American BEE JOURNAL

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SWARMING ROUND-UP

Australian Visitor

W. A. Stephen, Extension Beekeeper of the State of North Carolina sends us this picture of himself (left) and Mr. Alan Frost of near Melbourne, Australia. This was taken while Mr. Frost was visiting in Raleigh, N. C. Mr. Frost has visited W. W. Wicht of Hattiesburg, Miss., the Southern States Bee Culture Lab at Baton Rouge, La., and the Southwestern Lab at Tucson, Ariz. He is currently working with Woodrow Miller at Colton, Calif. and plans to see some of the western states before sailing for Australia in midsummer. Mr. Frost finds our bees and beekeeping methods very similar to those in his country.

Prominent French Beekeeper Dies

A number of our readers will recall the year long stay of Mr. Jean Chaneaux of the Juras in France, while he studied practical beekeeping in the United States in 1930. They may likewise remember the similar visit a few years ago of Mr. Pascal LeClerc, step-son of Mr. Chaneaux.

On Feb. 13, Mr. Chaneaux slipped on the ice outside his own doorway, fell backward on the hard surface and sustained injuries from which he died shortly afterwards. Chaneaux was one of France's largest beekeepers and was instrumental in forming a co-operative of several beekeepers operating in his immediate section of the country. Lately, together with LeClerc he had kept bees in both the North and South of France, with queen and package yards in the Riviera and producing yards in the Jura section.

Kindly Mr. Chaneaux loved to impart his experience and knowledge to other beekeepers and was a power for good in French beekeeping. He was 58 at his death.

HONEY

Sunday 'n' Monday 'n' All Through the Week

Something new in a recipe book has recently been published by the Canadian Beekeepers' Council, and distributed by the Ontario Beekeepers' Association. This attractive 24-page book should be a help to cooks not only for its recipes, which were edited and tested by Mrs. Vera C. Maguire, but also for its meal suggestions. Rules for using honey are followed by recipes and suggestions for breakfast, dinner, and supper or lunch.

The Cover

This picure of a swarm of bees on a redbud bush was taken by John W. Head of Decatur, Illinois. Note the four or five bees flying into the swarm. Such a sight used to be a common one back in the days when the children were sent out to "watch for swarms." Perhaps it is not quite so common to us now, as beekeepers find better methods of swarm prevention and control. Eight Round-Up articles in this issue tell you just how it's done.

Author Ordetx

Bee Flora of Tropical America

The late Frank C. Pellett in his later years was particularly interested in the nectar bearing plants of tropical America and the possibilities that some of these might be profitably planted in North America. In fact he made two trips to Mexico for this purpose.

He would therefore have been delighted with a book which has come to our office with the title "Flora Apicola de la America Tropical." It is written in Spanish by Gonzalo S. Ordetx Ros, member of the Cuban Beekeepers Association and author of "Honey Plants of Cuba." The book is extremely well done, well illustrated, clothbound of some 330 pages alphabetically arranged, similar to Pellett's "American Honey Plants."

Honey and pollen plants of Mexico, Cuba and other tropical islands are treated, as well as those of some of the northern sections of South America, Central America and most southern sections of the United States. In this "Bee Flora of Tropical America" more than 700 species are discussed. Mr. Ordetx spent over ten years in its preparation and traveled extensively in the countries treated. While written in Spanish, vernacular names in English are used for those plants occurring in the West Indies and southern United States. It is a book which could grace any bee library. Priced at $6.00 postpaid, it may be obtained by addressing the publishers: Association Apicola de Cuba, Correo, No. 259, Vibora, Havana, Cuba. This office intends to stock a few copies also.

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THE AMERICAN BEE JOURNAL

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Editor — G. H. Cale
Associate Editors — M. G. Dadant, Roy A. Grout
Managing Editor — Adelaide Fraser

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Contents

W. Leroy Bell . . .

W. LeRoy Bell, 54, died in Santa Ana, California, on March 2, 1952, as the result of an attack of coronary thrombosis. He was a veteran of thirty years of beekeeping in California, and was active in the industry until his sudden death. Surviving him are his wife, Clara, two sons, and three grandchildren. Also surviving are two brothers, Ralph and Donald. The guiding principle of Mr. Bell's life was a keen and lively interest in the world around him, from his childhood days in Arizona to recent years of leadership in the bee industry.

In 1922 Roy Bell settled in Orange, California, his home since that time, and beekeeping became his profession. He joined with his father to form Bell Apiaries, and began a lifelong devotion to the improvement of the quality of bees and the development of the industry.

From modest beginnings, Bell Apiaries grew until it comprised thousands of colonies of honey-producing bees and additional thousands of queen nuclei. Beginning with the production of both Italian and Caucasian queens, Mr. Bell later specialized in Caucasian breeding stock. The reputation he earned was an international one for the consistent top quality of his queens.

He divided his time for many years between California and the Snake River Valley of Idaho, where he was first able to produce the unique Mountain Snow Honey, a natural creamed honey of remarkable quality. During these annual trips he found time for his lifelong hobbies of fishing, hunting, and rock collection.

Roy was resourceful and creative. He revived the long idea hive and modified it, calling it the Bell-Duo Hive. With a few of these double hives he produced such a fantastic amount of honey one season that it was years before he wrote a report of the experiment. He feared disbelief of beekeepers and dreaded misleading the novice.

His growing position of leadership in California beekeeping culminated in his service as president of the California State Beekeepers Association in 1940 and as a member of the council of the National Federation of Beekeepers. He was vitally interested in the activities of the American Honey Institute throughout his lifetime.

The most fitting tribute to Mr. Bell was written by J. E. Eckert, entomologist at the University of California College of Agriculture, his friend and colleague, to the American Honey Institute:

"Roy had an enviable reputation as a breeder of Caucasian queens of quality, a successful commercial honey producer for many years, an organizer of a cooperative, and a man who was universally loved for his untiring and unselfish work in furthering the interests of others. His place will be hard to fill in the councils of California beekeeping, but the memory of his genial and helpful personality will live long in the minds and hearts of his friends. He was truly a leader in his chosen profession and sponsored the interests of the American Honey Institute in many of our state and regional meetings. Whenever there was work to be done for the industry, whether it involved the preparation of a talk for a meeting, or committee work, or to be master of ceremonies at an annual banquet, he never refused to do his part and did it well."

—Gracia R. Bell

A new spring list of Institute recipe leaflets and pamphlets is waiting for your letter of inquiry at the Institute office. Just drop a postcard to the American Honey Institute at 114 North Carroll Street, Madison 3, Wisconsin, and a list will be mailed to you immediately. It's been said that the real test of a good salesman is ability to overcome objections. This measure for the beekeeper will start soon as honey is ready to market in another two months or so. So arm yourself now with honey facts to ward off any objections a customer might offer. It is always well to be prepared in advance.

—American Honey Institute

Food for Thought

Planned Pollination - an Enterprise . . .

One of our correspondents writes that he would rather play checkers in a pool hall than perform pollination service on a basis which guarantees the grower a normal yield, and asks, "Who can say what is normal?"

This type of contract has received rather wide publicity and is a difficult barrier for pollinators to overcome. Because there are so many factors involved in the production of a seed crop, this doubtless has been a mistake. Our correspondent says, "Never guarantee a normal yield unless the grower is ready to guarantee weather and insect control." We believe he has something there.

He favors a contract which calls for a share of the seed crop beginning with the first pound of seed. Others are performing planned pollination on a basis which guarantees the beekeeper a fixed amount to cover his minimum costs of moving plus a percentage of the seed crop. Either plan has merit because the beekeeper and the grower both share in the success or failure of the seed production effort. Both are enterprisers.

Except in favored areas, planned pollination as an agricultural practice is more risky than honey production. It behooves the beekeeper, therefore, to pick fields with good stands and to pick growers who are willing to do a good job of insect control and harvesting before entering into a written contract to perform a pollination service.

The 1952 Support Program . . .

For the first time since Congress granted price support for honey to the beekeeping industry late in 1949, the Commodity Credit Corporation and the U. S. Department of Agriculture have announced a support program for the 1952 marketing season which can receive the full support of the entire bee and honey industry. This is a program in which honey will be supported at a national average of 11.4 cents per pound and the method of support will be carried out through farm and warehouse loans and purchase agreements. It is a program on the producer's level instead of a program of purchases through packers as before.

From the start and through two marketing seasons, the beekeeping industry at all times requested this type of program. Now that their request has been granted, beekeepers have the responsibility of participating in the program to their own advantage, to the end that the support level will be a floor price for extracted honey at wholesale, and to the end that honey moves to the consumer through normal channels of marketing and does not move in substantial quantities to the Government. If the latter happens, our "price-support goose" is cooked!

The American Bee Journal plans to present the details of the program to its readers, telling them how they can participate in the 1952 program to the best interests of everyone—themselves, the entire industry, and the Government. Other bee journals doubtless will lend their support to this program. The American Beekeeping Federation plans to do likewise as it goes forward with a marketing program planned to move the entire 1952 honey crop to the consumer through normal channels of trade.

How long we will have price support is uncertain. We do not think we will have it very long. We now have a good support program for 1952. Now is our chance to put our house in order by creating an improved marketing program for honey using the 1952 support program as an implement to that end.

Honey Color and Taste . . .

The late Dr. C. C. Miller of comb honey fame was repeatedly saying that "bees do nothing invariably." In other words, though we can count upon certain chains of activities in bee colonies, yet there are occasional instances which go contrary to rule and contrary to experience.

We have had this brought forcibly to mind by two recent arrivals of samples of honey on which we were asked to pass opinion. The one was a fine white sample from southern Kansas. It looked just like any other bottle of clover honey. In fact we at the office took very free tastes of it to our chagrin. The peppery aftertaste was like nothing we had ever experienced and lasted until lunch time. Just what did these bees pick up for surplus that their neighbors in the same general neighborhood did not? Was it a little known plant which yielded this year as an exception, or was it, perhaps, some commercial waste sweet which the bees accumulated along with the peppery flavor? We are inclined to the latter.

Then came a bulk comb jar from Texas, reddish in color, much similar to our Illinois fall honeys, gathered about the time of vetch. But, strangely, only one colony in the apiary got this harvest, the others being satisfied with the water white vetch. In this instance we do think that the one colony had affinity for a special plant while the others did not, for the sample gives no aftereffect that could lead anyone to assume that it was anything but pure honey.

We may have among our honey buyers, some with tongues trained well enough to distinguish between one honey and another even unto the less known kinds; just like the wine and cheese tasters of Europe, but even their repertoire must have its limits.

Some of our older Texans no doubt can recognize most of the honeys of their home state. But when it comes to putting it down in a book or bulletin for future beekeepers to consult, even color varies greatly with varying conditions.

We have no glossary of red honeys, or greenish ones. Nor of peppery or bitter ones. Even the late Frank Pellett in his "American Honey Plants" could not be sure, especially with most of the minor plants, of the color and flavor of their resulting honey. A difficult field for any compilation, but an interesting one.

You Can Help
with the
NEW HONEY PROMOTIONAL PROGRAM

THE Department of Agriculture is formulating plans for a great promotional program for honey to take place during the month of October and to bring increased impetus to National Honey Week which is being planned this year for the last week of that month. This program is the result of a request by the American Beekeeping Federation and is being handled by the Food Trades Division of the Food Distribution Branch of the Production and Marketing Administration. The program is being directed by G. Chester Freeman who has had a number of conferences with Glenn O. Jones, secretary of the Federation. Some 40 to 50 government employees will be working on honey promotion in Washington and in the regional and state offices of P.M.A. until the program is completed.

Mr. Freeman and his Washington associates will handle contacts that are national in character. Already he has discussed the promotional program with officials of the Grocery Manufacturers of America, the American Wholesale Grocers' Association, the National Ice Cream Manufacturers' Association, the Progressive Grocer Magazine, and a number of other groups of equal importance in the food industry. He reports a desire on the part of all to tie their own sales promotional efforts to this program for promoting the sale of honey. Mr. Freeman and his associates also will call upon honey packers across the country to solicit their full support in this undertaking.

The regional and state personnel will contact state associations of wholesale and retail grocers, chambers of commerce, P. T. A. associations, the extension service, hotel and restaurant organizations, and all other groups engaged in the marketing or preparation of foods. In as many cases as possible, P.M.A. officials would like to have the help of honey producers in making these contacts, and the Federation is organizing the beekeeping industry for this task.

There are, moreover, many similar contacts to be made at the county and local levels to ensure the total success of the honey promotion program. This task falls squarely upon the shoulders of honey producers and their wives. Results will vary with the energy and enthusiasm the honey industry is able to muster. The promotional work at this level will include seeing that wholesale grocers know about the national program and urge retail outlets to take full advantage of it; to help retail stores prepare better store displays of honey; to ask bakers to feature honey products, particularly toast and honey; to encourage ice cream manufacturers to feature honey toppings on ice cream during October; to interest all those engaged in serving meals to have honey on tables and to feature hot biscuits or toast and honey; to encourage newspaper editorials and articles on honey, bees and pollination; to get food editors to feature honey combinations during October; to offer help in securing speakers for civic clubs and school groups; and to encourage more extensive brand advertising by those packing and distributing honey during the period.

This is a worthwhile program—tremendous in scope—and will require the combined efforts of all organizations and all individuals in the entire bee and honey industry. The American Beekeeping Federation currently is planning its part in this worthwhile huge undertaking and will use every effort to cooperate with the American Honey Institute and the Department of Agriculture in building a great month of October for honey. The Government already is carrying out its program and plans. The American Honey Institute is being contacted to see how best they will fit into the program.

It is up to us as an industry NOW to get behind this program with every resource available to us. Mostly it is going to mean personal contacts and leg work, but a tremendous amount of mail—promotional and publicity material—will have to be prepared and distributed. Funds will be needed for such an undertaking. And beyond the promotional effort, a well-planned and executed distribution and sales program must be established, for the "point-of-payoff" for the honey industry will be measured by the amount of honey sold in retail stores.

The Federation now is contacting presidents and secretaries of state beekeepers' associations telling them that the Number 1 step is to call a meeting of their officers and to appoint an active and strong Honey Marketing Committee, if they do not have one already. States are being urged to give the fullest publicity to the honey promotional program in their bulletins to their members. A suggested honey marketing program is being included which urges the state associations to contact their State Marketing Director and their State Extension Service agent who have been alerted about the Washington program.

The important thing is to get action at every level of the honey industry. October is only five months away and much planning and preparation must be done now to see that a great sales campaign for honey takes place during the month of October, with special emphasis on National Honey Week.

The Food Distribution Branch of P.M.A. is sincerely enthusiatic about the honey program because it is radically different from other programs they have handled in the past. Honey has romance, appeal, legend and folklore that offer unlimited material for publicity. Honey has what it takes to create consumer demand. Consumer demand creates sales of honey. If the enthusiasm of the Food Distribution Branch carries down to the beekeepers themselves, the honey promotional program for October will be a startling success.

