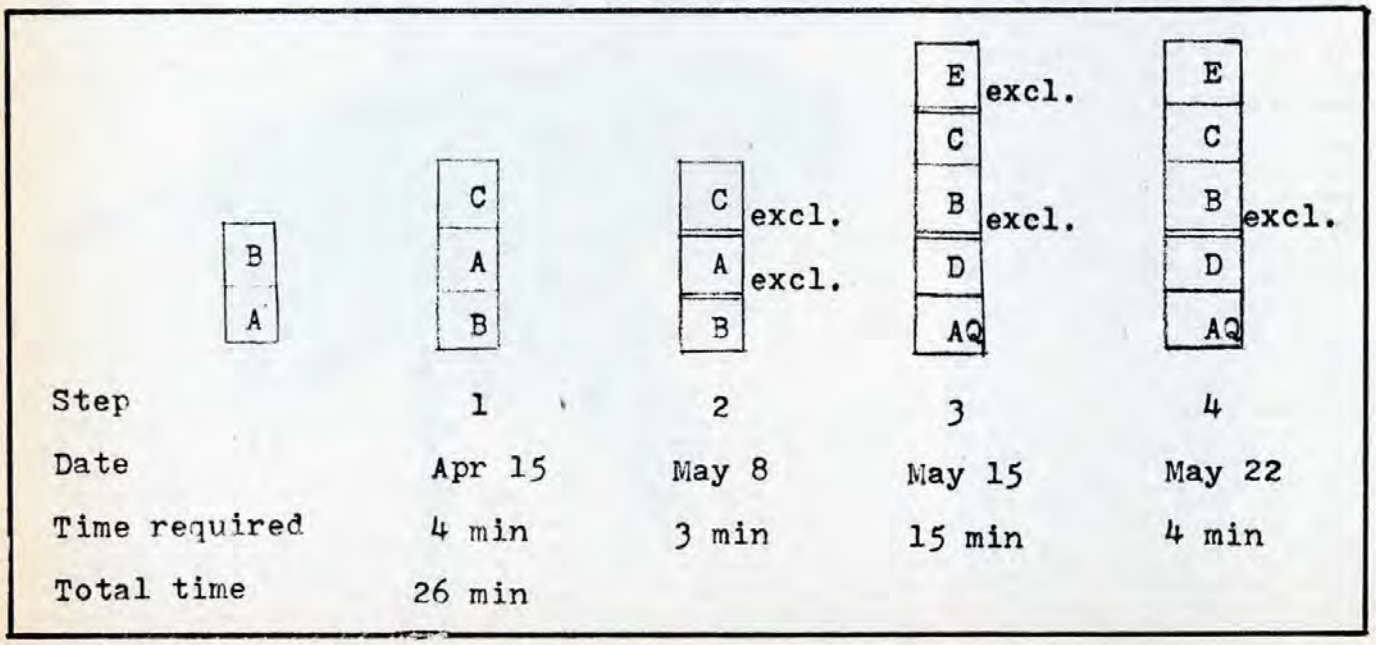
Fortunately, there is a better way. With a little advance planning and preparation there is a simple and easy method to accomplish the same result. Sometimes just a simple little gimmick can make all the difference in the world. Before I give a detailed description of my plan, I will give just a brief resume of the operation. In the month of May all my bees are in three stories and a week before I plan to Demaree them, I slip an excluder between each super. This simple operation confines the queen in one super and a week later when I start to Demaree I can immediately determine in which super the queen is located by the presence of eggs. I put this super on the bottom board and start removing all the frames of brood except two frames of unsealed brood by shaking the bees onto the bottom board. If the queen happens to be on one of these frames she gets jostled onto the bottom board along with the bees. All the other brood is put above the excluder and the mission is accomplished without even seeing the queen. There is nothing difficult or complicated about this method and I am sure I will hear from someone who will say they have been doing it this way for years.

The chart below is a typical case which shows the four steps required to perform the "Demaree Plan made Easy"

Step 1 - This step consists of reversing A and B and adding the extra super C. Cleaning the bottom board is part of this operation. This step is a normal operation for most methods and is not necessarily applicable to this plan only.

Step 2 - This is a simple operation to add two excluders. The second excluder is the only extra equipment required for this method and may be acquired cheaply from some beekeeper who has discontinued their use and considers them only honey excluders. The purpose of this step is to confine the queen in one of the three supers.

Step 3 - This is the major operation of the Demaree Plan. It is very easy to determine the super in which the queen is located by the presence of eggs. In the typical case shown in the chart below the queen was determined to be in super A. The important thing is to identify the super in which the queen is located and immediately set that super on the bottom board. If the queen had been determined to be in super B you leave it there as it is



just where you want it; or if you had determined the queen was in the top super C, then you immediately relocate it to the bottom board. And in this case you get a lucky break as the queen has laid probably but a few frames of brood and there are no excess frames of brood to be removed.

Now that you have the super with the queen on the bottom board and have set to one side all other supers for later attention, your next step is to place a super of empty combs on the ground at the rear of the bottom board to exchange with the brood combs. Now start lifting out the extra frames of brood, and as you do, give each a sudden downward jerk with your hands firmly gripping both ends of the top bar. It is amazing how suddenly the bees all fall to the bottom board. As you place each frame in the waiting super, bring back an empty comb to replace the frame just removed. You can shuttle back and forth very fast until you have removed all but 1 or 2 frames of brood. I like to leave 1 or 2 frames with the least amount of sealed brood.

You now add an empty super D and an excluder. The supers of sealed brood are placed above the excluder but they first have to be checked for queen cells. You will almost always find a few queen cells. My theory is that normally the queen continually rotates throughout the brood nest and when egg laying suddenly stops the bees think the queen is failing and start supersedure cells. The fact that you will find queen cells in these supers has its advantages. These are excellent cells to make increase or to requeen poor colonies. The last super E containing the extra frames of brood is placed on top with a queen excluder underneath. You may wonder why it is necessary to use this top excluder as supposedly you have shaken the queen onto the bottom board. It is just an extra precaution and for peace of mind for if by chance the queen had been in this super and had started laying in the upper supers then all your work would have gone for naught. I have never had it happen but there is always the possibility that it could happen.

Step 4 - The last step consists of removing the extra queen excluder at the top and checking for queen cells in the top super E. This super was intentionally put on top in order to make it easily accessible to check for queen cells.

The dates shown for the various steps are for a normal season in northern New Jersey. They may be adjusted accordingly for an early or late spring. The elapsed time between steps 2 and 3, and 3 and 4 of seven days may be extended to 9 or 10 days if necessary but not beyond without the possibility of their swarming.

The manipulation time is the actual elapsed time from the removal of the cover to the replacing of the cover after each operation has been completed. The

(Continued on page 200)

Beekeeper Technician: A Unique Program in Western Canada

FAIRVIEW COLLEGE is a small, rural and mainly residential college located in the town of Fairview, 563 km. northwest of Edmonton. Fairview is centered in the agricultural area of the Peace River Region. The Beekeeper Technician Program, unique in Canada, is being implemented to meet the demands of the industry for skilled workers.

For the first six weeks of the program, commencing February 19, 1979, students will become familiar with the theoretical and practical basics of beekeeping at the College.

For the six-month field session, students are guaranteed a salaried placement with a registered commercial beekeeper. The employer will expose the trainee to a full range of learning experiences so that knowledge gained in the first session can be applied as much as possible. The trainee will also be required to complete a special study project over the summer and report back in the fall.

Following the honey harvest, the students will return to Fairview College for a final session to integrate their theoretical and practical knowledge.

No course fee will be charged to those students who are sponsored through Canada Manpower or Alberta Vocational Training. Self-sponsored students will pay $105 course fee.

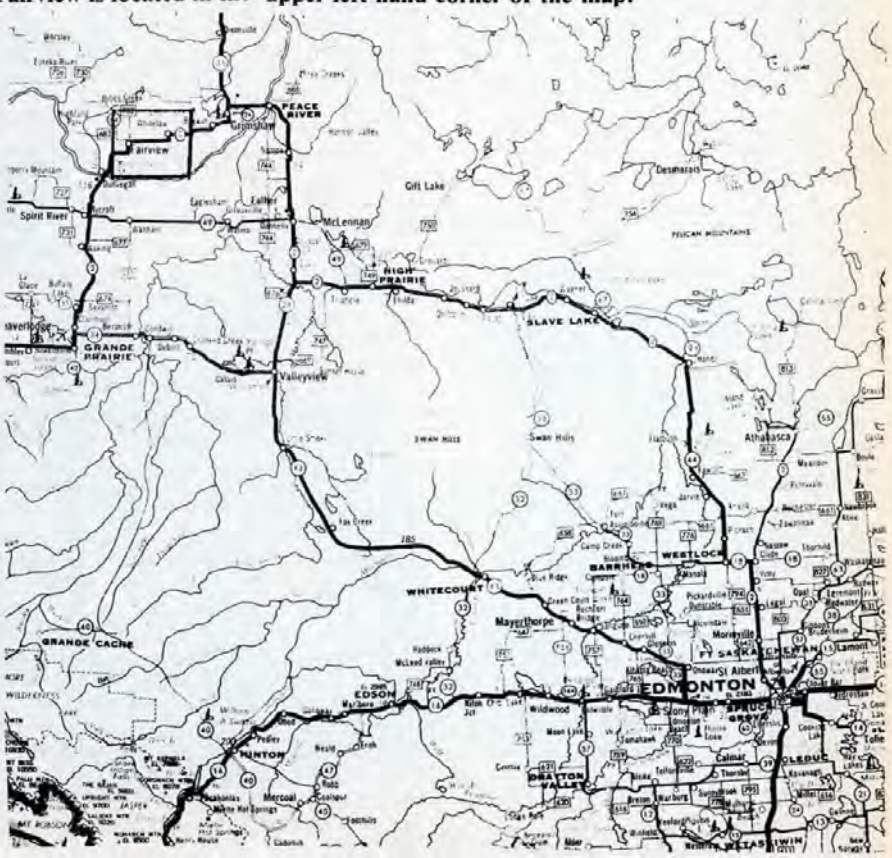
This program is open to both male and female candidates. Beekeepers who have hired female assistants have found them to be capable and reliable—valued employees.

Students from any province in Canada are welcome to apply.

Pre-requisites for the program include reading and writing skills equivalent to the grade ten level, a driver's license, and good general health.

For further information, contact: Steve Pawlak or Sandy McKenna, Fairview College, Box 3000, Fairview, Alberta, TOH 1L0, (403) (835-2213); or Dennis Wm. McKenna, Course Instructor, Box 343, Rycroft, Alberta.

Fairview College located in the town of Fairview, in the Peace River area of the Province of Alberta is the site of Canada's unique beekeeper technician program. Fairview is located in the upper left hand corner of the map.



Siftings

By CHARLES MRAZ
Box 127
Middlebury, Vt. 05753

HAVING JUST returned from the "romantic islands of Hawaii", it might be well to write some of my impressions after a one month visit to the island of Oahu and short side trips to the island of Hawaii, the "big island"; Kauai, the "garden island"; and Moloka; "friendly island". The trip was made possible by the generous invitation of the president of the Hawaiian Beekeepers Association, Colonel Clair and members of the association. Mr. Clair was a wonderful host and as a resident of the islands for some years, he was able to show us the islands from a beekeepers point of view. Quite different from a tourists point of view.

My one regret because of the lack of time, I could not visit the Kona Queen establishment of Jim Powers and the Weavers, though we did see several of their nuc yards where they plan to raise early queens for the U.S. market. It would be interesting to know just how this is working out. The weather was not too cooperative, just about three weeks of rain. On the big island it was even worse, something like 20 inches of rain in one day. No doubt the islands are a good place to raise queens, but there also may be many problems that need to be worked out. The different islands and the leeward and windward sides of the islands vary greatly in moisture and honey plants.

On the Kona coast it is quite a sight to see the recent lava flows when the volcanoes erupted, some of them not too long ago. Apparently there is always a chance that there will be more eruptions and anyone in the way of the lava flow will just get buried under "liquid rock". It must be something to see that liquid rock flowing with such irresistable force down the mountain to the sea. We did not see the volcanoes, but instead visited a beekeeper that is building up to a commercial operation.

About 40 years ago, the islands exported a great deal of honey to the U.S. Today they do not even produce enough for their own use. Honey is imported from California. Not only honey, but surprisingly, much of their fruit and vegetables, things that can be grown easily on the islands. For some reason, sugar cane and pineapples are the main crops still grown on the islands. Sugar cane is now losing a lot of money and the industry has to be subsidized with government funds. The pineapple industry is also on hard times. They can be grown more cheaply other places such as the Philippines. Also, a pineapple bug, a pest that causes considerable damage has now become so resistant to presticides, I've been told, it can no longer be controlled with insecticides.

About 30 years ago after beekeeping was neglected, perhaps due to low prices, AFB killed off many of the colonies. The resistant colonies survived, swarmed through the years and re-populated the islands, with many wild colonies. The Hawaiian Beekeepers Association is making an effort to maintain this resistant strain of bees as a source of breeding stock. Looking over the bees on these four islands, they appear to me to be the old strain of Italians that we had in the U.S. some 50 years ago and in some cases, also crossed with the old German black bees. This excellent old-time strain of bees no longer exists in the U.S. that I know of, except perhaps in some few isolated areas. It is a strain well worth saving. Even in Italy the old strain of dark Italians is no longer being propagated, being replaced with the "Golden Italian" so highly susceptible to AFB, and in some cases even EFB.

A start has been made to perpetuate this strain of bees by establishing queen breeding apiaries to select the best of these queens that can be found on the islands. I saw many colonies with beautiful, healthy brood and very strong. Beekeepers have told me that they have produced up to 300 lb. average per a colony some years. With honey selling on the islands almost a $1.00 a lb. wholesale, a beekeeper should have no trouble paying expenses. I trust some of you mainland beekeepers don't get an idea you can go to Hawaii and make a fortune in the honey business. It is not that easy. When you see the prices of lumber, material, land, houses and buildings, it will take almost a fortune just to get started.

With the decline in the profits of sugar and pineapple, there is some discussion as to what crops can be grown to replace these two staples that created the early fortunes on the islands. There is quite a bit of talk, but not much action; sugar and pineapples still dominate the economic minds. Mr. Clair heard of a farmer on Molokai that is just starting to grow alfalfa. A beekeeper, naturally is interested in alfalfa, much of the surplus honey from the U.S. comes from alfalfa. I have seen alfalfa grow in all areas of the U.S., Canada, Mexico, Romania and Russia. Alfalfa on the Hawaiian Islands I never heard of, nor have many people, even on the islands. As far as I know it is the old field of alfalfa in Hawaii, about 120 acres.

One day we flew over and saw this field with the farmer that is growing it. He is mainly a pineapple grower, and seeing the handwriting on the wall, started to experiment with this field of alfalfa. Much of the soil on the islands is a red, clay-like volcanic ash. The soil was checked by the farmer and needed only phosphorous and molybdenum, as I understood him to say. Molybdenum is important for alfalfa as it has something to do with the metabolism for the production of protein in alfalfa. The farmer told us his alfalfa tested 24% protein, surprisingly considerably higher than normal.

Not only was this alfalfa higher than normal in protein, but it was the most beautiful, lush and healthy stand I have ever seen anywhere. The farmer said it was a non-dormant variety, the seed costing about $2.65 per lb. In their climate they get 12 cuttings per year, about a ton per cutting, I believe. Most of the hay now in Hawaii comes from the mainland and sells for $9.00 per bale, and not the pure alfalfa such as we saw on Molokai, The hay from this field is worth at least $100 per ton, but he sells it for $88.50 per ton, and has a waiting list of customers that hope to get in line to buy it. They are planning to grow another 500 acres which they believe will cost about $400,000 for land preparation, fertilizer, seed, irrigation, etc., but with a yield of 10 tons per year, they could get almost all that money back the first year. They believe a stand will last at least 3 years. Also in 60 days, they could produce a seed crop. If, with good pollination, as in California, they could get 1,000 lbs. of seed per acre, that would be over $2,000 in seed, plus the hay. The great unknown is, what about honey production? Will alfalfa produce honey in Hawaii? That is the big question. If it does, far as beekeeping goes, it will be a valuable replacement for sugar cane and pineapple that produces no honey crop, and rather than lose money, alfalfa should be a money making crop. In turn it would also support dairy and meat production on the islands. It will be interesting to see how these plans develop and what the future will be for beekeeping in Hawaii.

BEE TALK-----

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

MY COPY OF the new edition of **ABC & XYZ Of Bee Culture** came the other day, so I've been spending some pleasant hours browsing through that. It must be the most famous bee book in the world. Apparently no one knows how many copies have been sold, of all the editions, but the number is well over a half million. What is equally remarkable is that the editorship of this encyclopedia of apiculture has remained in the same family and company all these years.