Swarming Round-Up

The Causes of Swarming*

by M. H. Haydak

Division of Entomology and Economic Zoology, University of Minnesota, University Farm, St. Paul, Minn.

SWARMING is a natural phenomenon in the life of bees. One reads a statement to the effect that if it were not for swarming, there would be no honeybees in the world today. Therefore, in order to control so deeply seated a habit successfully, we should clearly understand the sequence of events that leads to swarming. By fitting together all the pieces of information that we have now available, we can obtain quite a clear picture of what is happening in any overwintered colony in the spring.

Early in the season the bees still are in a relatively compact cluster in the hive. As the season advances, the bees begin to occupy more and more space. At any given temperature there is a certain number of bees per unit area present on the comb with brood. As the temperature becomes stable, the number of bees per unit area is also stabilized. In the spring there are 27-35 bees per area of 100 cells. Because the young bees have a tendency to seek and remain in the warmest place, the newly emerged bees remain on the comb and the older bees have to move out. Experiments with marked bees showed that bees 1-3 days old remain on the brood comb, while 4-10 day old bees are displaced. However, these bees, because they also like warmth, do not move far from the brood comb, but remain on the combs adjacent to the brood combs, where they begin to clean cells. When the queen comes to such a comb, she starts to lay immediately and the young displaced bees begin to feed her and the larvae that subsequently appear. If the queen does not find the cells ready for her, she returns to the brood nest. Therefore the egg-laying activity of the queen is governed by the displaced nurse bees and she can deposit only as many eggs as there are cells prepared by the nurse bees for her. The warmer the brood nest, the greater number of young bees will be displaced. A colder brood nest tends to diminish this displacement. Knowing the density of bees, the number of sealed brood cells, one can theoretically compute the number of displaced bees in the future, i.e., the space they will occupy and prepare for egg laying.

In a strong colony, sooner or later, there will be a disproportion between the number of the displaced nurse bees and the space available for egg deposition. The jobless, displaced nurse bees become excited. The circle around the queen is formed in a very close proximity to her, and the bees in the circle become very excited, shaking their abdomens. They constantly and persistently offer food to the queen, even pushing their heads under her head and thorax. Sometimes the queen, while resting, places her head inside a cell, as if trying to escape from the surrounding bees. The latter, however, increase in number and force the queen to start egg laying. The number of bees in the circle increases to 22 or more bees, the latter constantly offering food to the queen. Those in front of the queen sometimes jump on top of her and perform a shaking dance ("joy dance") lasting 3-4 seconds. Thus the queen is chased throughout the hive. As soon as the queen is around the swarm cells the bees do not bother her. She approaches the swarm cups and deposits eggs in them. As soon as the queen larvae appear the displaced nurse bees can lavishly supply them with food. At the same time the bees stop feeding the queen. The latter feeds herself on honey, deposits less eggs and the size of her abdomen diminishes. This decrease in egg laying results in further increase in the number of the jobless nurse bees. The latter fill out all the available space in the hive, sometimes even hanging outside—and those are the bees that leave with the swarm, "the active swarm bees." At the time of swarming the queen is actually chased out of the hive. The age of bees coming out with the swarm is mostly between 3 to 21 days. Field bees continue to work and it was observed that the number of the field bees coming in and leaving the hive is about the same before and after swarming. Both external (honeyflow,

* Paper No. 774 Miscellaneous Journal Series, Minnesota Agricultural Experiment Station.

weather, etc.) and internal (egg laying, type of brood nest, etc.) factors have a great influence on swarming and may accelerate, slow down or completely stop the preparation for swarming.

So here you have—the ever present and always ruthless law of supply and demand. The bees have found their solution for it. It is the most logical solution in nature. However, in modern beekeeping, when man tries to become an employer of his winged friends, he inherits all the difficulties going together with the problem of unemployment. A good "employer," who foresees the coming difficulty and tries to alleviate the symptoms before they become acute, usually wins—the bees in full force will continue to work for him. Otherwise they will leave, looking for better conditions.

Swarm Prevention

by Henry A. Schaefer

THE other evening, feeling quite relaxed, having just finished the outline for an article on our swarm prevention system, I dusted off "Fifty Years Among the Bees," by Dr. Miller, sank into my easy chair and began reading. It was not long before I was very interested in what Dr. Miller had to write about swarm prevention. Here it is—"A colony disposed to swarm might be prevented from doing so by blowing it up with dynamite." But, he says, that would be unprofitable. He was seeking profitable swarm prevention. (Swarming must have been a problem if he associated it with dynamite.) He further states that C. J. H. Gravenhorst, the great German authority, gives what he thinks is the truth about young queens and swarming: "A given colony will not swarm with a queen of this year if the queen was reared **in this colony**; if reared elsewhere it may swarm." After reading this I just had to have these thoughts head my article just to help keep us in our places when we think we have something NEW! (Just what is new in our business today?)

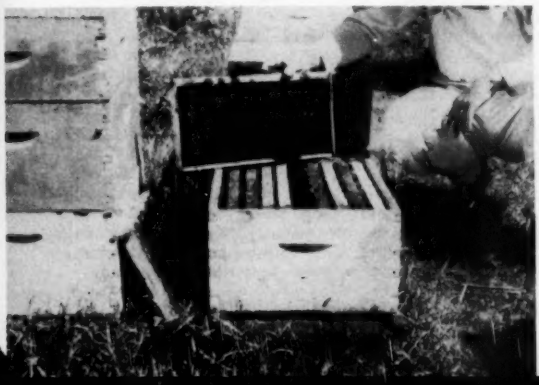
Have you ever walked through your bee yard or yards near the end of a good nectar flow thinking how profitable the returns would be if only all the colonies produced as well as the best few? I plead guilty to such thinking, past and present. Why did the best ones produce twice as much honey as the yard average? We found our answer in our hive records.

The season of 1927 gave us a very good honey crop, a 200 pound average with the Demaree system of swarm control. We had two outstanding colonies that year of the two hundred operated. No. 31 had a credit of 408 pounds and No. 62 had a credit of 405 pounds, all white clover honey, actual weight. No. 31 was cellar wintered, having one and one-half frames of brood when first examined early in April. It was then given two frames of brood. No. 62 was wintered out-of-doors, one of four in a quad winter-ing case, having four frames of brood when first examined. Each colony had an old queen. Each had advanced queen cells and was queenless May 1. Each was then given two frames of emerging brood. May 25 each young queen was laying and again each was given two frames of brood, minus the old bees. On July 2 these two colonies were piled higher with supers of honey than any of the others.

There is the answer.—A YOUNG QUEEN MATED BEFORE THE NECTAR FLOW FROM THE HIVE SHE LATER HEADS, PLUS VENTILATION AND PLENTY OF SUPER ROOM.

We worked hard and long trying to set up the ideal routine that would mate young queens from each hive before the honeyflow while at the same time keeping the overwintered queen laying. Many mistakes were made. Records are kept, so mistakes come less often. But we still make them, searching for the ideal routine. We tried many methods to get the end results. Giving ripe grafted cells to three-frame nucs above the screen gave very good results, but required too much time.

We now have the bees build their own cells. They do a good job of it. We begin these operations about the 1st of May, after settled warm weather has arrived in our locality.



No. 1

No. 2

Ten-frame equipment ←

Dadant equipment →

We save time by working each yard of bees as a unit, all hives receiving the same treatment. Colonies must be strong, those not up to the average strength of the yard are given sealed brood from some extra strong colonies. We DO NOT LOOK for ANY QUEENS. The weather must be such that field bees are actively going and coming. This is important and explained further on.

The colony to be worked is removed from the stand, its winter position, and replaced with a hive body of combs with at least one comb of honey and one comb of pollen. An empty comb is removed from this body, the comb of honey and comb of pollen being placed so that a comb of eggs, but without bees, is placed between them. Photo No. 1. The bees are shaken off to make certain the queen is not on this comb.

So our queen raising hive body is a beeless, queenless body with a comb of eggs and food, replacing the parent hive on the stand. This body is then given one deep body with combs (no bees) or two shallow supers, (if the parent colony is as strong as it should be, the field bees will need this extra room), then a double sheet of newspaper, then a moving screen with the entrance on the top and to the rear. Above this screen the brood bodies are then placed in the same order they were before we opened the hive, and above the brood bodies one or two shallow supers are given to take care of any space the bees might need before we return in about ten or twelve days. A rear entrance is given also between the upper brood bodies by shifting the upper body back. Photo No. 2.

All field bees and many young bees that have recently marked their hive location, will now enter and occupy the lower hive body that was prepared for them. A strong parent colony will have many field and young bees that will now build excellent queen cells especially if there already are eggs in cell cups. Photo No. 3. The old queen loses her field force to the lower hive and should there be any swarm cells started in her brood nest, the remaining bees will destroy them.

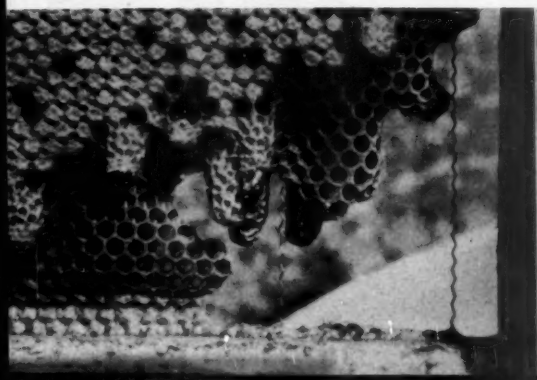
After ten to twelve days we inspect all hives given this treatment. We leave two good queen cells in each bottom brood nest. In case the OLD queen has been injured and cells built to replace her, we use the cells and brood where needed, leaving only a two-frame nuc with one cell in the unit above the screen. If we did not split up this old brood nest, these bees would be very apt to swarm with the top unit young queen.

After the young queen below has a good brood nest with sealed brood and plenty of young bees to protect her, as in photo No. 4, and the main nectar flow is on, we unite the two units by pulling out the screen, replacing it with a sheet of newspaper. This uniting must be done well in advance of the closing of the nectar flow or in place of honey in the hive there will be a hive full of brood.

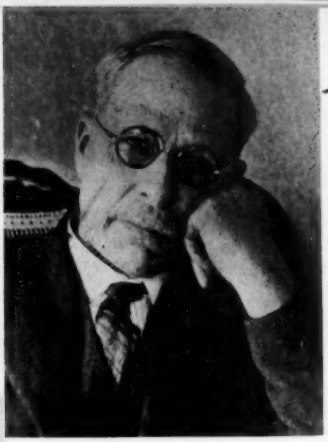
On our next trip after uniting, the hive bodies and supers are rearranged, the brood bodies down, together, and the supers all above. Extra supers are given as needed.

Wisconsin

No. 3



No. 4



Swarm Control with Extracted Honey

by E. S. Miller

IN the production of extracted honey, swarming can be prevented. It has been proved by more than six years without a swarm in a yard averaging about 50 colonies. In fact, the bees seldom started any queen cells. I believe this record can be duplicated by anyone who has a good strain of Italians and who will use the method which I will attempt to outline.

Let us assume that in spring you have strong two-story colonies with plenty of stores and that you also have a good supply of drawn combs. As soon as there is a sufficient amount of brood, usually about the time of fruit bloom, proceed as follows:

Confine the queen to the lower story. If you have trouble finding her just shake off bees and queen and let them run in under the queen excluder. Next, use as a second story a deep super of drawn combs, which is to be left in place during the next twelve months as a food chamber. Then place on top of this what was previously the second story. Time required, about 15 minutes per colony.

Then about June 1 or whenever the brood chamber becomes crowded replace the brood with drawn combs, moving to the top or fourth story all brood except one comb, which is left below so that the bees will not desert the queen. That's all. Time required about 15 minutes. It beats a weekly search for queen cells through two or more hive bodies, chasing swarms or reversing sections of the brood chamber, a procedure I have not found very effective.

It is important that this second operation be performed **before** there is any inclination to swarm or any queen cells are started. By elevating the emerging brood and young bees, removing them from the vicinity of the queen and new brood chamber, congestion is relieved without de-

Swarm Control and Queen Rearing in Comb Honey

by Carl E. and Eugene Killion

WE hesitate when we say that we welcome the swarming season, for fear that any who hear us may think we are just bragging. But we are not; to us, swarming is just as necessary as the nectar and pollen that go into the hives. Perhaps the problem of swarming has done more to prevent beekeepers from producing comb honey than all other reasons put together. We can readily see why, because just when the bees are getting nicely started on the foundation in the sections they start queen cells and swarm. Some may say just give a young laying queen at the start of the honeyflow and eliminate all this swarming. Sounds good, but it doesn't work too often. Twenty years ago when in partnership with the late Charles A. Kruse, of Paris, we agreed that most colonies would swarm later in the flow, if the young queen was reared too far in advance of the flow. We did find that any colony requeened with a ripe cell, in the swarming period, after being queenless for eight days, **did not swarm** nor swarm with a young queen reared and given instead of the cell, after the honeyflow was underway.

There are many methods of swarm control. We have tried almost everything recommended in the last

priving the colony of its working force and the bees go about their work without interruption. Result, no swarms. Ten days later you may desire to look through the top story for any queen cells that may have been started. With good Italian stock and queens not reared from swarm cells the chances are you will not find any. Provide shade, with ample ventilation both above and below. Add supers as needed.

But how can we have those strong colonies and drawn combs in the spring required in the method outlined? First, one should start in August with young queens and strong colonies. Weak colonies should be united at this time rather than later. Every colony should go into winter with a second story food chamber full of honey and pollen, provided by keeping the queen down through late summer and early fall or, preferably, during the entire working season. Winter stores are then placed immediately above the brood where they are accessible. A colony with the brood in the top story seldom winters well since the bees in cold weather can work up, not down, and may starve with plenty of honey below them or even at the sides. Provide top ventilation for the escape of moisture and a restricted bottom entrance and don't forget to remove that excluder before winter. Good combs should be provided in advance by having them drawn out in the second story from full sheets of wired foundation, alternating them, if desired, with drawn combs.

The system outlined is not a mere experiment. It has been in use many years with uniform success and is the most dependable means of swarm prevention known. Furthermore, it requires less labor. With its use one can count on two or three times as much surplus honey as can be obtained by allowing swarms or otherwise dividing the working force. By combining the above method with that of starting booster colonies in early spring and uniting at the beginning of the main honeyflow, I have been able to secure an average of 200 pounds per colony when the general average in this locality probably was not over 35 or 40 pounds. You can do likewise.

Indiana

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thirty years. Most of these sound so very convincing on paper, but if some were left on paper and never tried out in the bee yard, the bees and beekeeper both would benefit. We have a system that we have used now for over 25 years and every year we like it better than ever. This system has given results in maximum production with a minimum of equipment and labor. In our method of swarm control we are trying to do three important things at one time: control swarming, requeen our colonies, and get a honey crop. All three are so correlated that it is impossible to work them as separate projects, and we think we are saving by this method.