The beginnings of this book are somewhat mysterious. Apparently A.I. Root first published it in installments in the then young **Gleanings in Bee Culture**, and called it simply **The ABC of Bee Culture**. So that must have been the first edition, though I have never been able to be sure of this. The new edition, described as the thirty-seventh, adds some confusion by saying, in its "Preface to This Edition", that there have been thirty-four previous editions.

No matter. It is a remarkable book, and it can certainly be said of this one that it has been extensively revised. There is just an awful lot of new material here. But for everything that has been added, something has been dropped, for it keeps to the same number of pages as other recent editions—712, to be exact, plus the preface and index. This means that for a truly comprehensive encyclopedia, you should have several editions, going back over the years as far as you can. You won't find one of my favorite entries in this edition, for example—namely, "Beekeeping and Preaching the Gospel". For that you need an older edition. I was a little saddened to see "Beekeeping and Poultry Raising" go too, though the editor was wise to drop it. Egg factories have pretty much replaced the backyard hen house, alas! But I can still read about raising chickens and bees in my old editions.

I don't have all the editions of this book. I wish I did. But I counted the other day, and found I had forty-three copies. That is quite an impressive shelf. So I must have a few duplicates, as well as a few holes, in my collection. I used to pick these old editions up for ten dollars apiece, maybe twelve for a real old one. I guess you'd pay two or three times that now. My oldest copy, kept in a little plastic bag, is dated 1877. I wouldn't let those old books go for anything. I love the old pictures, and I love the philosophy of beekeeping that prevailed in the days when a "big" beekeeper had maybe a hundred colonies, half of them in his own back yard.

I used to read this book as a kid, when I was supposed to be doing my school lessons, and I got to know every picture in it, some of which are still there. I never imagined that I would see my **own** picture in it, but sure enough, there it finally is, on p. 169. All you can see is my hand, to be sure, holding a round section of comb honey, but it nevertheless gives me a sense of enduring fame.

The numerous and extensive revisions of this edition are largely in the direction of scientific developments of recent years, as well as the interests of commercial beekeeping, reflecting, usefully but somewhat sadly, the trend among serious beekeepers away from backlot beekeeping. There is a new article on breeding stock, and an important, up-to-date section on honey adulteration and the means of its detection. Alphonse Avitabile has contributed a very good piece about dividing colonies. Ecology and bees finally receives the attention it deserves, in the light of recent interest in this. The subject of raising comb honey in round sections, with a discussion of the equipment and methods used, is dealt with. This by itself marks a very important advance of the present edition over all the previous ones.

One of the most significant improvements incorporated into this edition is a new discussion of bee diseases and methods of dealing with them, which has been re-written by A.S. Michael, microbiologist with the U.S.Department of Agriculture. The older editions were somewhat reserved with respect to the use of therapeutic antibiotics, but Mr. Michael explains clearly how these substances, particularly Terramycin and sodium sulfathiazole, should be used in the control and prevention of American and European foulbrood. At the same time the reader is wisely warned not to rely on these at the expense of good management practices. Terramycin, in particular, certainly has its place in sound apicultural management and practice, and the possibility of any contamination to honey is virtually nonexistent if it is properly used. At the same time I must express doubt about the wisdom of using any drug in an attempt to **cure** any case of AFB. Its use should be limited to prevention of disease, in which it has been shown to be very effective indeed.

There are many other good new articles in this book. I'm sure I did not notice every single one, but I did find a new and very extensive article on artificial bee pasture, which responds to a widespread interest. The section on Langstroth has been enlarged, and note taken of the Langstroth Cottage, in Oxford, Ohio, which still stands and which efforts are being made to preserve as a memorial. The section on marketing honey has been revised, as has also the one on honey exhibits. An effort has been made, once more, to bring the section on honey

(Continued on page 201)

The old and the new.

From the West

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

QUESTIONS, QUESTIONS

WHEN I offered to send you information on where to get the right components to assemble "the hive for 1979", little did I realize what I was in for. It has been a delightful experience. Not only over 400 of you responded but with it came the questions, hundreds of them. I had to make my replies short. So now I will go into the details. A very often asked question, "Which is the best round section?" I don't know. Ask Dr. Richard Taylor of **Bee Talk**. He is an expert on that. But I can and should tell you this. "Patent pending" is a bluff. "Patent applied for" may be true but how do you know? "Patent number so and so" is the real McCoy provided that the patent hasn't run out. Seventeen years is the life of a patent. I have heard of Cobana sections for so many years that if the manufacturer had a patent it must have run out by now. Anyway, they are the granddaddy of all the round sections now offered for sale. That doesn't make them necessarily the best round section. Use your own judgement. Ask for a sample. Better yet write Dr. Richard Taylor. I hope he gets swamped with inquiries. We, who write columns, do it to help you. What we say is not always appreciated by some but you have to take the bitter with the sweet. Mae West used to say, "I don't care what they say about me just so they say it."

With so many beginners wanting to know about eleven deep frames in a ten frame deep Langstroth brood chamber I will have to go into further details. But first this letter from Anchorage, Alaska, of all places. For that is as far North as you can keep bees. He writes, "I'm a new beekeeper with one season's experience with two hives. A good friend is in the same boat—he had read one of your articles on "Squeezing" the bees and tried one of his hives that way—result—a hive **full** of bees and **honey**. This year we will have eight hives with eleven frames in the brood chamber."

If you, too, want to have a try at eleven frames in the brood chamber do this. In assembling your frame besides nails use glue. It's a permanent deal anyway. Be sure your frames are the type with grooved top and bottom bars. After assembling the frames plane down the end bars on each side so that they are the same width as the top bar. Now drive in the staples. As I mentioned last month make them by cutting paper clips in half. They cost but little and don't split the wood. Drive the staples into the wood until they stick out exactly one quarter inch. The staples should be all on one side. This prevents you from turning a frame around in the brood nest. It's a bad practice and it upsets the arrangement of the brood nest. And don't move frames around in the brood nest. It is being done but it leads to chilling of brood and it disturbs the laying cycle of the queen. I am talking to beginners but even old-timers should not commit this bad practice. As for the foundation, if you use molded plastic foundation just snap it into the frame and you are ready to go.

Now something else and it's very important. Be sure that you buy your supers with metal frame rests for the frames to slide on. Some manufacturers eliminate them and this is a complete violation of the Langstroth principle which calls for a bee space under the top bar end lugs. For your movable frames are not movable when the end lugs rest on a wood or metal covered surface. For the bees will solidly propolize these contact points and it will be impossible to slide your frames together. In other words it is not a movable frame hive. You cannot remove combs without rolling over bees and your queen may get crushed. Your bees will be furious and so will you. And believe you me, there is nothing so frustrating as getting off to a bad start. A reader writes, "I had a bad time last year for vandals destroyed my hive." I wrote him, "by all means paint your hives the color of their surroundings whether they are green or brown." We are living in a difficult age and a lot of people take their frustrations out on someone else. Hide your hives. What they can't see can't hurt you. And use latex paint for it lets your hives breathe so it stays dry inside.

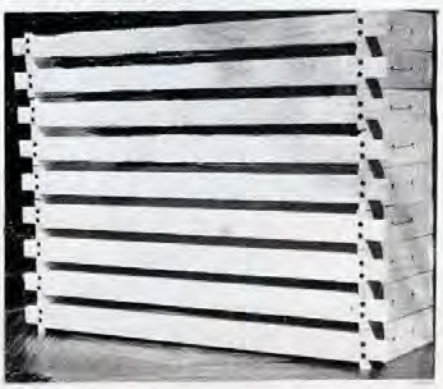
Last month I promised to tell you all about Manley extracting frames. The largest American commercial beekeeper who operates in five states, including Hawaii uses nothing else but 6-1/4 inch Manley frames. They are placed in his huge merry-go-round extractors after uncapping, in their supers, and the honey is slung out in one operation. It starts up slowly like the merry-go-round at the county fair and when it reaches full speed out flies the honey.

I have used nothing but Manley frames since July 1966, after I read in **Gleanings**, the excellent article entitled "The Honey Super", by Dr. Francis G. Smith, Sr., Apiculturist in the Australian Department of Agriculture. This is what he wrote. "The 6-5/8 inch deep honey super has many advantages which makes its use attractive for modern commercial beekeeping. Many beekeepers have recognized that the Langstroth 10-frame box is too heavy as a honey super. The strain of lifting these, which average 80 pounds in weight when full and may occasionally be over 90 pounds, have made many feel that they are too old at 45. The 6-5/8 inch honey super averages 55 pounds gross, ranging from 50 pounds to a maximum of 61 pounds and it is a reasonable and economical weight to lift, carry and load. The average amount of honey in these supers is 40 pounds ranging from 35 to 45 pounds, three quarters of that held by a Langstroth frame box.

"This more managable weight increases the speed of handling, lessens the fatigue, and eliminates the strain and backache of handling Langstroth boxes. On the hive, the 6-5/8 inch supers are filled and made ready for extracting more quickly. And they are cleared of bees more quickly, and thoroughly, by phenol or other repellents. The Manley frames, of simple construction, are especially designed for the storage and easy extraction of honey. With these frames, self spaced at the best spacing for honey storage, there is no death rattle when hives are moved with empty supers. The frames, their end bars just under 1-3/4 inches (44 mm.) wide, require no fiddling about spacing the frames by hand, and the boxes can be stood on their ends or on their sides without crushing bees or combs. The width of the top and bottom bars, a bare 1-1/8 inches (28 mm.), is just right for the removal of the cappings with one clean sweep of the knife. And very little honey is cut off with the cappings. The Manley frames are uncapped in half the time taken to uncap Langstroths, and with a shorter knife and much less fatigue. The increased speed of handling and uncapping the supers, the decrease in fatigue

(Continued on page 200)

Closed end bar Manley extracting frames. Bees work with vigor and seal combs perfectly. An ideal frame for extracted honey production.



Research Review

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

GYPSY MOTH SHENANIGANS

THE FEBRUARY 25 **New York Times** carried an article to the effect that the U.S. Department of Agriculture is preparing to spray certain parks on Long Island for gypsy moth this coming spring. The department takes a calloused attitude toward bees saying that if spray used was toxic they would warn beekeepers to move their hives. The agency which does the spraying, APHIS (Animal and Plant Health Inspection Service), has never assisted in the moving of bees, suggested where they might be moved, nor undertaken any research to determine how losses might be avoided.

One of the insecticides being considered for use is Sevin. Sevin was first used in a gypsy moth control program in 1959. Since that time other materials have been used but it appears that Sevin is again favored. Sevin is highly toxic to honeybees. The formulation of the material, that is, the way in which it is mixed with emulsifiers, stickers and spreaders, makes a difference insofar as toxicity to honeybees is concerned. (Formulation might make a difference in toxicity to gypsy moths too, but I doubt that the U.S.D.A. has studied the question.)

Dimilin, the insecticide used for gypsy moth control the past couple of years, is out of favor this year. It is thought to have some carcinogenic effects according to the Environmental Protection Agency. Campsites and parks are classified as residential areas and suspect insecticides cannot be used in them. Another insecticide, Dylox, listed as being relatively non-toxic to honeybees, is also being considered.

One bright spot in the gypsy moth control program, which has over 100 years of history, is the biological control laboratory founded in the State of New Jersey in 1970. The U.S.D.A. has aided that lab since 1971 and last year supported it to the extent of $100,000. Gypsy moth parasites reared in New Jersey have been released in many states in the Northeast including Virginia, Maryland and New York.

I have seen no other announcements about gypsy moth programs in other states. (The moth is found in many states east of the Mississppi). In talking to a U.S.D.A. representative from upstate New York, I learned that no plans have been formulated for that area; however, the extent of the infestation is such that it is felt there will be a program, but where and when remains a mystery. It was thought that both aerial and ground equipment would be used.

President Carter has announced that monies to compensate beekeepers for pesticide losses should be eliminated from the 1980 budget; the compensation program will continue through 1979. At the same time the U.S.D.A. has finally assigned two men to investigate how pesticide losses to honeybees might be avoided. However, there is almost no money for states to do so. We spend three to four million to compensate beekeepers for all pesticide losses in the U.S. each year; the amount being spent to research the problem is insignificant.

I am keenly aware of the fact that my colleagues in the entomology department at Cornell have no enthusiasm for the APHIS gypsy moth program. They are aware that a small number of homeowners complain about defoliation of trees in their yards and that on occasion a house may have many unsightly egg masses deposited on its outside walls. Resort areas, particularly in the Catskill Mountains, have complained bitterly when gypsy moth abounds. Some of our faculty think the spray program should be eliminated; others do speak enthusiastically about the New Jersey parasite laboratory.

When I asked one U.S.D.A. official why the program continued year after year he pointed out that egg cases deposited on trailers in parks might be transported to other parts of the country. He said there were parts of New York State which were not yet infested. I'm not certain that is true. I am aware that gypsy moths have been found in many states.

I don't wish to convey the idea that I am against the use of all pesticides, for I am not. There are some cases where they are needed, and badly so. I am not convinced the gypsy moth is in this category. Beekeepers have been remarkably quiet about the program in the past but many have suffered losses of adult bees and as a result have lost their honey crops.

POLLINATION OF DELICIOUS APPLES

The structure of the flower of red delicious apples is different from most other apple varieties (called cultivars by horticulturists). All apple flowers have five female parts which grow upwards from the center of the nectary, the gland which produces the nectar. They also have twenty male parts which surround the nectary.

In red delicious apples the twenty male parts are far enough apart that honeybees may insert their tongues between them to obtain nectar. This is not true with most apple varieties where the bees must insert their tongues down through the mass of 25 flower parts.

Robinson, a graduate student at Cornell, observed that about 95 per cent of bees which gather nectar by inserting their tongues between the male parts do not pollinate. He called these bees sideworkers. They don't pollinate because they don't come into contact with the flowers' sexual parts and transfer pollen from the tips of male parts to the tips of female parts.

Red delicious apples are the most popular variety in the country today. About 40 per cent of our trees are of this variety. For many years growers have been aware that yields from this variety have been low; however, because the public likes red delicious, growers are paid more money for them.

Over fifty years ago it was shown that the number of seeds influence the size and shape of an apple. Most apples have the potential to have ten seeds. A seed will develop only when a pollen grain is deposited on a female part and grows down to the ovary. A separate pollen grain is needed for each seed. In states such as Washington, where there is an abundance of sunlight during the growing season, well developed apples will form with fewer seeds. In the eastern part of the country where there is less sunshine, apples must have more seeds, though not necessarily all ten, to develop normally and be fully round. Lopsided apples usually do not have a full complement of seeds.

(Continued on page 203)

Who's Who in Apiculture

To supply a handy reference of the names and addresses of state and provincial apiary inspectors, secretaries of beekeepers' associations, extension workers in beekeeping, and other information often needed by our readers, we have corrected our Who's Who in Apiculture as of March 1, 1979

State or Province	Bees on Combs Admitted	Apiary Registration Req.	Fee	Secretary State Association	Address
Ala.	Not Allowed	Yes	Yes	Mrs. R. V. Harrell,	Hayneville 36040
Alaska	None	No		No Association	
Alta.*	Not Allowed	Yes	No	Mrs. Eric Abell,	Box 87, Gibbons T0A 1N0
Ariz.	Cer. & Per.	Yes	No	Clarence L. Benson,	Box 858, Oracle 85623
Ark.	Cer. & Per.	Yes	No	W. R. Sterling, Jr.,	1600 S. Tyler, Little Rock 72204
B. C.*	Not Allowed	Yes	No	J. N. Robertson,	Box 14, Site 55 RR#1, Lantzville V0R 2H0
Calif.*	Certificate	Yes	No	Frank Johnson,	2114 Westminster Dr., Riverside 92506
Colo.*	Cer. & Per.	Yes	Yes	Mrs. Genevieve Scherbenski,	11046 Isabelle Rd., Lafayette 80026
Conn.*	Certificate	Yes	Yes	N. Dana Lovell,	16 Rose Terrace, Trumbull 06611
Del.*	Cer. & Per.	Yes	No	William Sipple,	10th & Arch Sts., Seaford 19973
Fla.	Cer. & Per.	No	No	Edwin Hancock,	7410 Hancock Rd., Riverview 33569
Ga.*	Cer. & Per.	Yes	No	Lee Russell,	P.O. Box 291, 100 Madison St., Comer 30629
Hawaii	Not Allowed	No	No	No Association	
Idaho	Permit	Yes	Yes	Golden Millet,	Rt. B Box 318 A, Grandview 83624
Ills.*	Cer. & Per.	Yes	No	Hoyt Taylor,	Rt. 2, Pleasant Plains 62677
Ind.*	Cer. & Per.	Yes	No	Claude F. Wade,	Room 613, State Office Bldg., Indianapolis 46204
Iowa*	Cer. & Per.	No		Glen L. Stanley,	Agric. Dept., State House, Des Moines 50319
Kans.*	Cer. & Per.	Optional		Duane Levin,	Box 5, Stuttgart, 67670
Ky.*	Cer. & Per.	Yes	Yes	Allen Holt,	1037 Sioux Trail, Frankfort 40601
La.	Not Allowed	Yes	No	James Bernard,	Box 315 Breaux Bridge 70517
Man.*	Certificate	Yes	Yes	Don Dixon,	911 Norguay Bldg., Winnipeg R3C 0V8
Me.*	Not Allowed	Yes	No	Erasmus Hoch,	RD#5, Augusta 04330
Md.*	Permit	Yes	No	John Romanik,	3200 Pine Orchard Lane, Ellicot City 21043
Mass.*	Not Allowed	No	No	Milo R. Bacon,	8 Gardner Rd., Norwood 02062
Mich.*	Not Allowed	Yes	Yes	Ed. McGarvey,	884 Purchase Dr. N.E., Grand Rapids 49505
Minn.*	Cer. & Per.	Yes	Yes	Fred Holte,	2185 W. County Rd. B, Roseville 55113
Miss.*	Cer. & Per.	No		Harry R. Fulton,	P. O. Box 5207, State College 39762
Mo.*	Cer. & Per.	No		Chester Crain,	1216 W. 38th St., Kansas City 64111
Mont.*	Cer. & Per.	Yes	Yes	Joanne Speelman,	210 Harmony Rd., Kalispell 59901
Nebr.*	Cer. & Per.	Yes	No	Darrell Leu,	Rt. 4, Norfolk 68701
Nev.	Permit	Yes	Yes	Mrs. Alma Nygren,	1225 Lovelock Hwy., Fallon 89406
N.B.*	Not Allowed	Yes	Yes	Mrs. Eva G. Logan,	Box 9, Stanley E0H 1T0
N.H.*	Certificate	No		Francis W. Dodge,	P. O. Box 91, Goffstown 03045
N. J.*	Certificate	No		Mrs. Elizabeth Rodrigues,	157 5 Point Rd., Colts Neck 07722
N. M.	Certificate	Yes	Yes	Mrs. Paul Ridley,	Star Route 7 Box 43-C, Las Cruces 88003
N. Y.*	Certificate	Yes	No	Jon MacDonald,	Paris Hill Road, Sauquoit 13456
N. C.*	Cer. & Per.	No		Mrs. Sara Lewallen,	Rt. 3, Box 184AA, Siler City 27344
N. D.	Cer. & Per.	Yes	Yes	Dewey Robson,	Carrington 58421
N.S.	Not Allowed	Yes	No	G. G. Smeltzer,	148 Belcher St., Kentville
Ohio*	Cer. & Per.	Yes	Yes	Hobert Fulton,	4380 Olentangy Blvd., Columbus 43214
Okla.*	Certificate	Yes	No	Glenda Ross,	Rt. 2, Minco 73059
Ont.*	Permit	Yes	No	P. W. Burke,	Dept. of Env. Biology, Graham Hall, Univ. of Guelph N1G 2W1
Oreg.*	Certificate	Yes	Yes	Diana & John Van Driesche,	4496 Waconda Rd. N.E., Salem 97303
Pa*	Cer. & Per.	No	No	Mrs. Glenn Crimbring,	R. D. 1, Canton 17724
P.E.I.*	Not Allowed	No	No	Dave McLean,	64 Brackley Rt. Road, Charlottetown
P. Rico	Not Allowed	No	No	No Association	
Que.*	Not Allowed	No	No	Yves Gauvin,	R.R. 1, Chemin Giard, Ste. Rosalie
R. I.*	Certificate	Yes	No	Richard K. McKeen,	24 Superior Street, Warwick 02886
Sask.*	Not Allowed	Yes	No	S. E. Bland,	196 90th St.E., Prince Albert S6V 0X5
S. C.	Certificate	No		Robert Cutler,	100 Shelton Drive, Spartanburg 29302
S. D.	Certificate	Yes	Yes	Jack Meyer, Jr.,	Box 61, Winfred 57076
Tenn.*	Cer. & Per.	Yes	No	Mrs. Helen Brock,	Rt. 5, Box 433, Morristown 37814
Texas*	Cer. & Per.	Yes	No	Paul W. Jackson,	Dept. of Ent., Texas A&M Univ., College Station 77843
Utah	Certificate	Yes	Yes	David S. Miller,	Box 15807, Salt Lake City, 84115
Vt.*	Certificate	Yes	No	Todd D. Hardie,	RD. 1, Box 67F, Starksboro 05487
Va.	Cer. & Per.	No		Thomas G. Ragsdale, Jr.,	P. O. Box 24, Orange 22960
Wash.*	Certificate	Yes	No	Marcey Sires,	Rt. 1 Box 1020A, Selah 98942
W. Va.*	Cer. & Per.	Yes	No	Mrs. Sarah Hutchinson,	Webster Springs 26288
Wisc.*	Cer. & Per.	No		Floyd Burchell,	P. O. Box 144, De Pere 54115
Wyo.*	Certificate	Yes	No	Mrs. Richard Schaefer,	112 W. Fremont, Riverton 82501

State or Province	Professor in Charge of Beekeeping Course (Write Prof. of Apiculture % State University)	Extension Personnel in Beekeeping (Write Beekeep. Exten. Spec. % State University)	Inspector State or Province (Write % Dept. of Agric.) State Capitol
Ala.	Dr. Geo. H. Blake, Auburn	Carl Dennis, Auburn	Frank W. Randle, Montgomery 36109
Alaska		R. H. Washburn, Palmer	None
Alta.		Dr. Ulf Soehngen, Edmonton	Roger Topping, Edmonton T6H 4P2
Ariz.	Dr. Norbert Kauffeld, Tucson		R. W. Hancock, Phoenix 85005
Ark.	Wendell Phillips, Beebe	Dr. Gordon Barnes, Little Rock	Donald E. Bailey, Little Rock 72205
B. C.	Graham Drew, Vancouver	Douglas McCutcheon, Surrey	John Corner, Vernon V1T 4K7
Calif.	Dr. Norman Gary, Davis	Eric C. Mussen, Davis	Leo Vanderpool, Sacramento 95814
Colo.	Dr. J. W. Brewer, Ft. Collins		Gabe Patrick, Conifer 80433
Conn.	Prof. Alfonse Avitabile, Waterbury		Emil Pagan, Windsor Locks 06096
Del.	Dr. Charles E. Mason, Newark	Dr. Dale Bray, Newark	Phillip M. Bowman, Jr., Dover 19901
Fla.		Dr. Frank Robinson, Gainsville	James C. Herndon, Gainesville 32601
Ga.	Dr. Alfred Dietz, Athens	Rodney Colman, Athens	Carl Scott, Director, Atlanta 30334
Hawaii			None
Idaho		Hugh Homan, Moscow	Dr. Robt. C. Saunders, Boise 83707
Ills.	Dr. Elbert Jaycox, Urbana	Dr. Elbert Jaycox, Urbana	E. E. Killion, Paris 61944
Ind.	Dr. Todd Harris, W. Lafayette	Prof. D. L. Matthew, W. Lafayette	Claude F. Wade, Indianapolis 46204
Iowa	Richard Trump, Ames	G. Stanley & R. Wells	Glen L. Stanley, DesMoines 50319
Kans.			Gary R. Ross, Topeka 66612
Ky.	J. W. Stocker, Richmond	Dr. R. Scheibner, Lexington	Wm. G. Eaton, Frankfort 40601
La.	Dr. Thomas Rinderer, Baton Rouge	Dale Pottet, Baton Rouge	Richard Carlton, Baton Rouge 70804
Me.		Aruthur Gall, Orono	William Rich, South Paris 04281
Man.	Dr. S. C. Jay, Fort Garry	Don Dixon, Winnipeg	Don Dixon, Winnipeg R3C 0P8
Md.	Dr. Dewey Caron, College Park	Dr. Dewey Caron, College Park	Barton Smith, Jr., Annapolis 21401
Mass.	Dr. Henry H. Hagedorn, Amherst	Dr. Henry H. Hagedorn, Amherst	P. C. Kuzmiski, Boston 02202
Mich.		Roger Hoopingarner, E. Lansing	John Dreves, Lansing 48913
Minn.	Dr. Basil Furgala, St. Paul	David Noetzel, St. Paul	Richard A. Hyser, St. Paul 55155
Miss.		James H. Cochran, State College	Harry R. Fulton, State College 39762
Mo.	Dr. Flernoy G. Jones, Columbia	Dr. Flernoy G. Jones, Columbia	Joseph Francka, Jefferson City 65101
Mont.			Willard A. Kissinger, Helena 59601
Nebr.		Dr. David Keith, Univ. of Nebr.	L. C. Shanek, Lincoln 68509
Nev.	Dr. W. Harold Arnett, Reno	Robt. W. Lauderdale, Reno	Floyd Hilbig, Reno 89502
N. B.		Darrell Smith, Fredericton	Darrell Smith, Fredericton E3B 5H1
N. H.		Robert H. Keating, Durham	Robert H. Keating, Durham 03824
N. J.	Dr. Radcliffe B. Roberts, New Bruns.		Jack Matthenius Jr., Trenton 08625
N. M.			Bob G. Cambell, Las Cruces 88003
N. Y.	Dr. Roger A. Morse, Ithaca	Dr. Roger A. Morse, Ithaca	Gerald Stevens, Albany 12235
N. C.	Dr. John Ambrose, Raleigh	Dr. John Ambrose, Raleigh	James F. Greene, Raleigh 27611
N. D.			Melvin Fischer, Bismarck 58505
N. S.		Lorne Crozier, Truro	Lorne Crozier, Truro
Ohio	Dr. Walter Rothenbuhler, Columbus	Dr. Malcom Sanford, Columbus	Gordon Rudloff, Reynoldsburg 43068
Okla.		Joe Moffett, Stillwater	Ted Legako, Oklahoma City 73105
Ont.	Prof. G. F. Townsend, Guelph	Prof. P. W. Burke, Guelph	Prof. P. W. Burke, N1G 2W1
Oreg.	Dr. D. M. Burgett, Corvallis	Dr. D. M. Burgett, Corvallis	Warren H. Cyrus, Salem 97310
Pa.	Dr. Allen Benton, Univ. Park	Dr. Clarence Collison, Univ. Park	James Steinhauer, Harrisburg 17120.
P.E.I.		Lenore Andrew, Charlottetown	Horace McEwan, Parkdale
P. Rico	Dr. M. Moya, Quintana	Jose Munoz, Humacao	
Que.	Dr. V.R. Vickery, Macdonald Col.	Francois Beauchesne, Mord, Quebec	Francois Beauchesne, Mord, Quebec
R. I.			Robert Relli, Providence 02903
Sask.	Dr. S. H. Nelson, Saskatoon	S. E. Bland, Prince Albert	S. E. Bland, Prince Albert
S. C.	Dr. Rudy Holloway, Clemson	J. Howard Jr., Clemson	J. Howard Jr., Clemson 29621
S. D.	Dr. Robt. Walstrom, Brookings	Dr. Robt. Walstrom, Brookings	Ward Satterlee, Pierre 57501
Tenn.	Dr. Charles Pless, Univ. of Tenn.	Dr. Harry E. Williams, Knoxville	Sam W. Neeley, Nashville 37204
Texas		Dr. John Thomas, College Station	Paul Jackson, College Station 77843
Utah	Prof. Wm. P. Nye, Logan	Reed S. Roberts, Logan	J. T. Knighton, Salt Lake 84103
Vt.			Todd Hardie, Starksboro 05487
Va.		James E. Roberts, Sr., Blacksburg	Homer Powers, Richmond 23219
Wash.		Dr. Carl Johansen, Pullman	James C. Bach, Yakima 98903
W. Va.			Earl Cochran, Charleston 25305
Wisc.	Dr. Eric Erickson, Madison	Dr. Walter Gojmerac, Madison	Samuel B. Ferguson, Madison 53713
Wyo.	Dr. W. T. Wilson, Laramie		Walter Patch, Cheyenne 82002

GOVERNMENT AGENCIES

USDA — SCIENCE & EDUCATION ADMINISTRATION, National Program staff, Crop Production staff,C. F. Lewis, Acting Chief, Room 305, Bldg. 005, BARC—W, Beltsville, MD 20705. Staff Scientist - - Crop Pollination, Bees & Honey, Dr. E. C. Martin, Room 302, Bldg. 005, BARC—W, Beltsville, MD 20705

NORTHEASTERN REGION—Dr. H. Shimanuki, Laboratory Chief, Bioenvironmental Bee Laboratory, Rm. 200, Bldg. 476, BARC-East, Beltsville, Md. 20705. **NORTH CENTRAL REGION** Dr. Eric Erickson, Research Leader,

Bee Management Laboratory, Rm. 436, Russell Laboratories, Univ. of Wisconsin, Madison, Wis. 53706. **SOUTHERN REGION**—Dr. Thomas. E. Rinderer, Research Leader, **Bee Breeding & Stock Center Laboratory,** RR 3, Box 82-B, Ben Hur Rd., Baton Rouge, La. 70808. **WESTERN REGION**—Dr. W. T. Wilson, Laboratory Leader, **Honeybee Pesticides/Diseases Research Laboratory,** University Station, P.O. Box 3168, Laramie, Wyoming 82071. Dr. F. D. Parker, Laboratory Leader, **Bee Biology & Systematics Laboratory,** UMC 53, Utah State Univ., Logan, Utah 84322. Dr. L.N. Standifer, Laboratory Leader, **Bee Research Laboratory,** 2000 East Allen Road, Tucson. Ariz. 85719.

UNITED STATES MARKETING AID — U. S. Dept. of Agriculture, Washington, D. C. **MARKET DEVELOPMENT PROGRAMS,** Specialty Crops Branch, Fruit and Vegetable Division, Agricultural Marketing Service, USDA, Washington, D. C. 20250, James S. Miller. **HONEY MARKET NEWS,** Market Reports Section, Fruit and Vegetable Division, Market News Branch, 2503 South Building, Washington, D.C. 20250, **PRICE SUPPORT PROGRAM,** Production Adjustment Division, Agricultural Stabilization and Conservation Service, USDA, Washington, D.C. 20013, Harry Sullivan.

EXTENSION — SEA (Federal) Paul W. Bergman, Pesticide: Use & Impact Assessment, USDA, Washington, D.C. 20250.

CANADA DEPARTMENT OF AGRICULTURE — T. A. Gochnauer and R. Boch, Ottawa Research Station, Central Experimental Farm, Ottawa, K1A-OC6. D. L. Nelson, Head Apiculture Unit; T. I. Szabo, Apiculturist, Res. Sta., Beaverlodge, Alta. T0H-0C0.

INDUSTRY ORGANIZATIONS

AMERICAN BEE BREEDERS ASSOCIATION — President, P. A. Yelverton,, Mayhew, Miss. 39753; Vice President, Elliott Curtis, P.O. Box 507, LaBelle, Fla. 33935. Sec.-Treas., Louis C. Harbin, P.O. Box 218, Theodore, Ala. 36582.

AMERICAN BEEKEEPING FEDFEDERATION — President G. C. Walker, Rt. 1, Box 34-B, Rogers, TX 76569; Vice President, Binford Weaver, Rt. 1 Box 111, Navasota, TX 77868; Secretary-Treasurer, Frank A. Robinson, 13637 N.W. 39th Ave., Gainesville, FL 32601.

AMERICAN HONEY INSTITUTE —President, Howard Foster, Box 239, Colusa, CA 95932; Vice President, Donald Schmidt, Rt. 1, Winner, SD 57580; Secretary, Leslie Little, 831 Union Street, Shelbyville, TN 37160. A division of **HONEY INDUSTRY COUNCIL OF AMERICA.**

AMERICAN HONEY PRODUCERS ASSOCIATION — President, Jack Meyers, Jr., 202 N.W. 7th, Madison, SD 57042; Vice President, Berna Johnson; Exec. Secretary, Glenn Gibson P.O. Box 368, Minco, Okla. 73059

AMERICAN HONEY QUEEN — 1979 — Miss Kim Arnevik, Rice Lake, Wisconsin.

APIARY INSPECTORS OF AMERICA — President, Harry R. Fulton, Apiary Supervisor, P.O. Box 5207, Mississippi State, MS 39762, Vice President, Robert Hancock, State Apiarist, 1688 W. Adams, Phoenix, AZ 85007; Sec.-Treas., Floyd Hilbig, Chief Apiarist, Nevada Dept. of Agri., P.O. Box 11100, 350 Capitol Hill Ave., Reno, NV 89510.

CALIFORNIA HONEY ADVISORY BOARD — Manager-Home Economist, Marilyn Riser, P. O. Box 32 Whittier, CA 90608.

EASTERN APICULTURAL SOCIETY OF NORTH AMERICA, INC., Chm. of Board, J. C. Matthenius, Jr., 516 Victory Ave., Phillipsburg, N.J. 08865; Pres. R. E. Ross Hopkins, RR #3, North Gower, Ontario, Canada K0A 2T0; 1st V. Pres. Hugh J. Macleod, 8 Faircroft Blvd., Scarborough, Ontario, Canada M1M 2X1; 2nd V. Pres. John J. Tardie, 79 Center Rd., Essex Junction, Vermont 05452; Sec.-Treas., Mrs. Liz Rodrigues,157 Five Pt. Road, Colts Neck, N. J. 07722.