About four days after reducing our colonies from double brood chambers to singles and giving the first comb super we may expect to find swarm cells being started. If the swarming impulse does not appear to have developed enough we destroy these first queen cells and wait until next visit to start our swarm control measures. On the next examination we may find the colonies more determined than ever to build queen cells. We start by destroying all of their own cells but making sure the queen is present in the hive. The jelly is saved from the cells removed, and a space is made between the center combs for our cell bar frame. We make this space by just removing the two follower boards used in our hives, as only nine frames are used. If we used ten frames we would remove one frame. After working a few hives, dad usually continues with this part and son does the grafting. As each hive is manipulated it is closed until the bar of cell cups is given to it. We may be criticized for not rearing queens direct from the egg, making dry grafts or double grafts, but from the results we get from our present system it will continue to be used.

We dip our own cell cups and like to make them with a heavy base but paper thin on the top or open end. The cups are handled so as to keep them free of dust. The bar holds from 12 to 15 cups, usually about 14. The cups are primed with a drop of the jelly removed a few moments before. The jelly will be too thick and will have to be diluted slightly before the small larva is placed on it. This jelly is not only a food for the larva but is also a protective cushion. The larvae used are from our finest breeding stock. We prefer to use as young a larva as possible, it should be fairly floating in food in the cell before removing, the more food the easier to remove. When getting the larva on the grafting needle if part of it hangs over the edge it can be removed more easily, and as it touches the jelly, the needle is gently slid out from under the larva. When this bar of cell cups is given to one of the prepared colonies we can rest assured we are going to get queens of the finest quality. We have the most ideal condition to be found—**cells built under the swarming impulse, in queenright colonies; but larvae taken from our finest breeding stock. No other method in the world will give any finer queens**

We continue our grafting of cells in almost the same feverish haste as the bees are building their own. It is our desire to have an unlimited quantity ready for the time needed. Two days after we graft we start killing queens. For example, we graft our cells on June 1, on June 3 we come back to the apiary and start killing queens. All queens are destroyed except those in our cell-building colonies. About June 7 we destroy any cells the queenless colonies have started. On June 10 or early on June 11 we remove the bars of cells we grafted on June 1. We are now ready to give one of these cells to each of the colonies made

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A bar of good queen cells.

queenless on June 3, but not until we have destroyed every queen cell they have built. The bees should be shaken from the combs in front of the hive in order to see all the surface of the comb and not miss any small cell. We dare not leave a single cell other than the grafted one. If we do, this colony will surely swarm.

The queen that was left in the cell-building colony will swarm too about the time the cells are sealed. At this date we are ready to kill this queen anyway. She was left so the bees would not hurry the sealing of the queen cells, to ensure an abundance of food being placed in each cell. This colony is also given a cell after being queenless eight days. We have found it somewhat better to give cells than laying queens at this time, except for one thing, in widely scattered apiaries where mating is not so good, purely mated queens must be given later. When the last cell is given we start to breathe a little easier, especially if we have to work in the rain.

Illinois

Swarm Control with the Nucleus System

by Newman I. Lyle

THE fundamental principles of swarm control, as taught by the old masters, are as true today as when they were first discovered.

It is still necessary to provide a large enough brood nest, with the maximum amount of worker comb and the minimum of drone cells, to make room for a prolific queen to lay. A large brood nest is required where the queen can lay enough eggs to produce the necessary worker force before the main honeyflow. To accomplish this we use either two Modified or three ten-frame hive bodies for the brood nest. In fact our bees are usually wintered in this type of equipment.

The feed requirements must be checked in the late winter or early spring, to ensure the maximum number of strong colonies per yard. Each colony must have an abundance of honey and pollen to provide plenty of feed for the growing larvae. In northwestern Iowa we like to have an average of at least 7 or 8 Modified or 10 or 12 Hoffman frames of brood per colony by the last of April.

We make up our two-queen colonies at the time of the late April check. They are handled in a manner similar to that of Mr. Holzberlein's. The overwintered colonies, not being managed by the two-queen system, are checked in April. Fairly strong colonies with failing queens are immediately requeened. Weaker colonies are united by the newspaper method to good colonies after killing the poorest queen.

Late April and early May is the time to set up nuclei above strong colonies. When we have the bees in double hive bodies we proceed as follows: First we locate the queen, then set off one body with plenty of feed, both honey and pollen. This is set on a special board which is essentially an inner cover with the escape hole double screened and an entrance cut in one end. In this body we place, depending on the strength of the colony, two to four frames of mostly sealed brood with adhering bees. We like to have a frame or two with a lot of young bees emerging. Then shake in the adhering bees from two to four more frames. This is to ensure enough bees remaining in the nucleus to leave a large enough cluster to care for the brood after the old bees return to the parent brood chamber.

We introduce our new queen by the push-in cardboard cage or shipping cage method. If the attendant bees are removed from the shipping cage this method works very well. It is easy to introduce a queen to nuclei with only young bees remaining. A little ball of pollen supplement placed on the top bars above the brood seems to ensure a higher percentage of queen acceptance. When we have a lot of queens to introduce we like to make up a queen reservoir, a strong queenless nucleus, and put several queens, in their cages, without attendants, in it. The bees in the reservoir will lavishly feed the queens until they are plump and ready to lay. These queens are readily accepted.

The lower hive body, with the old queen returned to it, must have plenty of feed. Arrange the frames so none of the brood is separated by empty combs. Now put on an empty super; if the colony was in three ten-frame bodies, the lower two may be enough. If the colony is very strong, another super may be needed. Set the nucleus on top with the entrance to the front if the colony has or the bees are accustomed to a lower entrance. If the colony has had a top entrance, place the nucleus entrance to the rear.

It is preferable that the nuclei be made up when there is a light honeyflow. When there is no flow and it is warm enough so that the bees are inclined to rob, the nucleus entrance may be stuffed with grass so robber bees cannot get in. The bees in the nucleus will gradually liberate themselves. If it is necessary to make up nuclei during a dearth, it is better to do so in cool weather when there is little flight. After the nucleus is made up leave it alone for ten days before checking.

The nucleus will develop rapidly if the queen is accepted and is a vigorous layer. The warmth from the lower colony will enable the nucleus brood nest to be relatively large. Continued development of the parent colony and nucleus, with an increasing honeyflow, will make it necessary to super both units to pro-

vide room for bees and honey.

The nucleus and lower colony should be united at the beginning of the main honeyflow. If the old queen is unfit, because of temperament of her offspring or some other reason, find and kill her, leaving the dead queen in the hive so the bees will immediately know she is dead. Reassemble the lower hive, place one thickness of newspaper on it with small slits cut in the paper, set on the nucleus and on it pile the supers. Be sure you give plenty of super room because colonies so treated will really roll in the honey, if nectar is available. If the parent colony has a normal queen in good condition, the nucleus may be added without finding her. A newspaper again makes the operation a little safer. When both units have the same odor the bees will not fight, especially during the honeyflow. However, the queen from the nucleus might, if nervous, run down into the lower colony where some cross bees may ball and injure her. The nucleus may be used on any colony that needs requeening. We leave a small crack above the newspaper just large enough to accommodate flying bees returning to the previous location of the nucleus entrance. This temporary entrance can be closed in a few days; the bees will soon find the other entrance.

The best time to have bees draw foundation is during a honeyflow. During a steadily increasing flow there often becomes an overbalance of bees of wax-secreting age. When there are only drawn combs for honey storage the bees cannot use all the wax they are involuntarily producing. Under these conditions bees become restless and with otherwise ideal conditions, may swarm. This is an opportune time to get good combs drawn or produce chunk honey. When the bees are in this condition, they will store more honey in freshly built comb than in drawn combs, probably because of improved morale.

Iowa

Swarm Prevention - not Swarm Control

by John W. Holzberlein, J.

THE phenomenon of the swarm is one which I doubt if anyone fully understands in all its phases. We know its basic cause. It is Nature's means for perpetuating the honey bee colony. Long before man took over, bees were able to reproduce themselves, make up their losses from disaster, and perpetuate the species, all by means of the swarm.

Through study of bee habits and experimental manipulation we have learned some things, some of the apparent, secondary causes of swarming. We know, or should know, that a colony with an old queen is more likely to swarm than a colony with a young queen. But that does not mean that a colony with a young queen will not swarm. We all know that lack of room is a common cause for swarming, yet we have all seen colonies with twice as much room as they could possibly occupy prepare to swarm. We know that lack of adequate entrance space will promote swarming, and yet I have known of colonies storing two hundred pounds of surplus honey all brought in through one ½ inch auger hole, and they never wanted to swarm. We know that a good honeyflow will often clear up a bad case of "swarming fever" in a yard, and yet nothing is more conducive to general crowding than a good honeyflow. I rather think that a crowding of bees which have nothing to do, is what we mean when we say crowding is a cause of swarming. We also know that some kinds of bees, races or maybe just strains, are more prone to swarm than others. And yet we have all seen years when everything in the yard that had strength enough to do anything, wanted to swarm. I well remember such a year and if it wasn't for one thing I'd say that that was just one of those swarming years. But the thing that keeps me from saying it in this case, is that just four miles away there was another yard under the same management, with the same breed of bees, the same age queens, the same size hives and scarcely a colony in that yard showed any signs of swarming.

For over 30 years I have kept bees, and for 22 of those years beekeeping has produced over 90% of my income. Once in a while I feel like I'd like to line up with the "Experts." But then a swarming year comes along and I know for sure that I belong right where I have rated myself all these years—along with the learners.

Swarming is a natural instinct in bees but it has no place in modern honey production. Our great trouble is in trying to curb the urge once it takes possession of a colony. It almost parallels the sheep killing urge that develops in some dogs. The only way to stop it is to destroy the dog. Once a colony makes a firm determination to swarm, gets to the point of having sealed queen cells, with the old queen shrunken up ready for her first venture since her honeymoon days into the wide, blue yonder, there is nothing much we can do about it except to destroy the colony as such.

Once a colony has made final preparations to swarm there are just two things that I consider effective cures. One is to "swarm" them, that is, some phase of dividing the old bees and queen from the young bees and brood. The other is to make the colony queenless and queen cell-less, causing it to raise a young queen from scratch. But neither method has much value for the commercial

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honey producer in that they take too much time when time is valuable. Besides, both weaken the unit, the first by dividing its strength, the second by stopping for three weeks any chance for replacing the bees lost each day after the brood then present has emerged. And further, a colony treated by either method may loaf. Frustrated swarmers are the worst loafers. Just as a newly hived swarm is the most energetic colony in the yard, so the colony that has been denied the privilege, once its plans have been made, is the yard's laziest. Don't let anyone tell you there is no such thing as a lazy bee, for there is.

My solution to the whole problem has been in the field of swarm "prevention" rather than in the field of control. Of course one wants to have a strain of bees whose individuals can stand to rub elbows with more than one or two of their sisters without wanting to go hang onto a limb somewhere. And have young queens too, that is, not more than second year queens. Provide plenty of room well in advance of the need for it, too. But all this is sometimes not enough. There is a time in the north central tier of honey producing states, usually from April 20 to May 10, when the beekeeper is going to have to make a decision. He is going to have to look at each colony and decide if the colony in question is going to want to swarm a little later on. And if it is, do something about it **right then.** Do what?

Ralph Barnes, of Oakland, Nebraska, is one of the best beekeepers I know. He has a rule which I have found adaptable to most circumstances. It is, "Divide or requeen." That is all there is to it, just as simple as that. And it prevents swarming just as efficiently as the beekeeper is able to evaluate his colonies at the time period above mentioned. It means just this, if a colony is going to become strong enough to become a swarming problem divide it then and there and remove the possibility of future trouble. If it is not going to become a swarming problem the chances are that it will not reach honey gathering strength in time to produce a crop. Since it has had all the necessities for being as good as its neighbors, and isn't, the queen must be to blame and should be replaced, also **then and there.**

The rest of this article will concern itself with the business of dividing and should be enough to sum up one man's observations on the swarming problem. The kind of dividing I am going to tell you about has no part in making increase. The divide is made all under one cover. The "split" or "divide" is set up over a solid or screened inner cover with an entrance of its own, and given a young queen. It is the beginning of the two-queen system, but right now it is a divide and the best little swarm preventer that you ever tried. Aside from being almost sure-fire swarm prevention it has the added advantage of getting and holding more bees in the field force of the colony than one queen could possibly produce. It keeps them all coming to the same hive, yet divides them at a time when the desire to swarm is almost sure to take over if nothing is done. This system requires the minimum of equipment needing only an extra inner cover and two queen excluders one of which you will also need later. And when you follow it to the end of the season each colony so operated has a young queen and the best possible reserves of pollen and honey. The two-queen system has been described before, but from the angle of being a swarm preventive let us look at it again.

Only those colonies that are going to be strong enough to swarm at or before the beginning of the main honeyflow need be considered. The dividing should be done six or seven weeks ahead of the main honeyflow. But since it takes time, and one cannot do too many in one day, five weeks will serve the purpose although we have found six or seven to be better. The colonies should have brood in 10-12 combs, and if they have been well provisioned and had good queens the fall before, they will have. They should also have an abundance of bees and they will have unless they have just suddenly come up to that amount of brood. For the divide, take as much of the sealed brood, and emerging brood as possible. Try to get the equivalent of six full combs. Where combs with a mixture of sealed and young brood are encountered, as is often the case at this time of the year, the beekeeper will just have to use his judgment, taking the more mature for the divide. Leave all the adhering bees on the combs, and shake several extra combs of bees from the brood that is to be left below. All the field bees will return to the lower unit the first time they go out, anyhow, so it pays to make the top unit or divide look a bit top-heavy. Care should be taken to keep track of the old queen and leave her with the young brood below. Each unit should be well provisioned with honey for it is now out of balance.

The hive of young brood with the old queen should now be left on the bottom board, given an excluder and an extra set of combs, and then the extra inner cover and the divide set on top. It should have an entrance of its own, preferably an auger hole of not less than ⅜ inch and have a young queen caged at this time. A word about the upper entrance. If the colony has had an upper entrance up to this time the divide should be faced to the back until the young queen is laying, but the best method is to close the upper entrance some time ahead of this operation, so that the colony is habitually using only the lower entrance when this operation is done.

In ten days, check to see that the young queen is laying. Since the divide will have only brood and young bees, the chances are almost 100% that she will have been accepted. When the young top queen has sealed brood of her own and **not before,** the two units should be united, but the queens kept separate. This then will be a full fledged two-queen colony. The simplest way we have found to do it is to place two sets of combs on the lower excluder, then another excluder. On top place a single sheet of newspaper where the divider board was, and as soon as the bees chew through the newspaper they will operate as one unit with each queen presiding over her own domain. It is necessary to keep the queens separated by two queen excluders with two sets of combs between them.

When the main honeyflow is well under way the young queen and her brood may be set down on top of the old queen's brood nest, and all the supers put on top. This practice is advisable where flows are comparatively short, say about three weeks. When a long flow of perhaps two months is expected it is best to continue to operate the two-queen unit for at least half this time. For more details of the two-queen system read U.S.D.A. Bulletin E-693.