WESTERN APICULTURAL SOCIETY OF NORTH AMERICA President, Lucien B. Alexander, 35180 SE Highway 211, Boring, OR 97009; Vice President, Michael Burgett, Entomology Department, Oregon State University, Corvallis, OR 97331; Secretary-Treasurer, Becky Brown Westerdahl, Department of Entomology, University of California, Davis, Davis CA 95616.

HONEY INDUSTRY COUNCIL OF AMERICA — President, Donald Schmidt, Rt. 1, Winner, SD 57580 Vice Pres. Charles Adams, 109205 S. Garfield, South Gate, CA 90280; Secretary, Leslie Little, 831 Union St., Shelbyville, TN 37160.

LADIES' AUXILIARY OF ABF — President, Mrs. Ruby Kuehl, Box 220, Loup City, NB 68853; Vice President, Mrs. Roxanne Allen, Rt. 1, Box 16 BEE, Payette, ID 83661, Sec.-Treas, Phpllis Taylor, Box 327 Stratford, SD 57474

MID-U. S. HONEY PRODUCERS MARKETING ASSOCIATION—President, Don Smoot, Box 171, Power, MT 59468; Vice President, Dick Ruby, Milnor, ND 58060; Secretary-Treasurer, Glen Wollman, Rt. 5, Box 385, Sioux Falls, SD 57101.

NATIONAL HONEY PACKERS & DEALERS ASSOCIATION — President, Richard L. Hubbard, Onsted, Mich. 49265; Vice President, Robert J. Steele, Sioux City, Iowa 51101; Ex. Sec. Howard Graff, 1515 5th Street, Snohomish, Wash. 98290.

PROFESSIONAL APICULTURISTS ASSOCIATION — President, Dr. Robert Berthold, Del-Val College, Doylestown, Pa.; First Vice President, John Lindner, State Apiary Inspector, Maryland Dept. of Agr., Pest Management Section, College Park, Md. 20742 Secretary - Treasurer, James E. Tew Agricultlral Technical Institute, Wooster, O 44691.

SOUTHERN STATES BEEKEEPERS FEDERATION—President Ralpt Wadlow, 2135 McGregor Blvd., Ft Myers, Fla. 33901; Vice President, Vern Davis, 111 East Richmond St., Perry, Fla. 32347; Secretary, Joe Parkhill, Rt. 2, Box 190, Berryville, Ark. 72616.

THE CANADIAN HONEY COUNCIL — President, Tom Taylor, Box 2349, Nipawin, Saskatchewan, S0E 1E0 Vice President, Howard Bryans, Box 387, Alvinston, Ontario, N0N 1A0; Secretary- Treasurer, Fred Rathje, Box 480, Bassano, Alberta, T0J 0B0

CANADIAN ASSOCIATION .OF PROFESSIONAL APICULTURISTS: President, D. L. Nelson, Res. Station, Beaverlodge, Alberta T0H 0C0; Vice President, Francois Beauchesne, Div. de l'Apiculture, 2700 rue Einstein, Ste-Foy, Quebec, G1A 1E6; Sec.-Treas., S. E. Bland, Apiary Adm., 196 9th St. E., Prince Albert, Saskatchewan, S6V 0X5.

Annual Univ. **SHORT COURSES** are held in British Columbia, Florida, Maryland and Pennsylvania.

BEEKEEPING CORRESPONDENCE COURSES are available in British Columbia, Minnesota, Nebraska, New Jersey, and New York.

NOTE: Where we did not hear from a state or organization we repeated last year's listing.

(Continued on page 215)

Fundamentals for All

"IDEAS THAT WORK"

NO MATTER HOW much one reads, it seems that there are always time-saving practices that are never recorded, hence never become available to others. Well, maybe a few know the secret, but either do not practice it, or do not consider it worth passing on.

I may be the first to have discovered the value of the very small staples to prevent wires cutting into the end bars when wiring frames. I have already told you this in a previous article in which I stressed the necessity for cross wires to support the combs.

One thing I omitted in telling how to wire was what to do if the wire breaks. Much wire is wasted because beekeepers haven't put their Boy Scout training to use. Tie a knot. It's that simple; a square knot. Every once in a while, you will draw a wire so tight that it will break. Not recently, but years ago, I would find several consecutive feet, or yards, on a roll of wire that did not have the tensile strength necessary to admit of what I consider adequate tightening. I might have to discard some of it. But, mostly, it is when I allow the wire to kink, or I exert too much pull on it, that it breaks. Then, I simply tie a square knot in it and resume wiring; make it taut and the knot will assume an insignificant size. After tightening, twist the free ends back and forth until they break off and the knot will sink into the wax during the embedding process. A few years ago, I watched an employee wiring frames. Whenever the wire broke, he would start the process all over again, twisting off the wire at the first nail and driving in another nail to which to anchor the wire. This is wasteful and time-consuming and quite unnecessary.

Hundreds of thousands of sheets of wax foundation have been wired, using the spur-wire embedder. Electric embedding is so much simpler and faster that I enjoy doing it. As a beekeeper told me once, "It's like having dessert at the end of a meal." Only recently have I acquired an embedding device with a transformer, but I don't use it. I've always used homemade devices to reduce house current so that the bee wire is heated and sinks into the wax in a second, or less. The one I use now is nichrome wire from an old household iron, wound around a piece of asbestos mounted on a small board. With this in series in the circuit, my embedder works perfectly and has done so for many years.

Before I discovered the old iron to dismantle, I used a jar of water to reduce the current. I used two metal strips, or

By W. A. STEPHEN
Worthington, Ohio

heavy copper wires, bolted to a circular wooden cover for a quart jar, which is kept in place by a fruit jar ring. One of the electric wires is cut and the ends are fastened securely to the upper ends of the bolts which protrude through the wooden cap of the quart jar. The metal strips extend nearly to the bottom of the jar which is filled with water. The electricity passing through the water gives enough current to embed wires in foundation. If it is too slow, add some salt to the water to speed up the process. Water in different parts of the country contain different amounts of minerals, so trials are needed to determine how much salt to add. In continuous use, the water will get hot and the speed of embedding may have to be slowed down by diluting the water in the jar. Simply pour off some of the saline solution and add more water.

Once, I recall modifying the water-resistance method by simply cutting one of the electric wires, tacking each cut end to opposite ends of a wooden spool and laying this in a pan of water. It worked, but I don't recommend it. Other schemes for reducing the current have been suggested, but I haven't tried them. Those include putting a light bulb, a toaster, an electric iron, soldering iron, etc., in series in the current. **Due precaution must be taken when working with house current.***

Before electricity was a rural commodity, my brother fixed up an embedder, using the dry cell batteries of our gasoline engine. We also used batteries with some life in them that had been in the hand-cranked telephone. At other times, I have used hot-shot batteries, and car and tractor batteries. With the old six-volt automobile batteries, with cells joined by straps across the top, it was simple to clamp onto one terminal and then onto the strap needed to give the number of volts of electricity to do the job. Six volts is too much and, of course, you can't use twelve. With the newer twelve-volt batteries, with unexposed connectors, I have clamped onto one terminal and driven a nail into a lead post of one of the cells in order to get the required current. I have not tried it with expensive batteries.

When heated, metal expands, so the elctrically-heated bee wire may bow away from the foundation. A wooden bar fitted with eight, or nine, flattened, sharpened nails (the number depends on how many crimped wires are used in the foundation) can be used to press the wire into the foundation. With two additional nails, one at either end fastened to the electric wires, this becomes the embedder. Of course, there must be some sort of switch, so that the current can be broken while the bee wire cools in the wax foundation before the embedder is removed. My switches, too, are home-made—a piece of spring steel, or brass, with a wooden, or plastic button on the end to press down to make the current.

To me, fixing the foundation in frames and embedding the cross wires in either wired or plain foundation, is quite easy compared with putting foundation into comb honey supers. I have tried a heated knife, a wax tube, and a round stick to fix the foundation to the thin top bar. The technique involved with each is something acquired by trial and error and not easily described. I have produced very little chunk, cut, or section comb honey since coming to Ohio, so am not in a position to offer any tips on fastening thin super comb, or cut-comb foundation in frames. One system used where comb honey is produced is much simpler. It involves using the thin slotted top bar, available in frames from one manufacturer whose catalogue tells how to insert the foundation.

I had thought that fastening comb honey foundation in frames with heavy top bars was no problem, but a letter from a beekeeper in Tennessee tells me that with many of his old, weevil-(wax worm) marked frames, it is almost impossible to properly secure the foundation to the top bar with the wedge. This gentleman reminds me of his method, which I have not tried. He uses a sharp-pointed soldering gun. I am happy to present this "Lynn Clark Method" for you to use in fixing foundation in comb honey frames. I don't see why it won't work with shallow top bars, as well as in deeps.

Many impractical ideas have come from beekeepers. They have their sponsors for a time, but do not endure. The ideas presented here are yours to try. You may find them worthwhile as time-saving practices. You may even decide that they are worth something in saving labor and equipment expense. I hope that they will work and endure as long as necessary.

*Editor's Note: We recognize that many methods are in common use to reduce house current for wire embedding. However, the resistance method transmits current to the wires that could result in a fatal shock. The use of an isolation transformer is much safer.

Notes from the Straw Skep

By BESS CLARKE
Canton, PA.

EVER SINCE I received a word game called "Boggle" at Christmas time Bill and I have spent parts of every day in competition. Generally we play after every meal; sometimes for only a few minutes, sometimes for an hour or more. It's a simple game made up of 16 dice marked with alphabet letters instead of numbers. They are shaken into a grid and the game is to write down the number of words you can make in a three minute period.

Our daughter gave me the game because she knew I'd enjoy it. The surprise is that her father is better at it than I am. It's a rare game when I have a larger number of words than he does, no matter how hard I try. But there's more to it than winning; the sense of achievement at finding an elaborate word is shared by both of us. We've long since abandoned three letter words, with a few exceptions. We both write "bee" every time we see it; Bill writes "she"; and I'm partial to "gnu". We keep a dictionary handy and use it to settle disputes. It's been a delightful way to spend time during the lousy weather of the winter. It will go with us on vacation trips too. (The winter wasn't all bad. I skied cross country 18 days in February.)

The recipe this month is a goodie but it's time consuming and uses an awful lot of equipment. I was lured into trying it by a picture and the thought of chocolate. My test panel (son Jeff, and neighbor Catherine) approved it overwhelmingly so I guess it's worth the effort.

Chocolate Cheesecake Squares: 1 bar (4 oz.) sweet cooking chocolate, 2 cups milk, 1/4 cup margarine, 1 cup flaked cocoanut, 1 cup finely chopped pecans, 2 envelopes unflavored gelatin, 1/2 cup honey, 3 eggs separated, 2 teaspoons vanilla extract, 2 (8 oz.) packages cream cheese.

Step 1. In a small pan melt chocolate with 1/4 cup milk over low heat. Reserve 1/3 cup.

Step 2. Add margarine to remaining chocolate mixture and melt together. Stir in cocoanut and pecans. Press into the bottom of a 9 inch square pan and chill.

Step 3. In a medium pan combine gelatin, 1/4 cup honey, egg yolks, and 1-3/4 cups milk. Blend together over low heat until the gelatin dissolves, about 5 minutes. Add vanilla.

Step 4. In a large bowl, beat cream cheese until smooth. Gradually beat in gelatin mixture. Chill, stirring occasionally, until mixture mounds slightly when dropped from a spoon.

Step 5. Beat egg whites until soft peaks form; drizzle in 1/4 cup honey, and beat until stiff. Fold into the chilled gelatin mixture.

Step 6. Add the reserved chocolate mixture to 2 cups of the gelatin mixture and blend well. Alternate spoonfuls of the chocolate and vanilla mixtures to the base in the square pan. Gently marble with a knife, and chill until firm. To serve cut into squares. Garnish with maraschino cherries or pecan halves.

Questions and Answers

Q. I have my bees in Michigan. In talking with a beekeeper in Wisconsin he informed me that he uses mashed potatoes placed over the frames as a pollen substitute for his bees. I have never heard of this before. What is your experience with this idea? He said they have good results.

Incidentally, advise the party that asked about locating bees near a railroad to place the hives on large automobile tires. That will take care of the vibration.—B. L., Florida.

A. We passed this question about using boiled potatoes for pollen substitute on to the North Central Region Agricultural Research Center in Madison, Wisconsin. The reply is as follows:

"Boiled potatoes for use in bee food at this point is purely experimental. We have many questions to solve such as spoilage due to molding, the proper formulation for best results, and differences in potato varieties. One of the best mixtures used thus far has been 90% potatoes and 10% bee-gathered pollen. Obviously the potato does not provide a large portion of protein but has a good array of amino acids and vitamins. Most results have been favorable and have stimulated the production of good quality brood. We are urging that beekeepers experiment on their own with various mixtures. Suggestions: Use small patties at more frequent intervals to avoid problems with molding. Try incorporating expeller-processed soybean flour, honey, potato, and pollen or soybean flour and potato with or without honey. Caution: Do not feed honey from an unknown source or a source other than your own healthy bees because of the danger of transmission of American foulbrood.

"We have little new information on mashed potatoes for bees. Many beekeepers report having fed them successfully, particularly when using them for stimulative feeding 2-4 weeks prior to spring pollen availability.

"We have learned that potatoes are unacceptable to bees if stored at warm temperatures prior to use. We would presently recommend using potatoes stored only in a cooler or root cellar.

"We plan to continue these studies in 1979."

☆ ☆ ☆ ☆ ☆

Q. In talking to other beekeepers and reading bee publications I understand that a queen mates with "several" drones. On two different occasions I have seen a queen in a hive with the drone's organ still in her vagina. My question is: Does a queen have to return to the hive after each mating to have the drones organ removed before she mates with another drone?—J. D., Minnesota.

A. This question is answered by Dr. Norman Gary of the University of California, Davis, as follows: "Research has shown that queens normally mate with at least seven drones. Estimates of the number range up to fifteen drones. Approximately half of the queens mate on their first flight. Most queens take several mating flights. They normally mate with multiple drones on any given flight and do

not have to return to the hive after each mating. Each drone removes the previous drones' mating organ during the mating act and leaves its own organ. The mating flight duration is approximately thirteen minutes."

☆ ☆ ☆ ☆ ☆

Q. My problem and need for advice is a simple one. For the past three years we have had a granulation problem with our extracted honey. I was advised that returning the extracted combs to the bees in the spring without their having been cleaned out by the bees in the fall was the problem. It didn't make sense to me but I did it, and we still have the granulation problem. I thought also that it could have been due to extracting too late in the season and that maybe the temperature at the time of extracting was the cause. I have "backed off" and extract sooner but still this year's honey is now also beginning to granulate.

I have never seen granulated honey on the shelf in the grocery. There is something that I am doing wrong, or something that I should be doing that I am not.—J.B., Ohio.

A. Granulation of unprocessed honey is not an uncommon problem in northeastern Ohio where the late season honey comes from goldenrod and aster, two of the quickest to granulate of our honeys.

It is now an accepted practice to store honey supers without the fall cleanup by bees after it was fairly well established by experience that the bees clean them of any residue of honey, even that which is crystallized, before they store honey in them in the spring.

I believe your principal problem is concerned with the source of the nectar, honey from which, when extracted late in the summer will granulate quickly. You did not mention how early you extract, this can be critical. Early gathered honey may be extracted as soon as the combs are at least three quarters capped over, which may be as early as the fourth of July in our area. If this honey is left until September it becomes mixed with the fall honey, increasing the likelihood of granulation. Fall honey may be extracted fairly late in the season if it is not needed for winter stores but supplementary heat may be needed to warm the supers before extracting.

The final precaution is heating the honey before bottling. A temperature between 120 and 160 degrees, depending upon the type of honey and your personal preferences and experience with processing, will insure a liquid honey for packing and a reasonably long period free of granulation in the jar.

☆ ☆ ☆ ☆ ☆

Q. Am I correct in assuming that because of the metal frame support (which raises the frames 1/4 inch) the rabbet of deep supers is usually cut 7/8 inch deep instead of 5/8 inch deep as in shallow supers?

Why are not shallow supers also provided with 7/8 inch deep rabbets and metal frame supports?—R.V.S., N.J.

A. You are correct in regard to your statement about the difference in the depth of the rabbett of deep and shallow hive bodies, or supers.

Shallow supers are normally used for honey production rather than for brood chambers and are thus not usually propolized as heavily. The shallow combs are lighter and are easier to pry loose from a broad surface. Leaving out the frame rest reduces the cost some.

☆ ☆ ☆ ☆ ☆

Q. I have an apiary that is about 50 ft. away from a pond. It is in a pretty good honey producing area and would be very inconvenient to move. During the summer I have noticed the bees gathering quite a lot of water from the pond.

The pond has an algae problem. I want to use a product named Aquazine (trademark of CIBA-GEIGY) to control the algae. The directions say that fish taken from the treated pond may be used for human consumption. It also states that water from the pond may not be used for watering livestock for a period of 12 months after treatment.

I was wondering what effect, if any, it would have on the bees and or the honey?—C.W., Iowa.

A. I would not be overly concerned about the possible contamination of honey as the bees use water primarily as an air conditioning liquid in their hive and do not ordinarily incorporate it in the honey. Of course, no one can say for a certainity that the water is completely safe, but we do not believe that it will cause contamination of the honey although it may be harmful to the bees. Water must be carried in the honey sac, the same as nectar, and when the water contains a harmful substance it may penetrate the walls of the honey sac and enter the hemolymph or blood causing death of the bees.

Equalizing Colonies

By HOWARD J. ROCK
Dale, Wisconsin

THERE ARE several ways to equalize colonies, depending on the time and character of the season. Mostly, beekeepers talk of equalizing in the spring, although it can also be used to advantage in the fall.

Many will raise their eyebrows as if to say, "Equalizing? That is definitely indicative of poor beekeeping." To those I would say, "Your beekeeping experience is essentially limited." Any commercial beekeeper can show you much variation in the spring between yards not many miles apart; some yards will have super populations with dangerously little honey left with which to confront a cold, rainy spell of weather. In the same yard or a few miles down the road, there will be colonies that are lead heavy with honey and pollen and a vigorous young queen and perhaps two frames of bees.

Such disparity of conditions between yards or colonies in the same yard is not necessarily an indictment of the beekeeper's skill or expertise or management. These are the contingencies of everyday beekeeping and no one should expect otherwise as ideal conditions are only found in the textbooks and in the conversations one hears at bee meetings. If everyone's management was as efficient as one would infer from their conversations, then the honey production of the U.S. is misreported because it should be 100% greater if everyone is operating ideally in the maximums.

The most popular method to equalize that I encountered was the transferring of sealed brood and bees. I found this to be true all the way from New York State to the state of Washington.

Many laboriously hunt for the queen and then remove the hatching brood and adhering bees that they estimate a large colony can spare. Under the best conditions, queen finding in a populous colony is time consuming. As the day wears on the operator becomes tired and bored and several queens might be transferred along with the brood and bees. This subtracts significantly from any advantage in the equalizing.

In upstate New York, in an extensive

pollination apiary, we would shake all the bees from the selected frames of hatching brood, replace the brood taken with frames of honey and pollen and then place the beeless brood over an excluder over the original brood chamber. In perhaps thirty to forty minutes that beeless brood would be heavily covered with young hive bees from the brood chamber beneath. This is one situation where a queen excluder has a legitimate use. And, this method is most versatile; the brood and bees may be transferred in a screened super to a needy yard miles away or it can be used immediately to make increase if young queens or ripe queen cells are at hand. In New York, we used to lift up the super, brood and bees, while a helper quietly replaced the queen excluder with a double screen. Once the new queen has proven herself to be normal, the double screen is replaced by a regular bottom board, the original cover is returned to the parent colony beneath and a new cover is placed on the increase which still remains parked on the parent hive. Now you have it made. Any convenient evening one can truck all the increase hives to wherever they are needed with no disturbance to the parent yard.

Instead of making increase with this raised brood one can instead take it the very same day to another yard or yards where normal but weak hives need a boost. One could have mauled queens in these weak hives by placing foreign bees and their brood in the same hive body. Better to unite them via the newspaper method as you would unite two different colonies. Your queen will fare much better and you can give the weak hive much more of a boost.

Some will not want to go to all this trouble to give their weak hives a shot in the arm. There is another way and that is to shake packages of bees from the super strong colonies, just like they do it down South or out in California. It would pay any beekeeper with more than one yard to have a large shaking cage that is equipped with a wide funnel. If you do not wish to find the queen in the colonies that are to be shaken, then equip the funnel with a queen excluder so that no queen is shaken into the cage with the bees.

The shaking of bees is an art requiring skill but a little common sense will go a long way to make it pleasant and efficient. To begin with, the easier and gentler one manipulates a hive the less commotion, the less crushed bees, the less stings and the less frightened queens. When you shake the bees into the funnel don't try to "knock the bees out" or shake any nectar out of the combs, if any. Just a gentle, persistent, trembling, up and down movement of the frame is a great plenty. If you smear the bees with nectar you will not only hopelessly slow up your operation but the bees confined in the cage or cages will suffocate. If the caged bees emit a fetid odor, then you are in trouble.

With an excluder in the funnel one can easily spot the queen if she has been shaken with the bees. Never use smoke on the bees that are shaken onto the excluder in the funnel. The young bees will slowly negotiate the excluder and fall into the cage while the older bees will fly back to the hive entrance. This is exactly what you want.

No more than four colonies should be shaken into the large collection cage. Then, ideally, one should have regular shipping cages and fill each one with three to three and one-half pounds of bees.

In shaking bees, don't reduce the hive to the point of making it unproductive in the subsequent honey flow. The time, the amount of brood and the presence or absence of queen cells will dictate how many bees one can safely take away.

Allen Lathan, the Connecticut beemaster, reported the he could easily solve his swarming problems by shaking surplus young bees from a hive preparing to swarm. Don't expect to be outstandingly successful with shaking until you have done it for at least ten seasons. Nowadays, it seems that every beginner wants to duplicate in one year what it took someone else many years to master. Some rank beginners think that they are fully qualified to write a text on bees after only two years experience in the backyard, but---that is another story entirely.

Now that we have the required number of shipping cages filled with clean, young bees, what next? Make the rounds of the yards that need them.

If the young bees in the cages are gorged with thick sugar syrup they can be dumped at the entrance of the colony to be strengthened and everything will go well. The bees are gorged by painting the screen of the cage with a new, clean paint brush, it does not have to be an expensive brush. If the brush is immediately cleaned it can be used year after year. It is never good policy to stack shipping cages five or six high over a wash tub and pour the syrup through the cages in a sticky deluge. As a backlotter I used to do that. Then one spring I helped Howard Shipton of Ida Grove, Iowa hive about five hundred packages. I tried the same technique there but he hastily stopped me and handed me a paint brush and I still remember his contemptuous indignation as he told me that any fool could gorge bees that way. Later, in other apiaries, he pointed out to me the shortcomings of such a short cut. The bees were shiny, the queen looked bedraggled and the future of the packages treated that way didn't appear to be too promising.

Jack Deyell once told me that he strengthened several hundred weak hives using this same method and that not one queen in all the weak hives was lost. I had the same good results in Washington. Our Prosser yard was mostly weak, with young queens from fall supersedure and lead heavy with honey and pollen, a common result of late fall supersedure as occurs in the Yakima Valley.

We went to our yard on the Satus Indian Reservation where the dandelion flow came early. The flow was copious and 90% of the hives had advanced queen cells in preparation for wholesale swarming. The shaking went ahead well in spite of the abundance of dandelion nectar. It was a dandelion flow such as one sees many times in Montana, really heavy. That evening we took the caged bees to Prosser and added them to those hives that had previously been given several perfect, dark brood combs in exchange for frames of honey. The Prosser yard made a satisfactory crop of water white alfalfa honey. What happened to the Satus bees? Well, that September we "broke our backs" taking off an average of eight M.D. supers per hive. What better recommendation does any method have?

There is another method to equalize colonies which has several modifications and all work with a minimum of labor. It originally was called the Alexander plan; a weak hive is placed over a super populated one and is separated by at least one super and two queen excluders. One excluder over the populous hive and one excluder **under** the weak hive. The upper weak hive must be given its own entrance, a small one. Depending on the season, bees from below will gradually join the upper weak colony and in four to five weeks one will have two booming colonies. Then all that one must do is give the upper unit its own cover and bottom board, leaving it in the same position until some night it is convenient to move such treated hives to a new location. As I remember, this worked well in Trumansburg, New York in the '48 season.

Instead of two regular excluders, some duplicate these results with what has been called a "universal" board. It is a double screen with the center of the screens replaced by the two small zinc queen excluders. I noticed that these boards were quite popular throughout the East back in the days before WWII. It's the same principle.

Of course all attempts at equalizing should not be attempted where disease is a problem. If there is only an occasional case of foulbrood better to keep it that way and not spread it around. Once you feed sulfa or terramycin to one colony, you will soon be feeding to all colonies. Equalizing is a valid manipulation in areas with a strict inspection system, either state or private.

There is no reason why suitable equalizing cannot be used to good advantage in the early fall to insure good wintering but only if there is a respectable fall flow from late alfalfa, boneset, goldenrod, rabbit brush, etc. Locations vary and so does the feasibility. To the

(Continued on page 202)

Bee Art

By LENORE BRAVO
San Francisco, CA.

THE San Francisco Beekeepers, a hobbyist organization, has been seeking for two years to gain access to sites on the watershed property south of the city for the use of interested people who cannot keep bees in town and some members who want more than the one or two hives that our gardens will accommodate.

Last spring the city decided that this would be possible under very controlled conditions and if we were able to buy adequate insurance to protect the city in case of suit arising as a result of our activities. Pursuing this option to a successful conclusion will be a regular hero's journey that can be told about in another article if and when our hives are finally established there. For now, on to an interesting side result.

Since being able to pay for the necessary insurance was going to be an important item of qualification, ways to make the money were important. Somehow making a quilt occurred to the writer who began at once to draw designs which were passed out to members at the April meeting. By July all of the blocks were returned completed, and the top assembled. By August the quilting was done and we had a double bed size beautiful, completely washable quilt ready.

First we showed it at the WAS convention at Davis, CA. where it was photographed by other hobbyists who were inspired to make one for themselves. Many of our 300 tickets were sold there including one to a visitor from New Zealand and another from New York. One concern was how they would know who won it. The writer assured them that she would attempt to relay the information via the national bee journals.

The weekend following the WAS convention it formed part of our display

Design by L. Bravo, embroidered by B. Mead.

at the San Francisco Flower and Garden Show, our most important public relations opportunity in our own community. Visitors there, although not principally interested in bees or beekeeping, purchased quite a few of our remaining tickets. After that it was on display at a local savings and loan, impressing people with

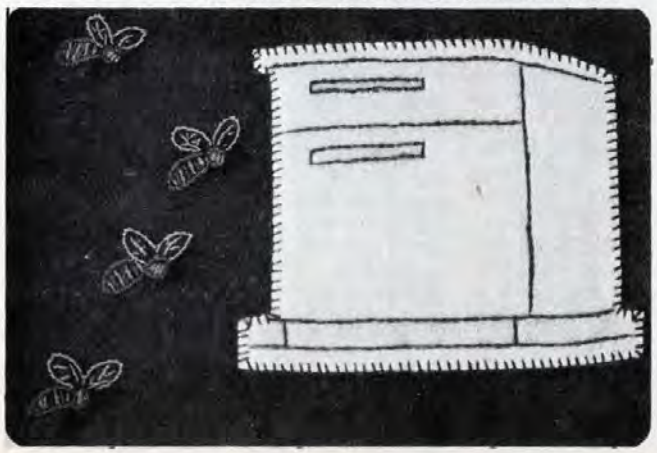
Block design by L. Dubay and L. Bravo, applique embroidery by Irene Nieder.

an extension of our hobby that certainly took their minds off the "bee-sting" association.

Our secretary, Dr. Hugh Visser, had bought one ticket for each of his eight children. The quilt was won by his eight year old daughter, Briana, shown in the accompanying photo. Briana had taken a class in hobby beekeeping for young children accompanied by a parent which we taught at the California Academy of Sciences a year ago summer. Her mother designed and embroidered two of the blocks. So the quilt will have a great deal of meaning for her.

Finally, at our October 4th meeting, having gotten a lot of good public relations work done with it and having sold our last ticket, which were one dollar each, we had the drawing. The winning ticket was drawn by James Alva of the California Farm Bureau Federation, who was our speaker that night.

Design by L. Bravo, applique embroidery by Irene Nieder.



Briana Visser, daughter of the winner of quilt.

Observations on Swarm Prevention and Control

"One could open every colony once each week, cut every cell with a vengeance, and not control swarming."

By STEPHEN BURT
19316 Brandt
Roseville, Michigan

THE TOUGHEST problem facing most beekeepers is coping with swarming, the utterly natural desire of honeybees to perpetuate their kind. Considering the importance of reproduction to all life, the most remarkable observation is that so very many healthy and thriving colonies do not swarm in a given year, at least among kept bees. The ability of the beekeeper to manipulate colony living space, expanding it to a degree seldom if ever found in nature, thereby minimizing congestion, is responsible for the general success of swarm prevention in colonies of hived bees. Further, the beekeeper may select in a general sense the type and quality of queen to head the colony. Bees in trees and other natural nests are not so influenced by a beekeeper, so they can be expected to usually swarm as soon as their limited nests become congested with brood and stores.

My methods of handling swarming arise from having a small apiary in a suburban setting. I generally run four or five colonies for maximum extracted honey production. All manipulations lead toward the goal of having the colonies in condition for, and supered to handle the main honey flow during summer. Due to the settled area, I cannot afford to stir up all my colonies every week, so the emphasis has been on a management plan to keep the bees from departing through use of two or three timely manipulations based on the actual colony conditions.

Assuming the use of the modern hive to provide ample space for colony expansion, the differences between the colonies that work and those which try to swarm boil down to one factor: The competence of the queen to head the colony.

The best colonies in terms of size and effort are headed by the best queens, naturally. A truly good queen has a charismatic quality. It may be nothing more than the ability of the queen to produce ample amounts of morale-boosting queen substance coupled with the will to lay a very large brood nest, expanding beyond barriers that stop a weaker queen. Inheritance must in subtle ways play a part. Also, the queen usually even looks equal to the role, having good size and posture, and a large retinue of workers in "daisy pattern" about her. Her brood is solid, with very few misses. Supering is usually ample to keep this colony in good condition. If congestion occurs, evidenced by bees draped on the front of the hive in cool weather, and lessened pollen input, I put the queen in the first body, place two fairly empty deep bodies above it, and the top hemisphere of brood above all. I place an excluder above the second deep body, and the queen rebuilds the top hemisphere of her brood nest during the next several weeks. Moving this much brood above the hive without shuffling the combs about does not lead to mortality of the brood if done after settled warm weather has come. During late fruit bloom (apples, plums, dandelions, etc.) the best colonies will be utilizing all four deep bodies, and will receive one or more shallow bodies. These will not be filled completely nor capped until the clover flow, but often carry unripened honey from fruit bloom. This type of colony works across the excluder as if it were not there at all. It will be the best sort of honey producer, and is most unlikely to swarm.

Moving quantities of brood to the top of the hive does seem to promote more complete utilization of the whole hive. One caution: the nurse bees elevated to the top of the hive may believe that they have been orphaned, and raise a few queen cells, which must be removed after one week. No further larvae will remain to permit a second attempt at cell building after the one week cell-cutting, young enough for the purpose.

Often a colony comes through the winter with a queen of slightly less competence. She probably is good enough to head a fairly productive colony if it can be kept in one piece during the swarming season. Whereas, the best queens can lay up to eighteen combs of brood during peak brood rearing, this queen will often lay somewhat less, and perhaps as little as twelve combs in a two-story nest. Small cell cups are expected in all colonies during the active season, but they will be larger and more numerous than in the best colonies. If a honey flow is on, the tips of the cups will be whitened, and some may be found with eggs or meagerly-fed larvae. With hotter weather and greater colony expansion, well-provisioned queen cells are apt to be started. I manage this sort of colony in much the same manner as the best ones, except that brood is sure to be moved to the top story of the hive at intervals during the spring. Cells are cut every ten days or so, and all combs where cell building is active are set aside for the purpose of being moved to the top story. This removes from the brood nest those nurse bees trying to replace the queen. Cell cutting in the top body will be needed very surely after another week. Since such a colony is dissatisfied with remaining intact with the reigning queen, it is useful to take three or four combs of stores and brood away for the purpose of making a nucleus. This lessens congestion, and the new queen will be ready for newspaper uniting with the parent colony as soon as extraction reduces the colony to a manageable size. If the colony is intact when the clover flow begins, it should refrain from swarming, and ought to be able to handle at least four deep bodies. If it can be induced to use four bodies during the build-up period, cell building is apt to be much reduced.

A third sort of colony comes out of winter with an otherwise healthy queen that refuses to develop a good two-story brood nest. She might have the equivalent of ten or twelve combs of brood, but it is not so solidly placed. If an excluder is placed above the second body, her bees will not cross it to occupy drawn comb above. Such colonies are noticeably behind the better ones even before inspections begin. After checking stores in all colonies, these balky ones are examined weeks before I disturb the good hives. Live queen cells in quantity are to be expected even before fruit bloom. Such a colony can be managed in three stories by placing most of the brood in the third body, stores in the second body, and the queen and the two or three brood combs in the first. This at least gets the bees to occupy both sides of an excluder. Still, as soon as the queen rebuilds very much of her brood nest, more live queen cells can be expected. Also, the natural tendency of such a colony is to congest a small area with brood and stores and not use all available space anyway, so attempts to

divide the nest or super away the swarming urge will fail. I manage such colonies by removing enough brood for them to make a nucleus and install a laying queen therein. All my colonies winter in three bodies, but this colony is not supered, and may be reduced if a whole super is devoid of bees. Removing the three or four combs of brood and stores will slow the swarming urge. When both the nucleus and hive have brood nests, I combine them with newspaper, removing the old queen. The new queen, if good, will bring cell building to a halt. A week later, I reorganize the colony so that all brood is in the bottom two bodies, and one or more deep bodies are in place. As long as morale is high and pollen pours in, such a colony should need little further attention beyond supering for the flow. With the brood from both queens, it ought to be strong enough to be at least an average producer.