Colorado

Automatic Demareeing

by Charles S. Engle

AT a meeting of Minnesota beekeepers some years ago the late Father Jager was extolling the fine qualities of the Carniolan bees when an amateur beekeeper inquired "Father, when you wish to keep Carniolan bees from swarming where do you place their brood?" Father Jager promptly replied, "Outside the hive." There were several beekeepers present who had had experience with Carniolan bees and they agreed that Father Jager's method of swarm control for this race of bees was correct. However, with the more common races of bees many successful methods have been developed.

During the 1920's I practiced a modification of the Demaree method of swarm control at the beginning of the sweet clover honeyflow. At the time, I was operating in northwestern Iowa and my bees were in ten-frame hives; standard bodies were used as supers. After checking the colonies in the spring the object was to keep the colonies building up for the main flow. Brood and bees were drawn from the stronger colonies and used in building up the weaker colinies. It was my intention to have every colony in prime honey storing condition at the opening of the sweet clover flow. All queens not up to par were replaced with queens from the South.

In what we usually speak of as normal years, many of the colonies would prepare to swarm during the early part of the main flow. In order to prevent swarming I usually started to "Demaree" the bees just as the flow started. A helper and I would go to a yard I considered the most likely to develop the swarming fever first. We placed two hive bodies of combs and an excluder to the rear of each normal colony. The first colony of bees in a row was moved back of their original stand, a bottom board was placed in the exact spot the colony had occupied. A hive body of combs was then placed upon this bottom board, then two combs were removed from this body. I then examined the combs of brood in the hive just moved to the rear and selected two combs containing considerable pollen and some unsealed brood, or both unsealed and sealed brood. These combs were placed in the body on the bottom board, a comb of brood next to each wall. The next step was to place the queen excluder upon this bottom hive body and upon the excluder a body of drawn combs and above the combs an empty body. I then proceeded to glance at each comb in the two-story brood chamber moved to the rear in hopes of seeing the queen. If I saw the queen, I placed her at the entrance of the new hive and placed the combs from the old brood chamber into the empty body, which was the third body above the bottom board. When I failed to see the queen upon a comb, I shook the bees off the comb directly in front of the entrance. Little time was spent in looking for queens. I planned to "Demaree" a yard of 100 colonies per day.

On my next visit to a "Demareed" yard, I checked the bottom chamber of the new hive in order to make certain that the queen was confined there and was doing a normal job of laying. Usually the queen started laying on one side of her new brood chamber, however, some queens would lay about an equal amount next to the outside combs of brood and pollen. Within a week or ten days a good queen usually had eight solid combs of brood below the excluder. As the honeyflow waned there were supersedure cells built in the new brood chamber of many of the colonies.

When I first practiced this method of swarm control I feared that the bees would swarm with virgins reared upon the brood placed in the top story of the hive. However, I learned that practically none of the virgins caused the bees to swarm. I found that when a virgin reared above an excluder found an upper flight hole she would generally take a mating flight and then establish a brood nest in one of the upper stories. My operations finally included an upper entrance at the rear of the top story.

Apiaries placed in the open seldom produced two-queen colonies by this method of swarm control. Apparently most of the virgins became confused and were lost for the want of suitable landmarks when they returned to the apiary, after taking a flight.

I learned that a young laying queen above the excluder would soon turn a body of honey into a body of brood; therefore I proceeded to put the young queens into the lower brood chamber as soon as found. At first I took time to find and dispose of the old queen in the bottom brood chamber before I put the young queen below. For the want of time I tried shaking the new queen and the bees off the comb of brood upon which I found her, in front of the lower hive entrance. Upon later examinations I found that practically every young queen put below in this manner, had been accepted and the old queen disposed of.

When using this method of swarm control I often had to use considerable foundation in the place of drawn combs. When the space between the two outside combs of brood and pollen was filled in with frames of foundation, the queen would lay in the newly drawn cells about as fast as the bees drew out the cells; this worked nicely during the honeyflow.

In later years I have varied my attempts at swarm control. Most of our bees are now in Modified Dadant hives and located in various parts of the country. I find that a swarm control method that works well in one locality does not quite do the job in another locality. I yet consider the method just described to be good for the type hive I used in the Middle West in the sweet clover territory.

Texas

Emergency Swarm Control

by G. H. Cale

PERHAPS the entire content of this should be confined to the title—"Emergency Swarm Control" but I want to comment on some of the other articles. I am fortunate to be the last to write in this Round-up, so that gives me an advantage. Also sitting at the editor's desk gave me a supreme advantage in knowing all that the others said and allowing me to confine myself to something that I do not think any of them have covered.

From my own point of view as a beekeeper, I like all of the articles in this Round-up. The standard old-time favorite, Demareeing, is not given as such, but Engle's plan is really a mechanized Demaree plan with the addition of requeening by top mating. I visited Engle at the time he was using the method in western Iowa. It was very satisfactory and combined swarm control and requeening in one operation.

The method advised by Schaefer is something new to me, worth a trial. The plan of dequeening and requeening by Killion in comb honey has been worked out by him into a standardized practice which seems to be the best way for comb honey production.

The behavior of swarming as described by Dr. Haydak, the first in this series, is a new concept of this behavior and I believe that it has more of the elements of probability in it than any I have read before.

All of the writers in this Round-up have contributed their own share in different ways to the problem of swarm prevention and control. The old standard methods of preventing swarming are still good. Keep the colony expanding and don't let it become crowded in a single brood nest. It may mean reversal when two hive bodies are used. I even have been trying to use two hive bodies, Modified Dadant size, with some success. So has Lyle.

The age of the queen has much to do with the amount of swarming because supersedure will be carried out at the same time swarming is usually imminent. The older queens therefore will be more involved in swarming than the young ones. As Killion says, queens of this year's raising, particularly when mated in the colony from ripe cells practically never swarm.

Often a crowded brood nest even under reversal in some seasons will impose a stimulus toward swarming. Making sure that the queen has room, particularly in the upper sides of her brood area in which she can lay is an important preventive measure. It is not advisable, however, to break up the brood nest pattern by inserting either foundation or drawn combs between brood combs. Always have the empty space at the sides, even if other combs have to be removed. There is some evidence too that when swarming is most likely to occur a variation in weather with a succession of shut-in periods due to rain or cold alternating with periods of bright sunshiny active days will produce a make and break pattern in colony behavior, particularly if there is any tendency for the colony to be crowded in quarters. That in itself will stimulate swarming considerably. We have found that the presence of sugar feed or thin sirup or both will sufficiently occupy the bees as far as food intake is concerned to reduce the effect of this alternating weather period.

Then too, in populous colonies that are well along in the flow and are right at that time when they could easily enter swarm preparations, if the younger wax producing bees can be kept busy drawing foundation, either at the sides of the brood nest or above the brood nest or in the second hive body or in a super, there will be less tendency to swarm.

One can discuss to a considerable extent the particulars of swarm impulse, but there will always be those colonies which, in spite of anything that can be done, will swarm if they have a chance. In some years there will be more of these than in others. We must develop a kind of management which will reduce this swarming to a low point.

In the first place, when colonies are growing up in the spring, we often switch the location of weak colonies with strong ones to reduce the population or to build up the population. This has a tendency to even things out so that there is considerable delay in the swarm impulse.

Right at the height of the swarming season, however, with say half a dozen or a dozen colonies persisting in building queen cells, whether or not they want them for supersedure or for actual swarming, we try an emergency measure which is really the main purpose of this article. This emergency method consists in switching these colonies with weak ones, so that they will lose population, or if there are no weak ones to switch them with, relocating them elsewhere in the yard at new spots where they will lose their population to the colonies surrounding the old stand. The loss of population in these replaced or switched colonies is considerable and if they have cells that are ripening, they may be allowed to keep them because they will in most cases be on a supersedure attempt and they will requeen themselves. If, however, on examination before locating them in a new place, it is found that the cells are true swarm cells, then they should be removed. You will find the majority of these relocated colonies are attempting to supersede. Some honey will be lost, also some population will be gained by others, and the net result will probably be as satisfactory as it would have been otherwise. This plan will not work satisfactorily with colonies that have already ripe cells ready to emerge as the time for population drift is too short. The only way you can treat this kind of colony is to break it up into nucs for increase.

How much each beekeeper's truck is worth as an "advertisement on wheels" depends on how well it does two things, according to an article in a recent issue of a trade publication by the Dodge Division of Chrysler Corporation. First, your vehicle must be clean, attractive, and distinctive in appearance to catch the eye of the passer-by. Second, it must convey a message that will make people remember and think well of your business.

Strong bright colors aren't the only ones that will call attention to your truck. Different colors are symbolic of different things; you might want one that suggests cleanliness. White or light colors are associated with purity. Psychologists tell us that most men like blue while women prefer warm colors, such as red. Warm colors are the strongest in attention-getting powers. For example, warm yellow, orange and red (in that order) would give your truck the greatest visibility. High visibility also can be achieved with new reflective paints that glow in the daylight, producing an unusual effect.

Besides being clean and attractive, speaking well of you and your product, your trucks can carry a sales message wherever they go!

(Drawing reproduced from "The Job-Rater" Vol. 5, No. 4, published by Dodge Division of Chrysler Corporation.)

The Vermont Beekeepers Association booth at the recent Boston Poultry Show. Invited to Boston by the show management and starting from scratch on very short notice we managed to put on a display that attracted much favorable comment. Featured was extracting equipment, small apiary needs, live package bees and many different packs of honey. Although the educational feature was stressed, honey sales were good.

Demonstrators of equipment and lecturers: Charles Mraz, Mr. and Mrs. Philip Townsend. Honey Salesmen: Charles Barozzi, William Butterfield, Robert Mead. Package bees were obtained from Garon Bee Co., of Donaldsonville, La.

I might add that the design of the exhibit was like Topsy, it just grew; we improvised as we went along and hoped for the best.

Osborn photo from Robert Mead.

FRUIT HONEY SNACKS

18 prunes or dried apricots
¼ cup honey
18 small round crackers
¼ cup peanut butter

Rinse prunes or apricots, cover with water and boil 10 minutes. Drain and cool. Remove pits by slitting prune along one side. Blend honey and peanut butter and spread on crackers. Top with a prune spread open, or an apricot half. Makes 18 snacks.

HONEY COCOA SIRUP

1¼ cups cocoa
1 cup sugar
½ teaspoon salt
½ teaspoon ground allspice
½ teaspoon ground cinnamon
1½ cups boiling water
½ cup honey
2 teaspoons vanilla extract

Combine cocoa, sugar, salt, and spices. Add boiling water. Blend. Place over low heat, bring to a boil and boil 5 minutes, stirring constantly. Remove from fire. Cool. Add honey and vanilla. Store in covered jar in refrigerator until ready to use. Approximate yield: 2¼ cups.

To serve: Heat ¼ cup Honey Cocoa Sirup with 2 cups scalded milk over boiling water. Before serving, beat with rotary beater. Yield: 3 servings. Honey gives this sirup an unusual smoothness and a delicious flavor in addition to extra food value.

American Honey Institute
Madison, Wisconsin

Characters and Habits of Moth Larvae Infesting Honeybee Combs*

by Dr. V. G. Milum

(Continued from April)

(Note — The number preceding each name corresponds to the number of the same species in the photograph of the larvae.)

1. The greater wax moth **Galleria mellonella** (L.)—The approved common name is "wax moth," the descriptive term, "greater," being added here to distinguish it from the lesser wax moth and six other species of moths whose larvae either infest honeybee combs frequently or have been reported as occasionally damaging combs. The younger larvae of this species are grayish white, extremely active, rapid running, with thoracic legs prominent. Older larvae are of solid dirty gray color, up to 1 1-8 inches length, later instars being more plump than those of the lesser wax moth. Newly hatched larvae may feed at first on isolated portions of comb, on or beneath surface, forming silken tunnels with added frass and bits of comb, gradually assembling in a mass of webbing, with tunnels extending through the remainder of combs in search of food consisting of the meconium, cast larval skins, and pupal cases of the bees lining the cells, in brood combs either with or without pollen. Development dependent upon temperature and food available, with a reported average larval period of 28.85 days at 35 degrees C. (95 degrees F.)

In pupating, the larva usually crawls upward then grooves out a shallow place in the wood of frames or other portions of the hive such as the inner cover or side wall of the hive. The cocoons often in rows or tiers, side by side, varying with larval size, up to 1 1-8 inches, usually white, but sometimes are covered with bits of frass. Each larva, before actually changing to a pupa, cuts three flap-like slits in an exposed end of its cocoon to facilitate the future adult's emergence.

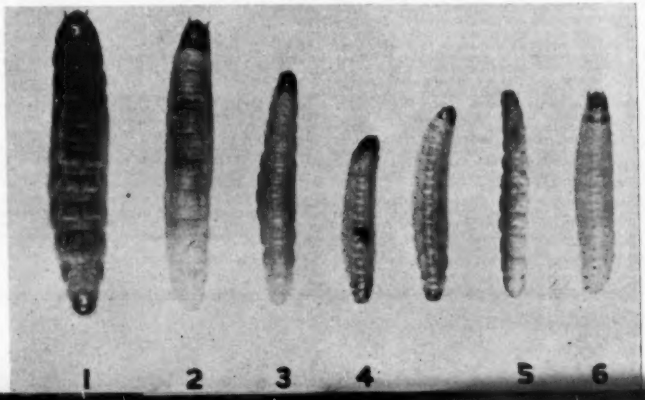
Injury of this species, especially on comb honey, is often incorrectly identified as that of the lesser wax moth or the bee louse, **Braula Cocca** Nitzch. The greater wax moth is often accused of killing colonies when AFB should be blamed for first weakening the colonies.

2. The lesser wax moth, **Achroia grisella** Fabr.—Young larvae are white in color, gradually becoming darker gray, more nearly resembling the somewhat more plump greater wax moth larvae than any of the other species. First and second instar larvae roll or curl in snail-like form if prodded or shaken from combs. The posterior margin of each spiracle is thickened and darkened. Full grown larvae range in size up to 3-4 inch, depending upon abundance of food. They are distinctly scavengers, may feed on brood combs with and without pollen, but more often in frass or other debris in bottom of hive, not easily enticed from same. Soon after hatching, larvae construct individual tunnels, covered with frass or excreta and bits of comb, extruding heads and parts of bodies to secure food. In brood combs, the greater portion of the first tunnels are along midrib. Pupation is in tough cocoons, 1-2 inch in length, usually singly at end of larval tunnel extended from the food mass and always covered with bits of black frass. At room temperature, 50 days was required to complete the development from egg laying to adults.