Mention is made herein of placing the bees in four or more deep bodies at points quite early in the season. The secret of having bees enough to reach this strength so early is to carry only first-class queens into winter in three deep bodies packed with stores. By fruit bloom, the more progressive colonies will have the top two bodies full of brood and stores, and will have more stores in the center combs of the first body. Once all that brood emerges, there are definitely bees enough to cover four or more bodies in most instances, and they will really need that much space.

Newspaper uniting is recommended at several points in the discussion. This, for those unaware, is nothing more than having the colony and nucleus in standard equipment, removing the covers from the colony, laying a single sheet of newspaper on the hive, and setting the nucleus colony above. Killing the queen below insures that the one of your choice remains. Placing the nucleus above the hive protects the new queen from the field force and guards who might kill her if they find her immediately. Poking a single hole in the paper is a precaution against suffocation of the nucleus.

Some final comments about queens: when bees prepare to swarm, they are attempting to both reproduce one or more new colonies and rejuvenate the parent colony with a new queen. Giving the colony a good, young queen will usually call a halt to the swarming urge. Giving a new, but poor queen will not relieve swarming in my experience. Hence, I do not routinely kill my queens, for many of the best ones will head a colony practically as well for a second season. Replacing a good queen with a new one, just because she had a birthday, seems a needless risk in light of the uncertain quality of any untried queen. I do remove a queen before letting her enter a third winter and build-up period, in the rare instance that one survives that long.

One could open every colony once each week, cut every cell with a vengeance, and not control swarming. My methods do not prevent swarming in every last colony, every year, though they do in many years. Every year, I do manage to collect some swarms. Whether the bees come from my hives or elsewhere, the pleasure and gain in collecting them makes swarming a definite asset to my apiary.

1979 APIARY INSPECTORS OF AMERICA MEETING

THE 1979 Apiary Inspectors of America Convention was held in San Diego, California on January 15, 16, 17 in conjunction with the American Beekeeping Convention. Federation President, Robert Ray, Tintah, Minnesota addressed the inspectors expressing the warm relationship between the two organizations.

Some of the highlights of the A.I.A. Program were: The presentation of "Beekeeping in Canada" by Phil Burke, Provincial Apiarist, University of Guelph, Ontario, Canada and Francois Beauchesne, Chief Apiary Inspector, Quebec, Canada, who showed slides and discussed ETO research in Quebec. For their use, a tractor trailer was converted into an ETO Chamber which holds some 300 supers. To date, the results of the fumigation efforts have been phenomenal. These were the first in-depth Canadian presentations at an A.I.A. meeting in many years.

The business meeting produced one of the most far-reaching accomplishments in a decade. A committee appointed by President "Gerry" Stevens at the 1978 meeting in Beltsville, Md., consisting of Jim Herndon, Chairman, Florida; Leo Vanderpool, California; and Gene Killion, Illinois; presented a Uniform Certificate of Inspection which was accepted unanimously by the members. Jim Herndon did a good deal of research on the laws of the various states. The approach to the problem by the committee was to produce a document that would fulfill the requirements of the existing laws instead of attempting to force the states to legislate changes to accommodate a rigid certificate. Certificates of Inspection are very important documents between states, especially in these days of extensive migratory beekeeping. Florida, with over 100,000 colonies coming and going each year, and California with about three times that number on the move, need certificates for these moves that contain the information their state laws require. Permits to enter the various states are issued on the basis of the information contained on the Certificate of Inspection.

Outgoing President Gerry Stevens of New York presents new gavel to new President of A.I.A., Harry Fulton.

Spurred by the early activity of this committee, both the National Association of Departments of Agriculture (NASDA) and the National Plant Board had requested that A.I.A. present a Uniform Certificate of Inspection that they could recommend to all the states. This was accomplished.

Other topics to which the group addressed itself were: Honey Adulteration, Certificates of Inspection from Hawaii, and "How to Win at Bingo!"

At the "new business" portion of the meeting, outgoing President "Gerry" Stevens, Apiculturist for New York State, presented a new gavel to the new President Harry Fulton, Apiculturist for the State of Mississippi.

The next meeting will be held at Dr. Bill Wilson's station in Laramie, Wyoming on September 6-7-8, 1979.

Associate Memberships in A.I.A. are available by writing to Floyd Hilbig, Chief Apiarist, Plant Industry Div., Nevada State Dept. of Agriculture, P.O. Box 11100, 350 Capitol Hill Ave., Reno, Nevada 89510.

NEWS and EVENTS

Martin Hoernig [left] and Tom Harmon.

Claude Wade [left] and Tom Ott.

INDIANA
Indiana Beekeeper of the Year

Claude Wade, Chief Apiary Inspector of Indiana, presents the 1978 Indiana beekeeper of the year award for outstanding achievement in promoting apiculture in Indiana to Thomas Ott of Columbia City, In.

Also, Martin J. Hoernig was presented an appreciation award for his services as ISBA president for the past 3 years. Martin was vice president for the 3 years previous, and director for several years before that. He is now taking over the office of treasurer of ISBA. Shown presenting Martin his award is Tom Harman of Mentone, In.

FLORIDA
Beekeeping Course

A beekeeping course will be held at Hillsborough Community College, Dale Mabry Campus, Tampa, Florida, beginning April 21, 1979 through May 26, 1979, Saturdays from 9 until 1 o'clock.

This course is designed to introduce the beginner to the basic principles and procedures of handling the honeybee colony. Topics include: Honey production, equipment, supplies, control of diseases and processing of honey. An enrollment fee of $13 per person is charged.

For further information, contact Hillsborough Community College; P.O. Box 22127, Tampa, Florida 33622.

NEW YORK
Beekeeping Short Course

A beekeeping short corse will be held at Cornell University, Ithaca, N.Y. 14853 on July 20, 21, 22, 1979. ($10 advance registration required).

Participants will stay in student dormitories and eat in the university dining room. Lecture and demonstration rooms are air conditioned; the dormitory, dining room and lecture hall are within a few hundred feet of each other. Enrollment will be limited. The cost is $70 per person. This includes a single room for two nights, three meals on Saturday and two on Sunday, all instruction materials and registration fee. Double rooms are $5.00 less per person (total $65.00). Full linen service is provided. Registration forms may be obtained from: Office of Apiculture, Dept. of Entomology, Comstock Hall, Cornell Univ., Ithaca, N.Y. 14853.

OKLAHOMA
Oklahoma Beekeepers Assoc.

The Oklahoma State Beekeepers Association will hold its spring meeting in Clinton, Oklahoma, May 19, 1979. Jim Ross, President of the Association, reports the meeting will be held in the banquet room of Pop Hicks Restaurant. John Flick, President of the Panhoma Beekeepers Association and his local association members will be host for the meeting. They will hold a special social meeting at 7:00 P.M. on May 18, 1979, for beekeepers who arrive early. The program for the state meeting on May 19, 1979 will be announced at a later date. All beekeepers and bee supply firms are encouraged to attend.

OHIO
Trumbull County Beekeepers, Inc.

The Trumbull County Beekeepers, Inc., of northeastern Ohio had a fun and learning-filled last half of 1978. The group compiled a good selling cookbook to raise funds to upgrade their next year's County Fair exhibit. (Any reader interested in obtaining copies of the cookbook, please send self-addressed, stamped envelope to Mrs. Harold Leiby, Secy., 3557 St. Rt. 534, Southington, Ohio 44470. The book contains 400 recipes collected from members, not all honey recipes, but a real assortment of good things to eat.) Price is $3.50 plus 30c for postage.

NORTH CAROLINA
N.C. Beekeepers Assoc.

The North Carolina State Beekeepers Association will hold its spring meeting in Winston-Salem, N.C. on March 30-31, 1979. For additional details and program contact: Dr. J. T. Ambrose, NCSBA Executive Secretary, Dept. of Entomology, N.C. State University, Raleigh, N.C. 27607.

CALIFORNIA
Queen Rearing Short Course

A comprehensive short course/workshop on queen rearing will be conducted by Dr. Christine Peng and Jerry Marston at the Bee Biology Facility on the Davis Campus, Saturday, May 19, from 9 A.M. to 5 P.M. (plan to bring your lunch).

Lectures describing the fundamental principals of queen rearing will be followed by demonstrations of practical techniques.

Persons desiring to pre-register for the course may send a check for $35.00, made out to the Regents of the University of California, to University of California Extension, 4485 Chemistry Annex, University of California, Davis 95616. Include a note designating Section No. 783E24. To pre-register with a credit card, please call (916) 752-0880. All persons who pre-register will be sent a map of the campus with directions for locating the Bee Biology Facility.

CONNECTICUT
Beekeeping Short Course

A short course will be given at the White Memorial Conservation Center (formerly the Litchfield Nature Center and Museum), Litchfield, Conn. The instructor will be Professor Al Avitabile of the University of Connecticut.

The course will consist of 4 Saturday morning lectures beginning at 9:30 a.m. immediately followed by field trips to bee yards. The dates for the course will be April 7 and 21 and May 5 and 12.

Demonstrations will include: How to hive package bees and swarms, how to rear your own queens, how to divide

colonies, how to manage a two-queen system and many other demonstrations related to bee management.

Cost will be $23 per person for the entire course. For additional information contact either Gordon Loery, Director of the Center at 567-0015 or Al Avitabile at 757-1231 (Ext. 38) area code (203).

CONNECTICUT
Connecticut Beekeepers Assoc.

The annual meeting of the Connecticut Beekeepers Association will be held on Saturday, April 28, 1979, at 10:00 A.M. in the Donald F. Jones Auditorium of the Connecticut Agricultural Experiment Station, 123 Huntington St., New Haven.

The speaker of the day, Dr. Clarence H. Collison of Pennsylvania State University, will give two talks.

The afternoon session will also feature a film on "Citrus Honey".

Our always delicious potluck lunch will be served at noon. Bring something you enjoy for the buffet table. Coffee is, as always, "on the house".

A cordial welcome awaits all beekeepers and their friends.

INDIANA
Indiana State Beekeepers Assoc.

The Indiana State Beekeepers Association will hold its spring meeting at the FFA Leadership Center near Trafalgar, Indiana. This is an all day meeting with a pitch-in lunch. In the morning there will be a "Cook With Honey Contest and Auction". The date: May 12, 1979.

In the afternoon, there will be demonstrations on installing package bees, queen rearing and requeening.

For more information contact: Claude F. Wade, Division of Entomology, 613 State Office Building, Indianapolis, Indiana 46204.

MARYLAND
Maryland State Beekeepers Assoc.

At the annual winter meeting of the Maryland State Beekeepers Association (MSBA) held at the University of Maryland, College Park, on February 3, with more than 200 bee people in attendance, the following were re-elected to serve for 1979; Earle O. Edmunds, president; Hugo W. Lee, vice president; John Romanik, secretary; and Richard Hammond, treasurer, with the only new face being that of the secretary who replaced outgoing Frances Yatsevitch.

GLEANINGS MAIL BOX

(Continued from page 170)

conditions will readily develop into a populous, productive colony. However, in reading advertisements in the bee journals and other outlets of communication with the industry, I haven't noticed any mention of a certificate of inspection for the apiaries from which such nucs or bees are shipped. Therefore, I am prompted to ask the following questions.

To the beekeeper who purchases nucs from an out of state source, I ask; do the nucs you are buying have a certificate of inspection stating that they are from an apiary free of bee disease? This certificate is required by State Apiary Inspection Law or Regulations where your apiary is located. A nuc consisting of comb, brood and bees must be certified to meet the same requirements as a regular full-size colony.

In the past several years there have been incidents of nucs developing American foulbrood as well as other contagious bee diseases. For your own protection as a purchaser you should insist on a certificate of inspection from those who have nucs for sale.

To the shipper of nucs, let me ask; do you realize that you are in violation of most state laws relating to the interstate shipment of bees if such shipment is not accompanied by a certificate of inspection and a permit to move bees to a new state of destination? A common carrier is not responsible for delivery of such shipments in Maryland and many other states when such reqirements are not adhered to by the shipper.

I believe that each of us who are interested in bee culture should do his or her part for the protection of our little winged friends, the honeybee, that fulfill the indispensable role of performing the first basic step in the production of the many foods and fiber that enables our human family to maintain our existence on this Earth that has been made available for you and me.—John V. Lindner, MD. State Apiary Inspector.

Dear Editor:

I would like to see an article on the business aspects of beekeeping. Anyone who has intentions of developing a hobby into a small business sooner or later has to learn about keeping records for their own benefit and for tax purposes. Even if you have someone else take care of the unpleasant (for most people) details, you have to be able to furnish them the appropriate information. I might also mention that joint ventures (partnership or incorporation) are especially full of pitfalls.—Michael Kreyche, Kent, Ohio.

Dear Editor:

In referring to the letter by Mr. Cucullu in the Feb. 1979 **Gleanings**, I cannot help being skeptical of his claim to have extensively "researched" the effects of the herbicide 2,4,5T. If he had read the scientific literature, he would know that 2,4,5T has very low toxicity to mammals, and can be safely used as a weed control chemical providing that label restrictions are followed. Furthermore, in general usage, the chemical is greatly diluted with water and applied in very small quantities over the land area that is to be cleared of specific weeds. On that land it is subject to physical and microbiological degradation and hence does not affect subsequent crops.

The controversy surrounding 2,4,5T stems from the chemical supplied to the military for use as a defoliant in Vietnam. Because of the manufacturing procedure, the 2,4,5T was contaminated with dioxin, an extremely potent toxin, which can harm mammals including man. It has been alleged that this contaminated 2,4,5T was the cause of birth defects in people who may have been exposed to the herbicide in Vietnam. The manufacturing procedure has since been altered to prevent formation of dioxin.

The fact is that 2,4,5T is labelled for weed control in rice, since it kills some broad leaved weeds, but does not injure rice, which is a species of the grass family. Since the U.S. Environmental Protection Agency (EPA) (which is not noted for its liberal attitude toward pesticides) still sees fit to allow 2,4,5T to be used on food crops, it is evident that the manufacturer has demonstrated the efficacy and safety of this chemical. Mr. Cucullu's statement that label restrictions are usually disregarded by applicators is an opinion not generally shared by those in agriculture, since we know that these chemicals are too costly to use unwisely or carelessly.—Daniel L. Jeffers, Assoc. Professor, ORDC, Wooster, Ohio.

AMERICAN HONEY SHOW WINNERS

THE 1979 Honey Show was a part of the American Beekeeping Federation in San Diego, California in January. Following are the exhibit class and first place winners: Best of Show—William Ruhl, Portland, Oregon—Trophy and $25.00 check. Water White Honey—Lawrence R. Budge, Harlowtown, MT; Extra White Honey—Robert Ray, Tintah, MN.; White Honey—William Mathewson, Fallbrook, CA.; Extra White Amber—William Ruhl, Portland, OR.; Light Amber—Paul G. Cummins, Conshocken, PA.; Amber—Waruth Honey House, Canyon Country, CA.; Comb Honey—Ray Nicholson, Wadena, MN.; Cut Comb—William Ruhl, Portland, OR.; Creamed Honey—Mrs. Russell Mitchell, Missoula, MT.; Crude Beeswax—Dan Guthrie, Utica, MI.; Sunbleached Beeswax—Frank B. Ross Co.,Inc.,Jersey City, N.J.

First place winners received a silver bowl, a check for $5.00 and a blue ribbon. The honey auction netted the American Honey Queen Fund over one thousand dollars, a new record.

DEMAREE PLAN MADE EASY

(Continued from page 183)

total time of approximately 1/2 hour per colony is not excessive and compares favorably with any other method. The important thing is that it is practically 100% swarm proof. It is a rather drastic shock treatment but it turns them around if they have any idea of swarming. They recover very quickly and come up to the peak of strength just in time for our major honey flow of tulip tree about the first two weeks of June.

The important thing is that you don't have to worry about their swarming and don't have to touch them again until taking off the honey in the fall. I don't know of a better method of bringing them all up to super peak strength at the beginning of the major honey flow, and you should see how they pile in the honey.

After all, honey is the name of the game.