The Indian meal moth, **Plodia interpunctella** (Hbn.)—The full grown larval size varies up to 1-2 inch. The body color varies from a solid color of white to pink, most commonly a pale creamy yellow, sometimes green. The head and thoracic shields are russet; the areas about hairs (piliferous warts or plates) on body segments are not easily observed (no pigmented rings), hence quite distinct from the definitely spotted larvae of the almond and Mediterranean moths and **Vitula edmandsii.**

The larvae are general feeders in stored grain and cereals, dried fruits, candies with nuts, and dead insects. Females are readily attracted to honeybee combs for egg laying. Larvae develop in unmelted cappings, brood combs either with or without pollen and honey, also in combs containing dead clusters of bees. May cause injury to comb honey, especially if cells of pollen are present. Newly hatched larvae crawl actively but soon construct a flimsy webbing on the surface of full combs, while with empty cells present they often wall themselves in with a drum-like membrane, behind which they feed and eventually pupate in flimsy cocoons or crawl away from the feeding area to cracks and crevices. At

The larvae of six species of moths which attack combs of honeybees. 1. The greater wax moth, Galleria mellonella (L.). 2. The lesser wax moth, Achroia grisella Fabr. 3. Female of the Indian meal moth, Plodia interpunctella (Hbn.). 4. Male and female of the almond moth, Ephestia cautella (Walk.). The male is distinguishable by its smaller size and by the presence of a pair of dark spots, the internal testes which are apparent beneath the skin on the dorsal surface of the fourth abdominal segment of the older larvae. Likewise the male larvae of the Indian meal moth and the Mediterranean flour moth may be determined. 5. Vitula edmandsii (Pack.). 6. Female larva of the Mediterranean flour moth, Ephestia kuehniella Zell. Note: All larvae were photographed from freshly killed specimens excepting Vitula edmandsii (Pack.) which was a preserved specimen, being somewhat shriveled with its normal spotting, quite similar to that of the Mediterranean flour moth, not being visible, because of discoloration by the preservative fluid. All were nearly full grown or mature larvae, thus showing the approximate relative sizes, except in the case of the greater wax moth where a smaller larva was used. Thus the latter appears about two times natural size while the other five species are shown approximately three times natural size of the mature larvae.



*Contribution from the Entomological Laboratories of the University of Illinois.

room temperature, 28 days was required from egg laying to adults.

4. The almond moth, **Ephestia cautella** (Walk.)—The younger larvae are white, the full grown, up to 1-2 inch, may vary from white to pink with distinct dark pigmented spots around the setae or hairs on the sides and back of body segments. According to body size, the spots are comparatively larger than those of the Mediterranean flour moth and **Vitula edmandsii.** The principal food is dried fruits, especially figs and nuts, also stored grains. In personal correspondence Farrar has reported the almond moth as feeding on brood combs containing pollen at Laramie, Wyoming. From mated females established on pollen combs at room temperatures, Milum has reared the next generation adults in 28 days, but all attempts to rear on pollen free combs or in the absence of dead insects such as the parental bodies were unsuccessful. On honeybee combs, its habits are similar to the Mediterranean flour moth, but with slightly less webbing. Pupation may be in a flimsy cocoon in the food mass or in cracks and crevices to which the larvae have crawled.

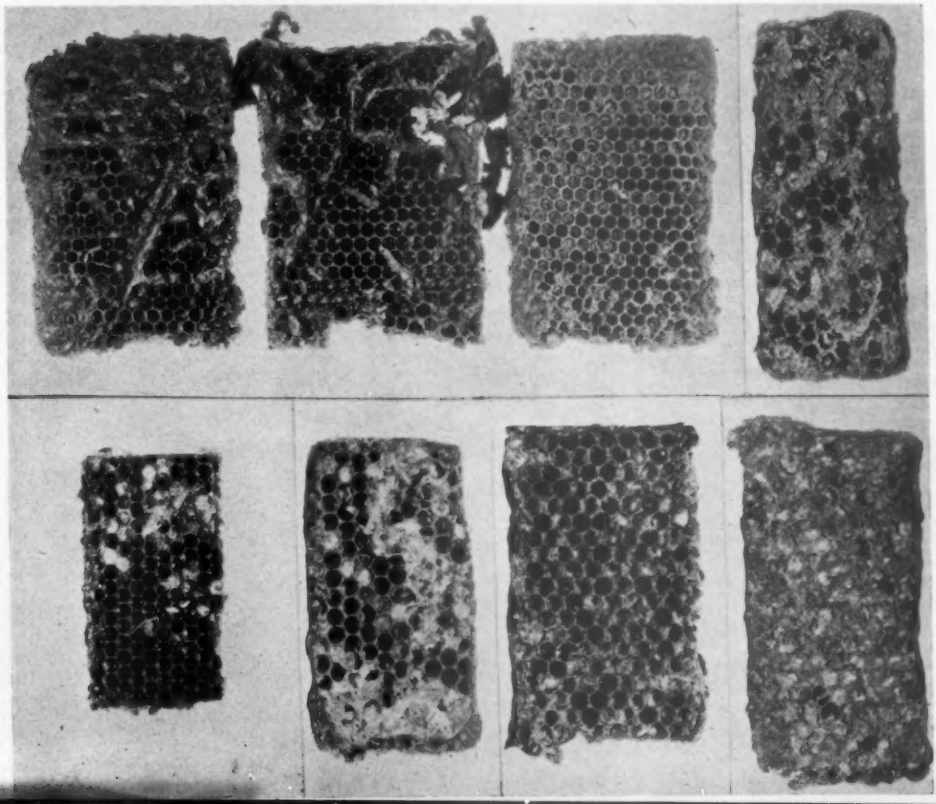
5. **Vitula edmandsii** Pack. (no common name)—The larvae of this species are commonly listed as widespread pests of bumblebee nests. Richmond has reported it as damaging comb honey in Colorado. Milum has reared adults of it from larvae feeding on discarded brood combs from Nebraska, from larvae feeding in winter on combs submitted from Manhattan and Hall, Montana. The pinkish larvae are quite similar in size and color to those of the Mediterranean flour moth, with the known characters for separation not especially satisfactory. Pupation is in a flimsy cocoon (similar to 3, 4, and 6), but with the fall generations only after exposure to cold, simulating the overwintering larvae of the codling moth.

6. Mediterranean flour moth, **Ephestia kuehniella** Zell.—Larvae, up to 3-5 inch in length when full grown, are generally white to pink, sometimes with a yellow or greenish tinge. Dark spots (pigmented rings) around setae or hairs on the dorsal or top sides of abdominal segments are distinct, but comparatively smaller than those of the almond moth, but similiar to **Vitula edmandsii.** The larval habits are similar to those of these species as well as the Indian meal moth, but with slightly more webbing. This latter activity is its chief damage in flour mills where it is commonly present. While the principal food is flour, it will attack whole grain and cereals, especially rolled wheat. Milum has reared adults from combs containing pollen in a total developmental period of 45 days, but all attempts to rear on pollen-free combs are unsuccessful. This and the fact that the adults are not readily attracted to combs for egg laying, plus the fact that the identification of the adults and larvae of at least two other species are easily confused with it, lead the writer to suspect that many alleged cases of honeybee comb infestation by this species have been incorrectly identified. (To be concluded)

Typical injuries of five species of comb infesting moth larvae.

Top row, left to right: Injuries of the (greater) wax moth, the lesser wax moth, and early, and more advanced stages of the Indian meal moth.

Bottom row, left to right: Early and more advanced stages of the Mediterranean flour moth, and injury of the almond moth, 34 and 50 days after introduction of adults or after feeding of one and two generations of larvae.



Flash Heating of Honey Using Plate Equipment

by Herbert R. Pallesen
Cornell University, Ithaca, N. Y.

HIGH-TEMPERATURE, short-time heating of milk has met with increased favor during the past few years. This can be explained largely by the fact that the equipment has been made reliable and foolproof through use of sensitive automatic controls and the change, by many states, in the laws governing the term pasteurization. Application of rapid heating to the honey industry is not new but an efficient unit for obtaining a desirable balance between heat transfer and flow rate has not as yet been put into plant use.

The advantages and disadvantages of such a method are as follows:

Advantages

1. Greater economy of floor space.
2. Greater flexibility of operation.
3. Lower cost of equipment.
4. Completely automatic.
5. Less damage to honey.

Disadvantages

1. Uniform flow rate required.
2. Creation of a bottling problem.

ECONOMY OF FLOOR SPACE

It has been stated that considering plate machines in milk processing, the floor space is about 20 per cent of that required for 30-minute holding equipment.

FLEXIBILITY OF OPERATION

Operation can be discontinued at any time without causing damage to honey.

COST OF MACHINERY

The cost of machinery is about one-half that of similar 30-minute holding equipment for milk processing.

COMPLETELY AUTOMATIC

The majority of the high-temperature systems are completely automatic, thus eliminating the element of human error. This will result in uniform treatment of all batches, hence a more standard pack. A breakdown at the filling machine or at any other piece of equipment will not result in a large quantity of honey being overheated.

DAMAGE TO HONEY

Honey is exposed to the heating medium for a much shorter time, and there is a shorter heating and cooling lag due to rapid heating and faster cooling, causing less injury to flavor and color.

UNIFORM FLOW RATE REQUIRED

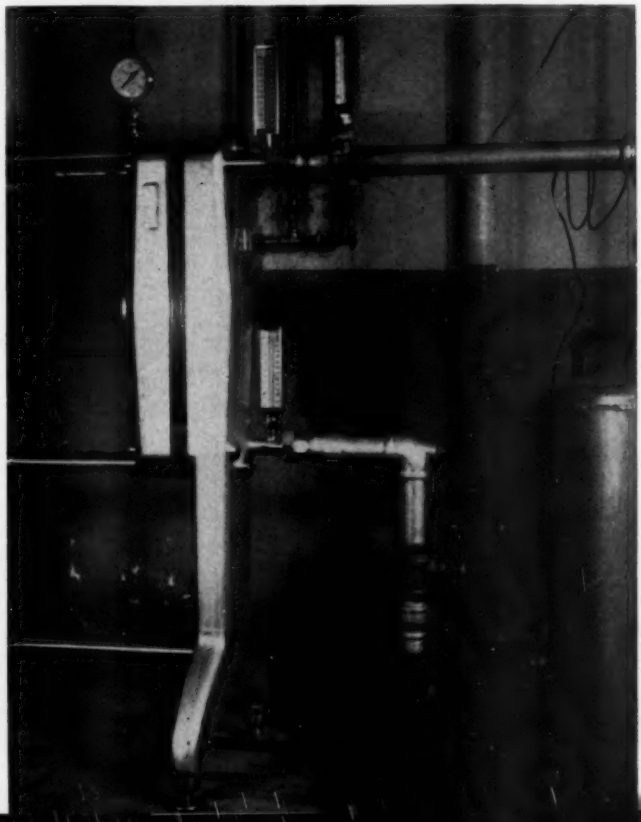
The most efficient operation of a flash unit is obtained when the machine is operated at full capacity and has a uniform flow rate to the machine. Higher heat transfer rates are obtained when these conditions exist.

BOTTLING PROBLEM

In using this type of heating unit the process should be continuous. This means that a bottling problem will arise if the filling machine used is neither efficient nor of a suitable capacity. Holding tanks can be used, but there should be some cooling so that the heat peak can be taken from the honey to eliminate heat damage. When using a flash heating unit the bottled honey may be cooled in a jar cooler or a cooling section can be installed in parallel with the heating section. The former suggestion requires that a waterproof label be used or a jar drier be installed prior to labeling. The latter suggestion presents problems that have not as yet been solved. It is hoped that research now under way at Cornell will eliminate these difficulties making it possible to have a complete high-temperature, short-time heating system for honey.

Technically, it is possible to flash heat honey by the short-time method in any type of heat exchanger. How-

Plate type heat exchanger assembled for flash heating. This equipment machine was loaned by the Walker-Wallace Company, Inc., of Buffalo, New York.



ever, considering ease of operation, and flow characteristics of honey, the plate type heat exchanger is far superior. Also the aim of flash heating of honey is to heat and cool as quickly as possible so as to keep heat damage to a minimum. This condition can only be met by bringing the product in contact with a relatively large amount of heat exchange surface. In a plate type heat exchanger, less than 0.6 of a pound of honey will contact 2.7 square feet of effective surface as compared with 0.14 of a square foot in a 2-inch tubular type exchanger. In addition, the formation of the plates is designed to cause the greatest amount of turbulence. While this does not increase the heat exchange

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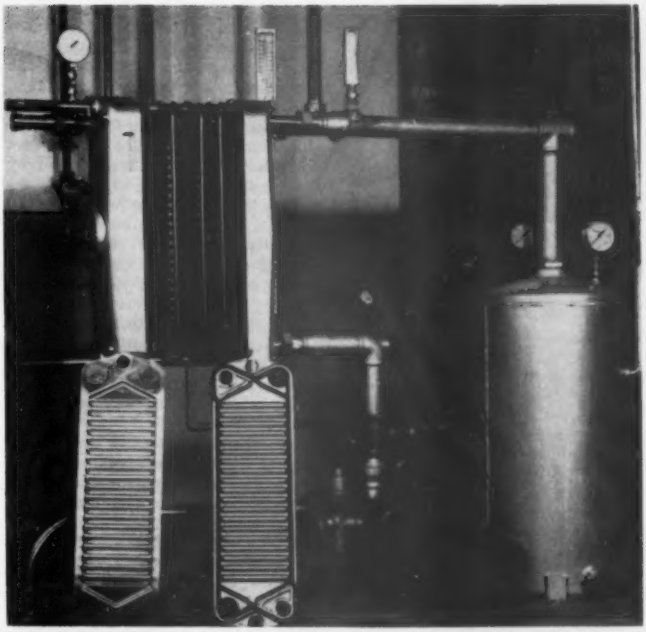
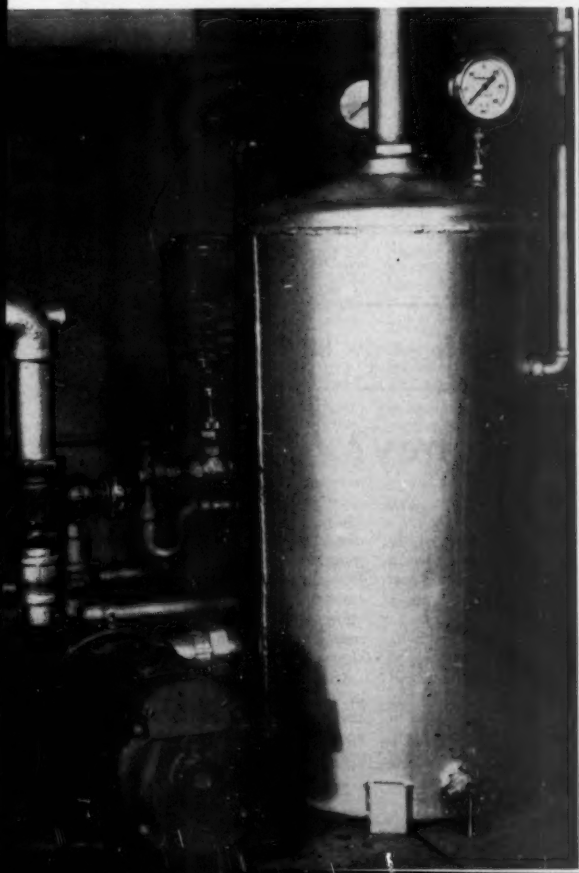
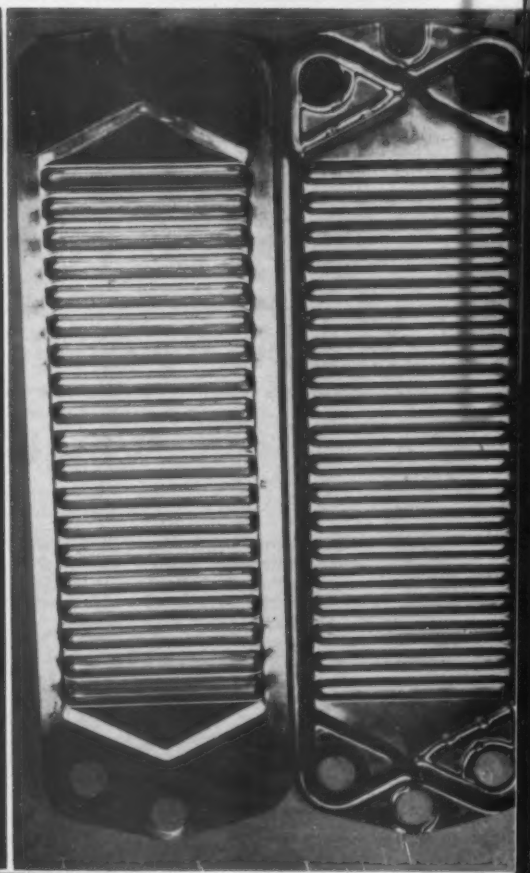


Right: The heat exchanger disassembled showing the arrangement of the plates.