FROM THE WEST

(Continued from page 186)

and strain, means that more honey can be extracted each day than was possible with the cumbersome Langstroth supers. Better honey is produced. As the combs are not used for brood production, the honey is free from the taint of dark combs, and very little slumgum is produced in the capping melter. Because of the design of the Manley frames, only the minimum of honey passed through the capping melter. Fuel is saved because less heat is taken up by honey from the knifes and from the melter. Most of the heat is used for melting the wax instead of heating honey. The maximum amount of honey is extracted in the proper place, the honey extractor. The reduction in slumgum permits a better flow of heat to the wax and results in better quality beeswax. Finally, the cost of the 6-5/8 inch supers is lower than that of Langstroth boxes. Timber of the width required is more plentiful and cheaper than the wider boards of Langstroth size. The frames are more simple in design, requiring fewer machining operations and are quicker to assemble ready for use. Those opposed to the use of special honey supers regard interchangeability of combs between the brood nest and supers as being essential. They pay a heavy price for this one feature in denying themselves all the advantages of the use of honey supers designed for the job."

R.O.B. Manley, who made that frame popular, until it now carries his name, wrote in his excellent book, **Beekeeping in Britain,** "Please don't write to me to ask where you can get these things, as so many have done. They are not reach-me-downs, not at present, at all events."

That holds good for me too. You will have to make them yourself or go without. Our beekeepers are either slow learners or hard to convince. The Australians, the Canadians and the British have used Manley frames for years. With the exception of our largest commercial honey producer the rest of us have been slow in catching on. That's not the American way.

MONTHLY HONEY REPORT

(Continued from page 166)

Washington-Honey selling well. Cold winter here. Bees in fair condition. Good moisture conditions.

Oregon-Season will be late this year. Crop prospects are good.

California-Good demand for honey at firm prices. Not much available from independent producers. Less imported honey available. Very active demand for colonies, equipment and packages. Double brood chamber colonies selling $55 to $65. Optimistic about spring honey production.

TO RAISE BEES OR MAKE HONEY?

(Continued from page 178)

queen below of course. I realize that the bees must eat over the summer and the unsealed honey will be the first to go. At least most of my winter stores will be left intact, I hope. Also, the necessity for rearranging frames or leaving extracting supers for winter feed will be eliminated. Maybe I'll get honey instead of bees.

Oh, for major summer and fall honey flows without the constant threat of swarming. But, as far as I can determine I'll never see summer honey on Long Island. Maybe someday I'll find a good east end location for fall honey, a summer or fall major honey flow cannot be found in western Long Island.

BEE TALK

(Continued from page 185)

buildings up to date, with extensive discussion not only of honey houses and extracting plants, but of honey storage facilities. Two other subjects which have been somewhat neglected before but are discussed her are record keeping and bee associations.

This is the kind of book that tends to improve in value over the years. Maybe someday I'll have all the editions of it, though I rather doubt this. In any case, I'm glad I have this one.

VARROA DISEASE, A NEW THREAT TO WORLD BEEKEEPING

(Continued from page 181)

against which we should also guard. They are **Tropilaelaps clareae** and **Euvarroa sinhai.** Less is known about them than about varroa mites except that we think they are found in tropical Asia only. **Tropilaelaps clareae** has been found in colonies of European bees in Asia; it is probably as serious as varroa but we have no data. **Euvarroa** has not yet been found in colonies of European bees and may not grow in them.

Are there still other Asian bee diseases that might pose a threat to world beekeeping? We don't know. No one has searched Asia thoroughly for potential problems.

EQUALIZING COLONIES

(Continued from page 194)

man going south with his bees it is a moot question but to the sideliner, who has no such opportunity, it can cut losses significantly.

Another method that was quite popular and was recommended by the late G.H. Cale was the relocation method where a strong hive building swarm cells was exchanged in mid-day at full flight with a weaker hive headed by a vigorous queen. It really stopped swarming but, if the strong hive had already begun to "loaf" prior to swarming, it was not effective. **It's all in the timing, whatever method is used.**

RESEARCH REVIEW

(Continued from page 187)

The fact that Red Delicious are different was discovered only last year. We believe we have the information to explain, at least in part, why past yields of Red Delicious have been so low in the East. Robinson will undertake experiments this year to determine if increasing the number of colonies in an orchard has an effect on yields.

We are aware that some persons concerned with fruit are already advising growers to use more colonies of bees per acre in orchards where Red Delicious predominate. One advisor recommends two colonies per acre. We think this may be good advice but we do not yet have the practical field data to back up this recommendation. If this advice were followed there might be a shortage of honeybees in the eastern states for apple pollination.

There is no question that beekeepers risk losing a portion of their honey crop when they move bees into apple orchards for pollination; in fact, some refuse to do so for that reason.

Robinson, Willard S.
Influence of 'Delicious' apple blossom morphology on the behavior of nectar-gathering honeybees. Dewey M. Caron, Editor. Proceedings, Fourth International Symposium on Pollination; Maryland Agricultural Experiment Station Special Miscellaneous Publication 1: 393-400. 1979.

BEE BEARDS MAKE GUINNESS BOOK OF RECORDS

DON COOKE of Terrace Park, Ohio, travels to Los Angeles on April 5 to appear on an ABC special to honor him as holder of the Guinness record of most bee beards.....93. The program will be aired May 6. Don has been donning bee beards for years as a part of the annual Ohio Honey Festival. His friends entered the record without his knowledge.

YORK'S---
Quality Bred

1 STARLINES

9 MIDNITES

7 ITALIANS

9

The Strains Preferred by Leading Honey Producers

Have you tried York's bees and service? Make 1979 your season to purchase your bees from a firm featuring both types of hybrid stock. New Starlines and Midnites continue to be the only privately developed strains of hybrids that consistentiy return more honey per colony. Be modern and use hybrid queens that produce vigorous workers which will extend your season and add to your total crop. Shipment made by parcel post, or your truck or station wagon. Information leaflets available on Starlines and Midnites; write us for your copy by return mail. Now booking for choice dates.

Bees & Queens

For Hobbyist - Honey Producer - Pollinator

ITALIANS

	1-3	4-25	26-99	100 up
2-lb. pkg. w/q	$17.00	$16.50	$16.25	$16.00
3-lb. pkg. w/q	21.50	21.00	20.85	20.50
5-lb. pkg. w/q	34.00	33.00	32.50	32.00
QUEENS	5.75	5.55	5.45	5.35

STARLINE OR MIDNITE

	1-3	4-25	26-99	100 up
2-lb. pkg. w/q	$17.40	$16.95	$16.65	$16.40
3-lb. pkg. w/q	21.90	21.50	21.25	20.90
5-lb. pkg. w/q	34.40	33.40	32.90	32.40
QUEENS	6.15	5.95	5.85	5.75

Prices F.O.B. Jesup

Queenless packages — deduct $2.00 per pkg.

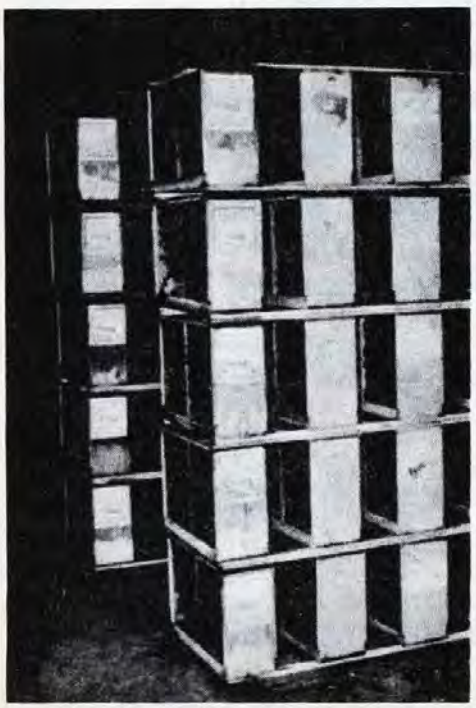
Tested Queens—add $1.00 per pkg. or queen.

Clipped and Marked 50¢ each.

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

WRITE FOR FREE COPY OF SHIPPING RATES AND INFORMATION

Shipments start first of April depending upon spring weather conditions.



APRIL 1979

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

MAY 1979

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JUNE 1979

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Help us to help you

ORDER TODAY

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

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

YORK BEE CO.

POST OFFICE BOX 307
(The Universal Apiaries)

So. Macon St. Ext. Ph. 912-427-7311

JESUP, GEORGIA 31545

BUY & SELL

Classified rates. 35¢ per counted word, each insertion, payable in cash in advance. Each initial, each word in names and address, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it) count as one word. Copy should be in by the 5th of the month, preceding publication. Send classified ads to: The A. I. Root Co., Advertising Department, Gleanings in Bee Culture, 623 W. Liberty St., P. O. Box 706, Medina, Ohio 44256.

MAGAZINES

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

Interested in ANGORA GOATS? Read the SHEEP and GOAT RAISER, Box 1840, San Angelo, Texas 76901. The only ranch magazine published serving the Angora Goat Industry. Subscription $5. Sample copy 25¢.

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

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

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

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

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

Bee Craft — Official (monthly) magazine of the BRITISH BEEKEEPERS ASSOCIATION. Contains interesting and informative articles. Annual Subscription (Sterling cheque £2.22p. 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).

MISCELLANEOUS

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

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

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.

SELL YOUR HONEY QUICKLY AND PROFITABLY. Order Sidney Gross' 52 page **Honey Marketing Tips for the Small Producer.** $3.95. Harvest Press, 3N681 Bittersweet, St. Charles, IL 60174.

TRADE. Your bees, etc. for my N.Y. state acreage. Vautin, 52 Washington Ave., River Edge, N.J. 07661 (201) 265-2445.

HONEYWINE Recipe. Herbs, Spices. Free catalog. Bacchanalia, Box 1BC, Dartmouth, MA. 02714.

RUBBER STAMP to imprint Honey Bear collars. 3 curved lines on shaped mount. Easy positioning $7.65. Extra line $1. Ink pad $1.50. Postage $1. Indiana Stamp, Box 990, Ft. Wayne, IN. 46802.

HONEY FOR SALE

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

CLOVER OR WILDFLOWER HONEY in 60's delivered or picked up. Paul A. Ballard, Roxbury, New York 12474.

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

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

PURE HONEY in 5 gallon pails (60#). Orange Blossom, Clover, Alfalfa, Buckwheat, Wildflower. Hubbard Apiaries, Belleview, Fla. 32620. Ph: 904-245-2461.

THOMPSON'S HONEYBEE ACRES. We still have some 1978 crop left. Packed in sixty pound plastic buckets. Robert and Janice Thompson, Route 1, Box 168, Brunswick, MO 65236. 816-272-4173.

TABLE Grade Honey 60's only. Shelly-Jo Bee Farm, Lisbon, N.Y. Call (315) 393-2609 after 8 P.M.

HONEY WANTED

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

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

WANTED — All types in drums, tins, truck and car lots. Send samples and prices each lot. Chas. E. Farris Co., Inc., P.O. Box 123, Springfield, N.J. 07081. Established since 1910.

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

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

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

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

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

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

HONEY WANTED: All varieties, any quantity, also comb honey. Office 612-464-4633. Residence 612-464-7476 — 612-462-4774. Nature's Treat, 6764 W. Bdwy., Forest Lake, MN 55025.

BEESWAX WANTED

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

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

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

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

WANTED

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

25-100 HIVES. Standard 10 frame equipmen, bees, supers, extracting equipment, etc. Furnish inventory, "Best cash price". Wisconsin or Illinois. Write: **Gleanings,** Box HP, Medina, Ohio 44256.

WANTED for our private library old bee books and old bee magazines. Stoller Honey Farms, Box 97, Latty, Ohio 45855.

WANTED TO BUY: 100-200 overwintered colonies or 5-frame nucs in 10-frame equipment (or stronger, nothing weaker). Would like to buy as early as April, no later than the 15th of May. Delivered if possible. Vermont (802) 948-2057.

WANTED TO BUY 200-300 Hives and Equipment in Michigan area. Cash. 616-399-1930.

5,000 USED Standard Deep 10-frame supers or 6-5/8 Shallows with or without combs. Write or call: Overbey Apiaries, P.O. Box 656, Bunkie, LA. (318) 346-6433.

HELP WANTED

WANTED: Commercial outfit needs hired help for 1979 season. Golden Valley Apiaries, Route 2, Box 62, Fairmont, Nebraska 68354.

HELP WANTED: 6 months work in pollen and honey operation in northern British Columbia. Contact: North Peace Apiaries, Ltd., R.R.#1, Fort St. John, B.C.V1J 4M6, Phone: 604-785-4808.

THE state of Nebraska is accepting applications for the position of State Apiarist. The position will be available in May or June. All interested parties should direct inquiries to Lloyd Bell, Nebraska Dept. of Agriculture, Centennial Mall, South, P.O.Box 94756, Lincoln, NB. 68509.

WANTED Beekeeper to work, either seasonal or year-round, starting about August 1st. Paul A. Ballard, Roxbury, N.Y. 12474.

POSITION WANTED

STUDENT & hobbyist beekeeper seeks work in apiaries of southeastern Michigan. Gaining experience necessary to qualify for seasonal employment while I finish my education is a prime requisite. If you can offer such training I have smoker—will travel. John Yuchas, 23416 Berg Rd., Southfield, Michigan 48034. 313-354-0864.

PARTLY experienced beekeeper seeks position with midwest beekeeper. Wesley Schumann, R.2, Wellman, Iowa 52356.

BEES & QUEENS FOR SALE

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

So. PA., MD., W. VA., VA. beekeepers; 4-frame nucs with laying queen $28.50. Live queen guaranteed. 10% to book order. Pickup date approx. April 10 to June 15 at The Honey Bee Farm, Rt. 10, Box 238, Chambersburg, PA 17201. Two miles from Interstate 81. Phone: 717-264-3044.

10-frame single story hives ITALIAN bees, young queen colonies in good condition. Pick up dates start mid-April. $50.00 each. Anderson Apiaries, 115 N. Oak, Adell, Ga. 31620. Ph: 912-896-4419.

QUEENS: DADANT'S STARLINE and HYBRID ITALIAN. Bees, nucs and bee supplies for sale. DIXIE HONEY CO., Rt. 1, Box 350, Shallotte, N.C. 28459. Phones: 919-579-6036 & 919-278-6951.

ITALIAN PACKAGE BEES & QUEENS Nuclei to be picked up here. Bring your cages and save. G.C. Walker, Rogers, Texas 76569. Phone 817-983-3468.

1979 PACKAGE BEES, queens, nucs, and complete hives available April -May. Pick up at Indianapolis or Ft. Wayne, Ind. Phone: (219) 657-5136 or write E & T Growers, Rt. 1, Spencerville, In. 46788.

PACKAGE BEES delivered to north eastern States. Marasan Honey Limited (see advertisers index).

NORTHERN CALIFORNIA Italian Queens, shipped airmail, postpaid and insured. April 1st to May 15th. 1-25 $4.50:26-99 $4.25:100 or more $4.00. After May 15th, 1-25 $4.00; 26-99 $3.75; 100 or more $3.50. Live delivery guaranteed. Ken Bachman (Bachman Apiaries), 1801 Calin Lane, Anderson, Calif. 96007. Phone: 916-365-4029 or 365-4175.

ITALIAN QUEENS-$5.25. West Georgia Bee Farms, P.O. Box 691, Carrollton, Georgia 30117. PH 404-832-7302.

ITALIAN QUEENS AND PACKAGES from April to end of season. Queens 1-5 $5.00, 6-25 $4.75, 26-100 $4.50, over 500 $4.25. 2 lb. packages w/q $14.00 plus package. All packages picked up here. John Rickard, Rt. 1, Box 2241, Anderson, Ca. 96007. PH (916) 365-5551, 365-6556.

PELICAN STATE QUEENS "Italian Type Hybrids". 1-5, $5.50 each - Over 5, $5.00 each. Postpaid, live delivery guaranteed. Clipped and marked on request. MAKE OUR QUALITY CONTROL PROGRAM YOURS. Pelican State Apiaries, P.O. Box 2904, Baton Rouge, LA. 70821. Phone (504) 293-3034 Evenings.

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

NUCS 3 frame nucs made in your supers with frames exchanged. $25 each. Overbey Apiaries, P.O. Box 656, Bunkie, La. 71322 or call (318) 346-6433.

FIVE Frame Nucs available. You haul or we can arrange delivery. Hubbard Apiaries, Box 416, Belleview, Fla. 32620. 904-245-2461.

QUALITY ITALIAN QUEENS 1-25 $5.00; 25 or more $4.50. Queen cells available by appointment. April 10 through May. Singles available mid April-mid May. New equipment $43.50 each, discount on quantity. Thousand Blossoms Honey Works, 215 Cherry St., Lodi, CA 95240 (209) 368-9876.

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

FOUR frame nucs available April and May $25.00. possible delivery of large orders. Queens, banded Italian 1-10 $6.50, 11 up $6.25. Free marking. Patagonia Apiaries, Box 768, Patagonia, AZ. 85624. 602-394-2448.

ITALIAN QUEENS: Fred's Bee Farm, 8015 Sullivan Drive, Charlotte, N.C. 28215. Phone: 704-568-5499. Fred Vees the Man with the Bees.