Below left: The water heating and circulating system for the flash heater.

Below right: A close up of the two plates used for flash heating. The grooving of these plates increase the effective heat exchange surface by 35% and also it increases turbulence thereby keeping core slippage to a minimum.





capacity as much as it would with a product of a lower viscosity, nevertheless it does help.

Honey in a tubular type heat exchanger acts as a series of concentric layers, the large layers acting as a lubricant for each successive smaller layer. This is known in the food industry as core slippage and, because of this, an exceedingly high temperature of the medium is needed to bring the center of the stream of honey up to the desired temperature. This results in the outside layer being heated to a higher temperature than is needed, causing heat damage. A tubular type heat exchanger has been designed at Cornell which is successful from a heat transfer point of view, but to get a desirable flow rate, high pressures are needed since the inside diameter is only ½ inch. In using such small tubing the problem of core slippage has been partly overcome, but it is necessary to use high pressures to overcome the increased friction factor.

By performing a simple experiment it can readily be shown that there are two entirely different types of flows in pipes. This experiment consists of injecting, into a fluid flowing in a glass pipe, small streams of colored liquids and observing the behavior of these colored streams. If the colored liquid streams appear in an irregular pattern or are dispersed at random throughout the main body of the fluid, the flow is said to be turbulent. The more turbulent the flow, the greater the heat exchange since there is a mixing action within the pipe. Water and most liquid food products fall in this category. Honey, however, flows in what is known as a viscous or streamline flow. Flows of this nature are characterized by the shearing of concentric cylinders of the fluid one past another in an orderly fashion. The velocity of the fluid is greatest at the pipe axis and it decreases sharply to zero at the pipe wall. From this it can be seen that the center core will move through a tubular exchanger little changed in temperature. To get good heat transfer, a turbulent type flow should be induced but extremely high pressures are required which makes it impractical. The unusual flow characteristics of honey are not adapted to the tubular heat exchanger even though a small size tube is used, since there cannot be obtained the most desirable balance between heat exchange and flow rate. With a plate type heat exchanger, core slippage is practically eliminated, some turbulence is present and the effective heat transfer area is much greater per given volume of honey.

The plate type heat exchanger used in this preliminary test is sold under the trade name of APV PARAFLOW and is of British design. This plate exchanger is made up of an assembly of grooved gasketed stainless steel plates which are suspended between a head and a follower on a stainless steel shaft. Pressure is applied to the follower by means of twin screws which compress the gaskets forming a completely closed system. The capacity, heat transfer efficiency, and flow direction are controlled by changing the number and arrangement of plates.

The heating medium used is water, circulated at the rate of approximately 300 gallons a minute. Heat is supplied to the medium by means of steam injected through a steam- and water-mixing tee. Temperature is accurately controlled by using a self-acting temperature controller which regulates the amount of steam injected into the system. The water is held in a 30-gallon surge tank, supplied with a relief valve so that the condensate from the steam can be drained automatically.

The plates are assembled so that the grooves fit one into another resulting in irregular parallel passages being formed. Honey is pumped through alternate passages, the water medium filling the others, which results in a thin layer of honey surrounded by hot water. This fact, plus the high rate at which the medium is pumped, ensures efficient and rapid heat transfer.

Honey can be flash heated efficiently and almost without damage to flavor and color, using a plate type heat exchanger. Flexibility of operation, lower equipment cost, and greater economy of floor space, important factors to any packer, can be obtained. The advantages of this piece of equipment appear to outweigh the disadvantages known at this time.

Talks on Honey and Health - by D. C. Jarvis, M.D.

Why Use Honey?

(Continued from April)

From these observations another new framework within which to carry on medical reasoning was developed. When the patient complained of indefinite symptoms which were not characteristic of any one disease, one turned to this framework of trace minerals within which to consider the patient's complaints. Often the prescribing of honey for the trace minerals it contained solved these indefinite symptoms of short duration which occurred in various parts of the body showing the human body was off balance and not functioning perfectly as it should.

When the new antibiotics such as penicillin came into use the thought occurred that there must be natural antibiotics and that the honey bee knew about them and stored them in the beehive against the day of need. I had learned that some native Vermonters chewed honeycomb cell cappings when sickness appeared and in this material might be found the natural antibiotic material that when chewed would prevent ordinary sickness and if it did appear would cut short its duration.

One chew, equal to a chew of gum, is chewed for fifteen minutes and then what remains in the mouth is spit out. As a preventive measure, one chew each day is taken when

sickness is prevalent in the community as it is apt to be during the winter months. When sickness does appear one chew is taken every hour for six chews and then one to three times a day depending upon how great the need happens to be. The ability of honeycomb cell cappings when chewed every hour for six chews to promptly stop a head cold or a beginning attack of influenza demonstrates its antibiotic ability.

From these observations relating to honeycomb cell cappings when chewed, a new medical framework within which to carry on medical reasoning was developed. When a patient asked how sickness might be avoided and continued good health be maintained, the chewing of honeycomb cell cappings was suggested.

Let us now consider briefly how to use these fifteen different frameworks within which to carry on medical reasoning.

1. If we are dealing with a case of typhoid fever we naturally carry on our medical reasoning within the framework of the theory of infection. We search for the source of the typhoid fever germs in the water and milk supply and try to discover whether an individual having contact with the patient is a carrier of typhoid fever germs.

2. If we carry on medical reasoning within the framework of acidosis and alkalosis we become interested in acid ash forming and alkaline ash forming foods. If we eat eggs, meat, fish, poultry, oysters, breads of all kinds, cereals, and pastries we are eating acid forming foods. But if we drink milk, eat nuts, fruit, vegetables, honey, peas, beans, and white potatoes we are eating alkaline ash forming foods.

Mother Nature intended us to eat fruits and vegetables which are generally acid in reaction before they enter the mouth but leave an alkaline ash in the body. It is frequently puzzling to people how a fruit which tastes acid and does contain acid can be an alkalinizer in the body. This is due to the fact that the acid we taste is usually an organic acid which the body is able to burn up as fuel in the tissues while the rest of the fruit contains a predominance of alkaline ash forming elements so that an alkaline ash is left in the body after the food is burned in the tissues.

3. If a case of beriberi, pellagra or other clinical condition suggesting a vitamin deficiency presents itself, the vitamin framework in which to carry on medical reasoning is used. By reasoning within this framework, we are able to solve a number of clinical problems by prescribing the needed vitamins. For a long range program, honey is prescribed because it not only contains vitamins but also the trace minerals which seem to be associated with the effectiveness of the vitamins in the human body.

4. If the patient has goitre or evidence of other endocrine disturbance the endocrine framework within which to carry on medical reasoning is used. While using this framework one needs to keep in mind that honey acts as a body sedative.

5. If a disturbance of the normal fluid balance in the body is present, one turns to the framework representing the potassium-calcium balance at the cell wall. Two teaspoonfuls of honey each meal is prescribed for the potassium that honey contains. This potassium increases the penetrability of the cell wall which permits food material to enter the cell wall and the products of vital cell activity to leave the cell. This ability of honey to increase the penetrability of the cell wall may account for the observation that honey is a magnet for fluid.

6. If inflammation is present or there is evidence of the presence of a deposit of calcium in the body, one turns to the medical framework in which medical reasoning revolves around the phosphorus-calcium balance. Honey taken by mouth will lower the blood phosphorus level.

7. If evidence of microorganism growth is present we seek to learn the reason why the human body has become a candidate for humus with which to enrich the earth's soil and is being destroyed by microorganism growth in order to convert it into earth humus. We turn to a study of the daily protein intake as representing a possible cause of the human body becoming a candidate for humus. If the daily protein intake is too high it is lowered and honey each meal is prescribed to raise the carbohydrate portion of the daily food intake.

8. When checking the daily food intake of an individual, an effort is made to learn whether the daily intake of protein food is being protected by the intake of an acid with it. One also notes whether foods made from white flour are being protected by the taking of honey with them.

9. If we are in doubt as to the cause of the clinical condition present we turn to the framework represented by the urine reaction within which to carry on our medical reasoning. We endeavor to learn whether the clinical condition appears on an alkaline urine reaction background or an acid urine reaction background. When this is learned a regimen is prescribed that will shift the urine reaction background. When this takes place often the clinical condition disappears altogether or improves.

10. If growth of the human body is at a lesser rate than it should be honey is prescribed at each meal for the potassium it contains. One can check the growth rate of the body by making a file mark at the base of the thumb nail and the nail of the big toe. It requires five months to grow a new thumb nail and ten months to grow a nail for the big toe.

11. If the health of the digestive tract is being considered and a change of the intestinal flora is desirable, one turns to the framework which deals with an intake of apple cider vinegar and honey made by adding two teaspoonfuls of honey and two teaspoonfuls of apple cider vinegar to a glass of water at each meal as a means of changing the intestinal flora.

12. When mucous membrane secretion alters its character we turn to the framework which deals with the influence of the daily protein intake on this secretion. Honey is prescribed to thin this secretion if it is thickened.

13. When muscle twitching, muscle cramps or muscle paralysis appear we carry on medical reasoning within the framework that uses honey to raise the blood calcium.

14. In checking the health of individuals we turn to the framework which considers the daily intake of trace minerals. In order that we may be sure of a daily intake of trace minerals honey is prescribed to be taken at each meal.

15. If an individual wishes a simple source of Mother Nature's natural antibiotics then one turns to honeycomb cell cappings as a source of natural antibiotics that will enable the ordinary individual to go through the year free from ordinary sickness such as head colds and influenza.

The End

Members of the British Organizing Committee, left to right, D. S. Hudson, Vice-Chairman, B.B.K.A.; W. B. Williams, Chairman B.B.K.A.; Dr. R. N. Barnes, Chairman of the Committee; and Nancy Ironside, Honorary Organizing Secretary.

International Beekeeping Congress

by Herman F. Menke

It would be impossible to present an adequate summary of these meetings without using the entire space in this issue, but at least the efforts of Nancy Ironside, W. B. Williams, Dr. D. S. Hudson, Dr. C. G. Butler, Dr. O. Morgenthaler, Dr. J. N. Tennent, Mr. and Mrs. Norman Slater and Mademoiselle N. Baldensperger can be recognized for their outstanding contributions for the successful congress.

A portfolio was given to each registrant which included complete programs and a booklet of all papers presented in a choice of German, French or English. Mlle. N. Baldensperger was the official interpreter.

Dr. G. Wykes of the Rothamsted Experimental Station is continuing her outstanding contributions on nectar studies with her paper, "Some Aspects of Nectar Secretion," containing many important facts, a few quotes from her article follow.

"With the development of the micro-analytical technique of paper partition chromatography for qualitative analysis of sugar mixtures, it has become possible to separate and identify individual sugars in small volumes of solution. Using this sensitive technique, an investigation was begun at Rothamsted during spring, 1950, to determine the constituent sugars in nectar secreted by different species known to be visited by honeybees, and including important orchard and seed crops. Sucrose, glucose and fructose, sugars which von Frisch found were highly attractive to honeybees, were identified in samples of nectar from flowers of all species examined. This initial investigation suggests that the constituent sugars and their relative proportions tend to remain constant in nectar secreted by any one species, while their occurrence appears to be characteristic of certain families, e.g. **Cruciferae** in which glucose and fructose appear in the nectar of most species examined in high proportions, whereas sucrose occurs in amounts which can only be detected with an extremely sensitive method."

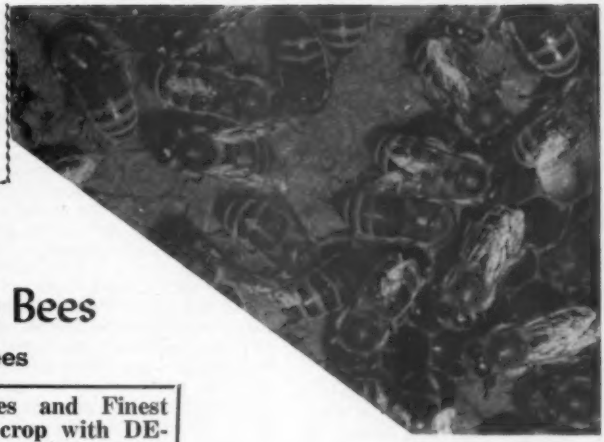
E. P. Jeffree, North of Scotland College of Agriculture, Aberdeen, gave a most interesting paper, "A Modified Phenological Approach in the Determination of Flowering Times of Beekeeping Plants in Aberdeenshire."

He states: "The honeybee colony in its development apparently responds much more closely to phenological than to calendar dates. Thus the first profitable activity in spring generally coincides very closely with the flowering of **Crocus aureus.** Sustained brood-rearing, indeed, normally depends on the inflow of pollens, which cannot start until usually this and subsequent flowers are in bloom. Subsequently, the same conditions which advance the various flowers appear to influence colony development in the same direction. Again, spring flowers in Scotland, for example, are some three weeks later than in the south of England, and colony development is later by an approximately similar amount."

"Already the Research Committee of the British Beekeepers' Association has made use of these facts in their cooperative experiment on the Effects of Spring Feeding, in which experimenters were asked to continue feeding until the white horse-chestnut was in bloom. Many similar timings for the starting and stopping on research operations could probably be advantageously introduced. In practical beekeeping, also, phenological timings are useful. Thus, the present author has pointed out that the formation of active queen cells in honeybee colonies occurs during a period which somewhat closely corresponds with the flowering of **Lupinus polyphylus,** so that this may be used as an indicator of the time during which close watch must be kept upon colonies for swarm preparations."

France is taking a continued prominent place in the field of scientific workers contributing to beekeeping and its related problems. Under the expert guidance of Dr. Remy Chauvin, a most outstanding research entomologist, the government has a modern laboratory at Bures Yvette, near Paris, where a number of excellent men are working. **Jacques Lecomte**, one of these men, lectured on his experiments pertaining to "Interattraction in **Apis mellifica.**" From his work he concludes, "a real interattraction (cluster) is caused by a complex stimulus which is partly of a vibratory and partly of an olfactory nature, that the olfactory stimulus comes from the abdomen, and finally that there must be a certain number of bees present for this stimulus to be properly perceived."

"It should be noted that this number 50 (for clustering stimulus) had already been found during the studies on cluster formation in worker bees. This number seems to form the limit below which the effect of interattraction is no longer detectable. If bees are allowed to choose between two cages, one containing their own queen and the other a strange queen, then a cluster of the same size is formed around each cage. If they are allowed to choose between two strange mated queens, then again two clusters are formed. If one of the queens is a virgin, however, she is then neglected in favor of the mated one. There exists, therefore, as beekeeping practice confirms, an attraction of the workers by the queen. It is probably of a chemical nature, localized in the abdomen, and persists for some time after death. A mated queen has a greater effect than a virgin. Conversely, the workers never attract a queen, even when they are from a queenless colony. This is in contradiction of an old belief among beekeepers, according to which the bees are supposed to be capable of attracting the queen."



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(For Queenless packages deduct price of queens)

All of our queens in our packages, or individual queen orders, are SELECT QUALITY. The culls we DESTROY. Only queens we would use in our own apiaries do we cage for shipment. Queens' wings clipped FREE OF CHARGE on request.

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References: The Union Bank & Trust Co., or First National Bank, Montgomery, Alabama. Any bee journal in the U. S. or Canada.

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Oldest Active Package Shippers in the South

All Around The Bee Yard

by G. H. Cale

May. The month of months! Eleven months of work, just for May. It is a month when swarming comes up in most places. Therefore, the Round-up this time is on swarming. It is the time too when, in the Middle West at least, our flows usually start either in late May or the early part of June. So the bread basket must be right side up. This is it!

A spring like the present here in the Middle West imposes a lot of problems. It has been cold, backward, rainy, and the season, as this is written, two or three weeks late, although seasons have a tendency to catch up on one another so that you will find when the flow starts, instead of being two or three weeks late, you are a week or ten days late. In other words, a flow starting ordinarily on the first of June may start on the 10th. That gives us some chance for a build-up that the delayed season makes necessary.

Last winter, a comparatively mild one here, brought colonies through considerably under the strength we like to see them have when spring opens up. Where supers or hive bodies were left as a food chamber, the bees started brood there and deserted downstairs. This indicates a heavy consumption of food in winter and there has been a lot of feeding, even though more stores than usual were left with the bees last fall. I have yet to see a year under any conditions when there has been sufficient stores all the way around to last until the honeyflow. It does happen with some and others not. Some have to be fed.

Our feeding combination is dry sugar and sirup fed in a 10-pound pail with a single hole in the center of the lid. The sirup is put on with our oilcloth turned back (we do not use inner covers) and a corner also turned back so the bees have access to the dry sugar which is placed on top of the oilcloth with a surrounding shell or rim so that the bees can feed as they wish. This food will usually last ten days but a colony destitute or nearly so by the middle of April will have to be fed three or four times before the flow starts, or before they have sufficient support from early nectar to carry on by themselves without any reduction in brood rearing.

The fact that bees this spring were situated in the top body to such an extent has required reversal to get the queen up through the lower combs. This should have been done April 1. It was not done until the latter part of April due to inclement weather and the danger of loss of brood or isolating the bees downstairs with the food up in the attic, so to speak. Everything has been backward. For my part, I hope the flow doesn't materialize until about the 10th of June.

One thing we have found out

about the two-queen system is that not all colonies are candidates for two queens. If they were, the increase in crop would be very satisfactory. This year, only about a third of my bees are candidates for two-queen management, and the rest just won't be up to that sort of management. I will do well to get some of them into production as it is, particularly if the flow starts earlier than we would like to see it.

My best guess is that most years only half of the bees are candidates for two-queen colonies, so the increased production from this management will have to be spread over the other half, reducing the total per colony yield considerably. Two-queen colonies may produce as much as twice a single queen colony in the same yard, but it must be remembered that the colonies that have been put into two-queen management were the best ones and so they are sharing their extra honey with what is left and those colonies are likely to be classified as average or below average colonies. From our present experience on this basis, the total additional honey to be expected of a 50 per cent two-queen management is about 50 per cent. In other words, if the total for the yard for single queen colonies is 100 pounds, you can expect the over-all total including the two-queen colonies to be about 150 pounds.

Winter loss so far has not been bad in the winter of 1951-52. The strength of the colonies, however, is not normal and the consumption of stores is way above normal. Those colonies we did lose simply starved to death. The probable total winter loss is around 5 per cent.

This winter also showed the value of protection. Bees protected well are stronger than those more exposed. It is doubtful if packing would have done as much good as the protection did. There is no way to be sure of it, but that's the way it looks from my seat. Some colonies apparently well protected weren't. They were in pockets where they caught the cold and the ground was wet or the pockets were fogged. Those yards are in worse shape than those that are really up on hillsides where they catch the sweep of the wind.

I have one location in woods with hills on both sides of a ravine, with the colonies facing ravine-wise where the air drains out and doesn't weigh stagnant. It is always quiet and sunny, even with a high wind. That's a good way to judge, whether a location is well protected or not, particularly when it is cold and windy. If it is warm and still in there, you really have a nice sheltered spot. That is the description of this particular yard. Those are the strongest bees in my outfit, and surprisingly require less feed, have more stores left over, fewer dead bees on the bottom, etc. If all my locations were like it, this particular chapter of "All Around the Bee Yard" would have been written differently.

Glenn Jones Honored . . .

At the 86th annual meeting of the Iowa Horticultural Society, Glenn O. Jones, secretary-treasurer of the American Beekeeping Federation, was awarded a certificate of merit for his contributions to horticulture and beekeeping. Mr. Jones has been an active member of the Iowa Beekeepers' Association, served as its president from 1944 to 1946, and was president of the Iowa Horticultural Society in 1947. He is a member of the Federated Garden Clubs and has served in his present capacity with the Federation since 1945.

Answers . . .

conducted by

Frank E. McLaughlin

My honey crops have been very poor in the last few years. Some of the colonies have been riddled with wax moth. What is the cause of this weakness?

George Laurence, Oklahoma

Wax moth will get into nearly all colonies, especially in the fall of the year, but good strong colonies will not allow them to do much damage. Your bees may have been weakened by a disease or have a failing queen. In either case, the population of the colony would certainly dwindle fast. There is nothing you can use to kill wax moth that will not kill the bees too. If you are sure you have no disease in your bees, try requeening with young vigorous queens of good strain in the spring.

During the blooming time of nectar secreting plants, the larger the population of bees the heavier the surplus honey crop. Some beekeepers have too many colonies and too few bees. To obtain a large surplus of honey the colony should be so populous with bees that they seem to almost bulge out the sides of the hive.

Weak colonies may be united with stronger colonies either before the honeyflow or in the fall. This method will often produce a good colony. However, do not unite two weak ones to make a strong.

There are various methods of uniting colonies. One is to set the weak colony on top of the strong with a sheet of newspaper between. The poorest queen is killed. The bees gnaw through the paper and mingle together. Or you may kill the poorest queen, place the brood of both colonies in one hive with the remaining queen and shake all other bees from both colonies in front of the hive, sprinkling them with sugar sirup and smoking the entrance. Two colonies may be united by placing a queen excluder between them and making the lower or weak colony queenless. Bees may be united during a honeyflow with little trouble. They are also easy to unite in early spring or late fall. When there is no brood and the weather is cool, they mingle peacefully without fighting.

What is the proper procedure for uniting a queenless package of bees with a colony that has a a queen? Will the two lots of bees fight?

S. J. Hogg, Canada

I unite bees by the newspaper method. Place a sheet of newspaper over the top of the queenright colony, directly over the frames. Punch a few holes in the paper with a pencil. Set a super with five frames of comb pushed to one side, over the newspaper. (Assuming you are using ten-frame equipment.) Shake the queenless package of bees out of the cage into the vacant space in the hive and close the top. If the rest of the frames are put in at this time, many bees will be mashed. The bees will chew through the newspaper and unite. After two or three days the colony can be opened and the newspaper removed. If you want to leave the super on the bees, put the other five frames in. If you wish to remove the super, make sure the queen is below, take off the super and shake the bees into the lower hive body. Do not leave the super with the five frames and the vacant space on the hive for very long as the bees will draw spur comb and make a regular box hive.

MEETINGS

Tenth Annual Beekeepers' Short Course, May 7, 8, 9, 1952
University Farm, St. Paul 1, Minn.

Wednesday, May 7

a.m.
8:00—Registration
9:15—The life story of the bee—M. H. Haydak
10:00—Beekeeping for profit and pleasure—F. B. Paddock
11:00—Spring work in the apiary—C. D. Floyd
12:00—Lunch

p.m.
1:30—Bees and agriculture—C. D. Floyd
2:30—How to get better bees—W. C. Roberts
3:30—Installing packages of bees in the bee yard - demonstration in the apiary of installing package bees and of standard practices of handling bees and equipment—M. H. Haydak, F. B. Paddock, C. D. Floyd, W. C. Roberts.

Thursday, May 8

a.m.
9:00—Honey production under changing conditions—F. B. Paddock
10:00—What to do about swarming—M. H. Haydak
11:00—Queens and queen rearing—W. C. Roberts
12:00—Lunch

p.m.
1:30—Honey - what it is and how to sell it—C. D. Floyd
2:30—Summer management and early fall management of bees—F. B. Paddock
3:30—Fall management and wintering of bees—M. H. Haydak
6:30—Informal meeting. Dr. Roberts will speak about "What is new in bee breeding" and Dr. Paddock will give a talk "Beekeepers here and there." This is an opportunity to visit and exchange ideas.

Friday, May 9

a.m.
9:00—Adult bee diseases and enemies—T. A. Gochnauer
10:00—Brood diseases and their control—T. A. Gochnauer
11:00—Legal aspects of beekeeping—T. L. Aamodt

p.m.
1:30—Beekeeping movies
2:30—Question box (A box will be provided near entrance of main meeting room for questions asking further information on any topic. These questions will be discussed by various members of the staff.)

Middlesex County Beekeepers Assoc.
Weston, Mass., May 24

The first outdoor meeting will be held at the home and apiaries of Mrs. S. S. Fitzgerald, 62 South Ave., Weston, Mass. at 2 P.M., May 24. The new club hive started at the April meeting will be inspected for progress. This hive will be presented to one of the members at the last outdoor meeting in September.

The association was presented the special Silver Medal and a special award for its educational display on bees, beeswax products and pollination at the Spring Flower Show in March in Boston. The accompanying photograph shows one corner of the exhibit with modern hive, expanded hive, uncapping and extracting equipment. Scenery was painted by students of Boston University Art School.

At the April meeting "Ken and Caroline" who broadcast from the "Yankee Kitchen" over local radio station WHDH, were presented with a new hive of bees furnished with Dadant's Gilt Edge Foundation donated by charter member Walter J. Copeland of Lexington. The colony shows much progress at its home in Marblehead, Mass.

Officers Re-elected

By unanimous vote the incumbent officers of the Ionia-Montcalm Beekeepers Association were re-elected at the annual meeting held March 27 in Belding, Michigan. They are: President, Hazen Hines, Ionia; Vice-Pres., Clarence Sparks, Belding; and Sec'y-Treas., Mrs. Margaret Seidelman of Ionia.

The annual beekeepers summer picnic was set for Thursday, June 5 at the Bertha Brock Park on M-21 east of Ionia. Attendance was urged for the state beekeepers association meeting to be held in Frankenmuth on July 24.

Westchester County Beekeepers
New Rochelle, N.Y., May 18

The Westchester County Beekeepers' Association will hold its regular monthly meeting at 2:30 P. M. on Sunday, May 18, at the Odd Fellows Hall, 20 Lockwood Ave., New Rochelle, N.Y. R. B. Willson who travels to Mexico, South America and Europe buying honey will be our guest speaker. He will tell us of some of his experiences on these trips. Refreshments will be served, and visitors are always welcome.

Carlton E. Slater, Publicity

(Please turn to next page)

Missouri Meeting

The March 15 meeting of the Missouri Apicultural Society represented the re-assembling of all beekeeping interests in Missouri on a program of better apicultural development.

Plans were developed at the Columbia meeting for Boy and Girl work, Pollination publicity, and a greater Missouri plan for beekeeping in 1952-53.

Tazewell County Beekeepers Assoc.
Pekin, Ill., May 18

Those members of Tazewell Beekeepers Association who have survived the winter will come out of hibernation and meet on Sunday, May 18 at 1:00 p. m. at Mineral Springs Park in Pekin. There will be a basket dinner as usual. Members of the defunct Caterpillar Bee Club are also cordially invited to join with us.

Joseph Jachman, Sec'y

Cuyahoga County Beekeepers Assoc.
Cleveland, Ohio, May 18

The spring meeting of the Cuyahoga County Association will be held on Sunday afternoon, May 18, at 2 p. m. in the Miles Avenue Church of Christ hall at 9200 Miles Ave., Cleveland, Ohio. There will be a guest speaker and demonstrations will be held in the yard of Dr. E. E. King, which adjoins the church property. Refreshments will be served and all beekeepers are invited.

Dr. E. E. King

Short Course
Ames, Iowa, May 13-14

Readers are again reminded of the short course to be held at the Memorial Union, Room 206, Ames, Iowa on May 13 and 14. For details of the program see your April ABJ.

New Officers
Allen County Beekeepers Assoc.

The following officers were elected at a meeting held March 21, 1952 to serve the Allen County (Indiana) Association for the coming year: President, Frank E. Amstutz, Ft. Wayne; Vice-Pres., E. R. Bodenhorn, Ft. Wayne; Sec'y- Treas., Gerald G. Zimmerman, Ft. Wayne.

Belgian Fair

Beekeepers who plan to be in Europe this summer will be interested in attending the Belgian Fair which is being advertised by the Zoo of Antwerp to be held July 10 to 23.

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ITALIAN PACKAGE BEES AND QUEENS

	1-24	25 or more
2-lb. pkg. w. q.	$3.75	$3.50
3-lb. pkg. w. q.	4.65	4.40
	1-10	11-24
Extra queens 1.20	1.10	1.00

10% books the order. Balance 10 days before shipping date.