PACKAGE BEES, ITALIAN Pick up, Terra Alta. Book early for choice dates. Complete line of bee supplies. James Johnson, Terra Alta (Preston County) WV. 26764. (304) 789-6011.

PENNSYLVANIA DOUBLE GRAFTED ITALIAN QUEENS. Northern, hardy stock. Mating nucs fed Fumidil-B. Book now with payment. Live delivery guaranteed! May to September. 1-5 $6.00; 6-up $5.50. Marking .50. James Mentzer, RD 2, New Holland, Penn. 17557. 717-354-8042.

NUCS for Sale. Rex Haueter, Phone 916-273-3702.

PACKAGE BEES LAST CALL. April 5th deadline. Steuk Apiaries, North Olmsted, Ohio. 216-777-7630.

PACKAGES- 2 lb. w/Q $15.00. Postage not included. Queens $5.00 postpaid/insured. Italian/Carniolan. Starting April thru summer. White & Diltz Apiaries, 3992 Mary Ave., Marysville, California 95901. (916) 742-4545.

QUEENS, Italian 1-10 $5.25; 11-25 $5.00; 26 and up $4.75. Roger's Apiaries, Rt. 2, Box 208-F, Rose Hill, N.C. 28458. Phone: (919) 289-2850. Call early morning or late at night.

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

ROYAL JELLY

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

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

POLLEN

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

FRESH-FROZEN ROCKY MOUNTAIN POLLEN. Highest quality. Postpaid prices: 2 pounds, $12.00; 5 pounds, $25.00; 10 pounds $47.50. Larger quantities, inquire. Cleaned pollen for human consumption, $1.00 per pound extra. TETON BEE COMPANY, Box 176, Victor, Idaho 83455.

POLLEN TRAPS FOR SALE, O.A.C. Style Construction, Introductory Offer-$19.95 ppd. Edward Buchle, P.O. Box 71, Millersville, PA. 17551

SEEDS

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

BEE SUPPLIES FOR SALE

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

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

QUALITY CYPRESS BEEKEEPING SUPPLIES: Manufacturing for those who know the best costs less in the long run — **dovetailed** 9⅝," 6⅝", 5⅛" supers, hives, hive parts, Cobana supers, nucs, beginner's kits, and complete supplies. Write: BEE-JAY FARM, 1524 Drowning Creek Road, Dacula, Ga. 30211.

NEW 9-5/8 inch deep supers with frames all assembled $9.50. Frank Lubben, 129 E. Winona, Owatonna, Minn. 55060. 507-451-0220.

SHALLOW SUPERS with drawn comb. Elam S. Fisher, R.3, Newville, Pa. 17241.

PINE BEE SUPPLIES — Beehives, dovetailed $3.25 each; Supers, 5¾ or 6⅝" $2.25 each; Frames, per 100 $25; Frames per 1000 $225; Lids and Bottoms $3.50 set. Allow manufacturing time on all orders. MARVIN SMITH APIARIES, Rt. 1, Parma, Idaho 83660. 208-722-5271 Eves. 722-5278 Days.

COBANA BEE SUPPLIES-U.P.S. or pickup, commercial discounts, Slinger's Apiary, Pierz, MN. 56364.

"LAGRANT'S, New England's Largest Manufacturer of Bee Supplies, send for our catalog! Northern bred 3-frame nucs with 1979 queens, (limited number). Lagrant's, Ware, Mass. 01082.

ROUND COMB SECTION Equipment and Supplies. New and improved. Send for price list. ROSS ROUNDS, INC., PO Box 485, Massillon, O. 44646.

In the WEST beekeepers depend on UNITED BEE CRAFT COMPANY. Your full time—full service dealer. Complete stock of supplies and equipment. Dadant-Maxant-Cobana. Mail phone orders promptly shipped. 600 Harbor Blvd., West Sacramento, CA 95691. 916-371-9340.

WE MANUFACTURE CYPRESS BEE-KEEPING EQUIPMENT and sell other beekeeping supplies. BEGINNER BOOK $1.25. Free list. Forbes & Johnston, P.O. Box 535, Homerville, Ga. 31634.

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

PACKAGE BEES. Pick up St. Paul, Minnesota, April 14. Now booking 1979 orders. Please book early, limited supply. Write or call for free brochure. J.B. APIARIES, P.O. Box 6626, St. Paul, Minn. 55106 612-429-4267.

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

BEE SUPPLIES- hive bodies, supers, covers, bottoms, complete line of bee equipment, featuring Tru-lock frames. Have bought out Holloway and Sons and have improved wood machines. Write or call for price list. No orders too large or too small. **Moncrief Bee Supplies**, P.O. Box 625, Lakeland, Florida 33802. Phone 813-858-6754.

COMPLETE line Dadant Bee Supplies and table grade bee feed sugar in 100 lb. bags or 130 lb. avg. barrels, 18 cents lb., Howard Apiaries, 740 Kerber, Lafayette, IN. 47906. 317-583-2047.

20 TWO Story Bee Hives. $60 a hive. Houston, Texas. Phone (713) 444-9109.

"A. I Root beehives unused, still in original boxes, 30% off list price. Two B2, one B13, two B26, ten B30, four C2, two G15, six G16, one H11, three H12B. Anthony O'Connell, 2337 S. 13th St., St. Louis, MO. 63104. Tel: (314) 776-4926."

WHY buy commercial grade when you can buy No. 1 grade at a highly competitive price? Finest quality supers & frame $24.00 per 100. You have tried the rest, now buy the best. Write for price list. Superbee, Inc., 822 S. Fourth St., Montrose, Colorado 81401. PH. 303-249-4666.

FIVE-FRAME NUCS in your equipment. Italian bees delivered to Belmont, N.Y. or Florida pick-up. $35.00 per nuc with $5.00 deposit per nuc when ordered. Also, 100 single story hives for $50.00 each. April, May. Dick's Bees, RD#1, Belmont, N.Y. 716-268-7684, if no answer 716-268-5408.

COWEN Self loading automatic extractor. Included uncapper, auger extractor. All or part. Rex Haueter, 916-273-3702.

100 HIVES with bees. Will deliver free 100 miles of Houston, TX. Baker, Ph. 713-492-2101.

13 LARGE HIVES for sale. Located in 2 Jefferson Rd., Jefferson, N.Y. Call (516) 486-3992 John Roser, 193 Village Ave., West Hempstead 11552

AUCTION: Hive bodies and supers, some with comb, some new and KD. Covers, bottom boards and misc. wooden equipment. Honey house equipment includes: 72-frame extractor, stainless tanks, clarifier, Kelley wax press, Brand melter and two 5-gal. steam generators. Many other items. Saturday, May 5, 1979, 12:00 noon. Complete list of items and directions write: W.R. Koenig, RFD#2, Freeport, IL. 61032 or call: (815) 232-3410 or 232-1036. Lunch Stand.

NUMBER 1 new deep supers assembled and painted with 10 frames $12.00. New bottom boards, inner covers and telescope cover also supply of Duragilt foundation. Call or write C. Miron, 117 3 Avenue, Ashland, WIS. 54806. 715-682-4180.

SOMETHING SPECIAL: 500 single story beehives, headed by our own 1979 northern queens, 5-24, $59./ea.; 25-99, $56/ea.; 100-up $55/ea. Through years of selection and careful breeding these colonies will make a big difference in HONEY PRODUCTION and WINTERING. Available in May. Howland Apiaries, Berkshire, N.Y. 13736. Phone 607-657-2517.

100 DOUBLE colonies bees, standard 10 frame, good condition, $55 each. Bernard Greulick, Scotia, NY 518-346-7055.

FOR SALE

COMB HONEY PRODUCTION, a new book by Roger A. Morse. From WICWAS PRESS, 425 Hanshaw Road, Ithaca, N. Y. 14850. $7.95 postpaid anywhere.

FOR SALE: 4 Frame Nucs to pick up in Texas. Leonard Apiaries, 4539 Longvale, San Antonio, TX. 78217. Call 512-656-2502.

"MY STORY by A. Honeybee"—A 20 minute presentation of color slides, narration and cassette recording for your bee programs. Kit postpaid. $27.50. C.A. Divelbiss, Route 10, Mansfield, Ohio 44903.

BEE OUTFIT for sale 450 hives 2-story standard 10-frame, inner cover and tin lids. About 3,000 10-frame supers. Will sell one or all. Norman Ellis, 1509 Orr Rd., Caro, Mich. 48723.

EDB-WAX MOTH CONTROL Qt. $9.50, Gal. $26.50, 5 Gal. $85.00 all f.o.b. Country Honey Farm, Box 518, Hope, Ark. 71801.

FIVE-frame nucs available April and May. No frame exchange. Delivery possible. Also 3-lb. packages. Complete line of economy price bee supplies including frame nuc boxes. Honey in 60's. Larry Saums, 96 Mine St., Flemington, N.J. 08822. 201-782-2432.

100 STRONG SINGLES available in mid April for $47 each. Charles Cook, 410 E. Roca, Refugio, Texas 78377. 512-526-4758.

EXTRACTOR, Cowen 78 frame stainless, $950.00. Drake Honey Co., Box 488, Snoqualmie, WA. 98065. 206-888-1360.

FORTY colonies, 40 supers, 60 hive bodies, 20 nuc bodies and frames, 2-frame extractor, 9 boxes of foundation. Misc. other equipment. (714) 623-5140.

100 2-STORY hives, 200 extra supers with frames, 30 frame extractor, 500 lb. bottling tank. Uncapping tray, clarifier, honey pump and tank. All stainless steel. New condition. $9,500.00 Cash. L.D. Marshall, 1880 Murphy Lane, Moab, Utah. 801-259-6330.

THE HOW-TO-DO-IT BOOK OF BEEKEEPING, clothbound, $9.95, and HOW TO RAISE BEAUTIFUL COMB HONEY, clothbound, $7.95, by Richard Taylor, both for $16.95 ppd. Linden Books, Interlaken N.Y. 14847.

THIRTY hives two deeps $50 Maple Valley, Washington (206) 432-4765.

NEW and used bee equipment, some misc. items, also bees with or without locations: write or see me on Tuesdays. John Seitz, Oxbow Rd., Canastota, N.Y. 13032.

STRONG ONE STORY BEE HIVES $52, 3 frame nucs with superior queens $30. Minimum order 5, discounts large quantities, available Feb. and March from Norman Sharp, 1711 Belvidere Rd., Englewood, Fla. 33533. Ph: 813-474-8809 Available April, May, June from Norman Sharp, 384 Fishers Rd., Fishers, NY 14453. Phone 716-924-2747.

SQUEEZE BOTTLE—24 ounce size with snip top spout and cap. 100 bottles 21¢ each, 200 bottles 19¢ each. U.P.S. Shipping weights 11 pounds and 22 pounds respectively. Samples $1.25. Hollowville Products, Hollowville, NY 12530.

8-FRAME Superior Lifetime EXTRACTOR. Reversible, 12-inch baskets, mint condition. B.F. Faricy, 843 Brown, Pueblo, Colo. 81004. 303-544-7576.

---

100 deep (10-frame) dove-tailed supers with light drawn combs. 75 with dark combs. Raymond F. Fuller, 4566 New Carlisle & St. Paris Rd., New Carlisle, Ohio 45344.

SINGLE colonies and 2 story colonies. Call 216-365-5501. Adelbert Schuster.

BEE BUSINESS: 250 hives, plus extra equipment: 500 deeps, 770 shallows; complete extracting operation including 72-frame extractor, 20,000-lbs. storage tanks, clarifying pan, uncapper/wax melter/separator, steam boiler, liquefying tank and heater, etc.; $30,000; Peebles, Ohio; (513) 764-1249.

---

50 HIVES: a bottom board, 10 medium depth supers, inner and telescoping cover, used only 5 seasons like new. 20 with bees $110.00 each. 30 empty $100.00 each. Merle Fossum, 12116 Red Oak Ct. S., Burnsville, MN. 55337. Telephone: 612-894-3562.

1,000 SUPERS painted white excellent condition with 9-frame Stoller spacers, complete worked out foundation. $20.00 each. Write to: 831 Blake Ave., So. Milwaukee, Wis. 53172.

---

50 DOUBLE body hives $60 each, extra equipment available, Hillsboro, Ohio, 1-513-764-1242.

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

FOR SALE, Retiring, 500-600 colonies Central N.Y. truck, 30 ft. trailer & loader, Cowen uncapper, etc. W. Eshleman, Moravia, N.Y. 13118.

---

100 COLONIES of bees. Available May 1, 1979. Phone Gibsonburg, Ohio. 1-419-637-3131.

KEEP

GLEANINGS

COMING

WHO'S WHO IN APICULTURE

(Continued from page 190)

INTERNATIONAL ORGANIZATIONS

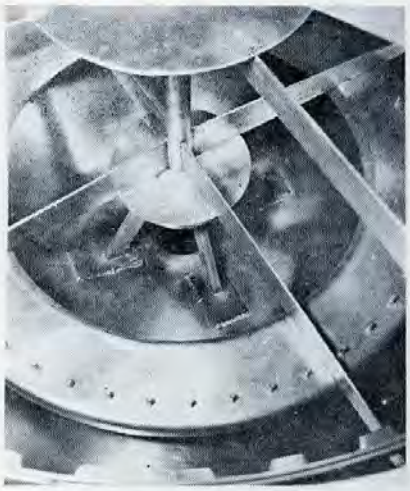
INTERNATIONAL BEE RESEARCH ASSN.—Hill House, Chalfont St. Peter, Gerrards Cross, Buckinghamshire, England SL9 ONR.

APIMONDIA — Italy, Rome, Corso Vittorio Emanuele 101.

REMEMBER!

Ad closing date is 5th of every month.

The Revolutionary New HUBBARD Extractor



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

Model Number	2401	4401	8001
Frame Capacity	24 D/44 Shal	44 D/60 Shal	80 Frames
Voltage Required	110 volts	110 volts	110 volts
Motor Type	¼ Hp.	½ Hp.	¾ Hp.
Drain Diameter	2" FPT	3" FPT	3" FPT
Tank Height	34"	36"	38"
Tank Diameter	30"	38"	55"
Reel Diameter	28"	35"	52"
Shaft Diameter	1¼"	1¼"	1½"
Brake Type		Electric Disc	Electric Disc
Warranty	One Year Complete	One Year Complete	One Year Complete
Catalog Number	**HO 61050**	**HO61070**	**HO 61040**
Price	$1250 Net	$1945 Net	$2485 Net

REMEMBER — YOU GET WHAT YOU PAY FOR!!

PACKAGE BEES

*Pick Up at Onsted Store Only!

2 Pound Package

1-24 Packages	$22.50 ea.
25-up Packages	21.75 ea.

3 Pound Package

1-24 Packages	$28.00 ea.
25-up Packages	27.25 ea.

QUEENS

1-24 Queens	$7.25 ea.
25-99 Queens	6.60 ea.
100-or more Queens	6.10 ea.

Queens are sent post paid air mail.
Telephone order in for early arrival.

***Prices subject to change without notice.**

***Package Bees Will be Available in Late April and Early May.**
No Deposit Required. Telephone Order In for Early Arrival.

THE FOLLOWING ARE NET PRICES — NO DISCOUNT

		9⅛"	6¼"	5⅜"
100	Hoffman Top Bar Std. Frames, Commercial	$38.00	$38.00	$38.00
1000	or more Hoffman Top Bar Std. Commercial Grade	275.00	275.00	275.00
5	9⅝ Deep Bodies, 9⅛ Frame, Commercial Grade			28.85
50	9⅝ Deep Bodies, 9⅛ Frame, Commercial Grade			280.00
100	9⅝ Deep Bodies, 9⅛ Frame, Commercial Grade			375.00
5	5⅛ Shallow Bodies, 5⅜, Commercial Grade			22.00
50	5⅛ Shallow Bodies,, 5⅜, Commercial Grade			200.00
100	5⅛ Shallow Bodies, 5⅜, Commercial Grade			375.00
5	6⅝ Shallow Bodies, 6¼, Commercial Grade			22.00
50	6⅝ Shallow Bodies, 6¼, Commercial Grade			200.00
100	6⅝ Shallow Bodies, 6¼, Commercial Grade			375.00

For Good Buys Ask for 1979 Catalog (Available January 1979)

HUBBARD APIARIES

ONSTED, MI 49265
Telephone 517-467-2051

BELLEVIEW, FL 32620
Telephone 904-245-2461

Root QUALITY

BASIC BEEKEEPING KIT

The Root Beginner's Outfit comes complete with everything a novice needs except the bees.

This special package contains a standard hive, including metal cover, 10 frames, (all wood parts in the flat) with nails and directions. Ten sheets of Root quality wire foundation, 43 support pins and a Root Indestructible bee veil. A Boardman feeder, bee smoker, hive tool, a pair of coated-cloth bee gloves and the best book for beginners, **Starting Right with Bees.**

All Root Quality products — and all for less than the average price you pay for the separate pieces.

For more information about Root products 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