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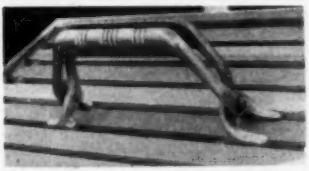

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"Magnolia State" Italian Bees and Queens

Quantities	Queens	2-lb. Pkgs. W/Qs.	3-lb. Pkgs. W/Qs.
1-24	$1.20	$3.75	$4.75
25-99	1.10	3.50	4.50
100-999	1.00	3.25	4.25
1,000-up	.95	3.00	4.00

For Queens of Dadant's Improved Stock of "Starline" D.R. Hybrids, add 25c per queen or package to above prices. Queens Clipped and Marked Free. Prepaid. Via Air Mail when expedient.

Package bees by Express Collect. Live delivery guaranteed. For Parcel Post allow 6-lb. and 8-lb. on 2-lb. and 3-lb. Pkgs. respectively, and apply your postal zone. Include postage with your remittance.

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2-lb. pkg. of bees	$3.00	4-lb. pkg. of bees	$4.50
3-lb. pkg. of bees	3.75	Queens	1.00

Each package has a young laying queen.

We guarantee Full Weight, Young Bees and live delivery by express.

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Queenless package deduct price of queen. Live delivery guaranteed.

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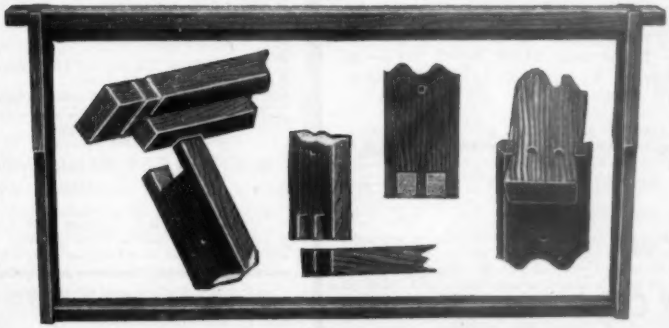

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	May 1 - May 19				May 20 - June 30	
	Queens		Packages		Queens	
	Regular	Starline	2-lb.	3-lb.	Regular	Starline
1-24	$1.20	$1.45	$3.40	$4.40	$1.00	$1.35
25-99	1.10	1.35	3.25	4.25	.85	1.25
100-999	.95	1.25	3.00	4.00	.75	1.15

Add 25c for packages with Starline Hybrid queens. No packages furnished after May 19. Queens, both Starline and regular stock, available until October 15.

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	1-11	12-49	50 or more
Select untested queen	$1.30 each	$1.20 each	$1.10
2-lb. packages with select untested queen	$3.75 each	$3.65 each	$3.50
3-lb. packages with select untested queen	$4.75 each	$4.65 each	$4.50

Select untested queens after June first $1.10 each, any number. Circular on request.

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F.O.B. Prices	1 to 50	50 to 1,000
2-lb. Packages with Queens	$3.00	$2.75
3-lb. Packages with Queens	4.00	3.75
Untested Queens, D.R. Stock	1.00	.90
Tested Queens, D.R. Stock	2.00	

Queens Air Mailed and clipped if wanted at above prices
Write for prices of bees delivered by mail.

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25-99	1.00 air mail	3.25	4.25
100 & up	.95 air mail	3.00	4.00

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2-lb. pkg. with queen	$3.00
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Extra queens	1.00

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Airmailed Free

1 to 9	$1.35	10 to 24	$1.10
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Organization In Wisconsin

In the fall of 1933, the Wisconsin State Beekeepers' Association voted to affiliate with the Wisconsin State Horticultural Society and adopted Wisconsin Horticulture as its official organ. H. J. Rahmlow, secretary of the Society, was elected Corresponding Secretary of the Beekeepers' Association and has edited the beekeeping section of Wisconsin Horticulture and carried on the educational and organizing program of the Association, working over the years with such able presidents as A. H. Seefeldt of Kewaskum, Wis.; A. E. Wolkow of Hartford; Arthur Schultz of Ripon; Walter Diehnelt of Menomonee Falls; Robert Knutson, Ladysmith, and Henry Schaefer of Osseo, the Wisconsin Beekeepers' Association became one of the largest and most active in the nation.

The first step Mr. Rahmlow proposed for strengthening the organization—its membership having dropped to less than 100 by 1932—was to strengthen the county associations and affiliate them with the state association. The next step was to organize district associations of the Wisconsin Beekeepers' Association in order to carry the program of the state organization back to the grass roots.

Six district associations have been organized and they hold meetings every spring, February through April, reaching hundreds of beekeepers. The program of the state association is discussed and the latest findings in beekeeping research presented. Mr. Rahmlow has prepared several moving picture films and sets of slides in cooperation with the Central States Bee Culture Laboratory for presentation at meetings.

Membership in the state association rose steadily to a high point of about 650 several years ago.

The beekeeping section of Wisconsin Horticulture has been an important factor in maintaining membership in the Wisconsin Beekeepers' Association. Many beekeepers grow fruit, flowers or vegetables and appreciate the combination. The beekeeping section has been very educational, holding steadfastly to facts obtained from research by the Bee Culture Laboratories and Experiment Stations.

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Less than 12	$1.25 ea.
12 to 49	1.15 ea.
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500 or more	1.00 ea.

Package bees available in limited quantity at nominal prices.

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Queens via Air Mail, any number	1.00

I guarantee a good full weight package with a Good Young Laying Queen, Safe Arrival and Your Satisfaction.

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3-lb. pkg. with queen	4.25	4.00	3.80
4-lb. pkg. with queen	5.25	5.00	4.75
Extra Queen	$1.00 each		

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	Queens	2-lbs.	3-lbs.	4-lbs.	5-lbs.
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Write for prices on larger orders.

After May 10th DEDUCT 10% from above prices. For Queenless Packages deduct price of queen. Queens sent by Prepaid Air Mail. Packages by Express Collect unless Parcel Post is prepaid by customer. State Health Certificate and Live Arrival Guaranteed. PLEASE ORDER DIRECT FROM THIS AD. THANK YOU.

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Crop and Market

by M. G. Dadant

Loss of Bees

The loss of bees has, we believe, been less than average, although in some sections reports are of considerable loss. Florida, with 10 per cent, Alabama and Kentucky, with about the same amount, seem to be the highest losers in the South; whereas in the northern areas, Indiana and Minnesota have reported from 10 to 20 per cent loss. The central west generally reports a loss somewhat heavier than other sections, and Minnesota probably leads the list, running from 8 per cent to 40 per cent from south to north.

There have been considerable losses in Oklahoma, Montana and New Mexico, but in general losses have been, we believe, far below ordinary, although there is still plenty of chance for losing colonies on account of starvation as the bees are rapidly using up their stores with the arrival of warm weather. In the Canadian provinces, Saskatchewan seems to have had the heaviest losses, running from 10 to 20 per cent, whereas the eastern provinces report 5 to 10 per cent loss which is not much above normal.

Condition of Bees

We have remarkable reports as to the condition of bees practically all over the country. There are some reports that bees have come very slowly this year just simply because of the cool weather, and the lack of outdoor forage, but with the swing to warm weather, bees have built up rapidly. There are also quite a number of reports of bees running short of stores owing to the prolonged and only moderate winter. Minnesota reports much feeding necessary, whereas Oregon states bees are slow on account of the cold and Washington reports a shortage of stores. Other states wanting on stores are Virginia, Georgia, Illinois, Iowa, Indiana, Minnesota and Nebraska.

Honey Plants

Again we find unusual conditions in honey plants with practically the entire country reporting at least 100 per cent of average, and in most of the white clover sections it seems to be much better. As we go through the South, the conditions are at least normal for honey plants and perhaps better than normal. In practically all sections, the plants have been held back by cool weather which naturally has had its effect on the build-up of the colonies.

Plants do not seem to be in good condition in the dry areas, and this includes south and west Texas, New Mexico and western Oklahoma, and up into eastern Colorado. New Mexico particularly and west Texas are reporting extremely dry conditions. In the white clover regions while some heaving of clovers was feared on account of freezing and thawing, it has probably not affected the total planting very much and pastures seem to be coming up quite heavily with white Dutch clover. There seems to be some increase also in field plantings of sweet clover, alfalfa, and so forth.

Moisture

As reported previously, moisture seems ample in most sections. In fact, in the northern sections from east to west, reports are of more than normal moisture.

There have been heavy snowfalls in practically all of the intermountain sections and this assures ample irrigation water. In fact, practically all "behind dam lakes" are full to overflowing. No doubt there is going to be some losses of colonies of bees from floods along the Missouri and Mississippi rivers, but this will likely be a minimum, although much forage will be lost.

In the Canadian provinces, moisture conditions are ample except that Manitoba reports more rain would be desirable.

Honey Sold

With very few exceptions, beekeepers report that either they are out of stock or only have enough honey left to carry until the new season. Georgia reports some offgrades left, and some honey is left in the tupelo and saw palmetto sections of Florida. However, there seems little doubt that most of it will move before the new crop is available.

Throughout the entire country, most of the honey is out of the hands of the beekeepers, and packers are searching. In fact, since the report of the advance in support price of honey to 11.4 cents, there has been an appreciable stiffening of the market, and most honey is now moving in quantities at a price for white honey of about 12 cents f.o.b. shipping point, although some perhaps can be bought lower. However, there is no tendency to sacrifice at this time what little honey is left on hand and we believe that the situation is that there is less honey on hand at this time of year than there has been for many years. Naturally, it is partly due to the price support program of the Department of Agriculture and the export subsidy program to encourage shipments to foreign countries, which have together totaled in the neighborhood of 33,500,000 pounds.

California looks for an extremely heavy crop this year. Just as a comparison, up to April 15, there had been a total of 25 inches of rain since last July as compared to 7 inches a year previous. The deserts are blooming and seem to have enough moisture to bring most of the bloom to maturity. There also seem to be extra cotton acreages in southern California which will help the honey crop, no doubt.

Summary

All in all, the condition of bees throughout the country is above normal, honey plants are without doubt above normal, and moisture conditions except for the south and western areas also are above normal.

Moisture, particularly in the intermountain sections, seems ample for irrigation without any stinting.

The advance in support price on honey to 70 per cent of parity or a national average of 11.4 cents is meaning a lot. There does not seem, however, to be much increase in the number of colonies except for the making up of winter losses. California, however, is an exception. Winter losses are being made up and there seems to be a substantial increase, although probably no more than can be disposed of in the pollination projects which are expanding all the time in that state and in Washington and Oregon.

Was This You?

Sometimes a beekeeper mails to the American Bee Journal office a check intended for The American Beekeeping Federation, Atlantic, Iowa. This happened lately. We recall that the check for $15 came from New York State. One of our staff expected to personally deliver the check to the Federation Secretary, but in the bustle of making a trip, the check was destroyed. We regret that this happened and hope that this will come to the attention of the one who mailed the check, so that another check can be written and so that he will receive his deserved membership in the Federation.

The Market Place . . .

BEES AND QUEENS

CAUCASIAN BEES—2-lb. pkg. $3.00; 3-lb. pkg. $4.00. Queens $1.00 each. Tillery Brothers, Greenville, Ala.

CAUCASIAN BEES AND QUEENS—Extra good workers and very gentle. 2-lb. with queen $3.50; 3-lb. with queen $4.50. Select untested queens, 1 to 25, $1.20; 25 to 50, $1.10; 50 up, $1.00 each. All orders given special attention. Black River Apiaries, Elliott Curtis, Mgr., Currie, North Carolina.

YANCEY HUSTLERS — Packages and queens—ready April 1st. Three band Italians, bred for business. Overweight packages, queens spring reared under ideal conditions, all guaranteed to please. 2-lb. pkg. with queen $3.50; 25 or more at $3.25 each; 50 or more at $3.00 each. For 3-lb. packages add $1.00 to above prices. Caney Valley Apiaries, Bay City, Texas.

THREE BANDED ITALIAN bees and queens, best of quality. 2-lb. with queen $3.50; 3-lb. with queen $4.50. Select untested queens, 1 to 25, $1.20; 25 to 50, $1.10; 50 up, $1.00. Write for prices on larger orders. Alamance Bee Company, Geo. E. Curtis, Mgr., Graham, North Carolina.

GOLDEN ITALIAN BEES and QUEENS very yellow and gentle to work with. 2-lb. with queen $3.50; 3-lb. with queen $4.50. Select untested queens, 1 to 25, $1.20; 25 to 50, $1.10; 50 up, $1.00. Satisfaction guaranteed. Carolina Bee Farm, W. O. Curtis, Mgr., Graham, North Carolina.

ITALIAN QUEENS $1.00 each; Carniolans $1.25; Caucasian $1.10. All queens by Air Mail. Walter D. Leverette, Box 364, Ft. Pierce, Florida.

BRIGHT 3 BAND ITALIAN bees and queens — 3-pound $4.75; 4-pound $5.75; 5-pound $6.75. Queens $1.00 delivered. Luther Pickett, Owner Orange Bee Co., Efland, N. C.

YELLOW ITALIAN bees and queens. Quality and service guaranteed. 2-lb. with queen $3.65; 3-lb. with queen $4.65. Queens $1.00. O. E. Brown, Route 1, Asheboro, N. C.

CAUCASIAN QUEENS — Young, laying. Personally raised. $1.00 each. Fred Brock, McDonald, Tenn.

ITALIAN QUEENS—1-10, 90c; 10 up, 85c. All young vigorous queens. Gaspard Bee Co., Hessmer, La.

FOR SALE

40 acres land all open but a few acres, 8 room house with two baths, half basement. Big honey house, chicken coop, small barn. 300 4-story hives, 200 extra bottoms, 200 extra tops, queen excluders, Root 45-frame extractor, steam boiler, 100 cases used 5-lb. honey jars. Brand heater and strainer, clamp truck and other items. Priced at $4500.00. Located 6 miles southeast of Roseau, Minnesota. Carl A. Wenner, 414 5th St., Willows, Calif.

FOR SALE—35 10-frame supers, 50 8-frame supers, 30 8-frame hives. Chas. Sherwood, Victor, Iowa.

100 standard 10-frame hives certified Italian bees. A. V. Dowling, Valdosta, Ga.

150 two-story 10-frame Italian colonies, $9.00 per colony. Mostly disease resistant stock. Any part or all. Four extractors (including a 20-frame radial). Four honey tanks, ¾ inch honey pump. Approximately 450 drawn supers. Also supplies for comb honey. John Flock, Griswold Ave. and Lefevre Rd., Sterling, Ill.

FOR SALE—About 200 colonies, good locations, room and equipment for 400. G. H. Rose, 3333 Wadsworth, Wheatridge, Colorado.

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FOR SALE—Modern extracting equipment with or without buildings, with running water, electricity and steam heat, with plenty storage space. 45 Root extractor, 5 H.P. boiler, honey heater, uncapping and storage tanks, wax melter, etc. Everything for full operation, ready to go. Cloverbelt Apiary, Madison, Minn.

FOR SALE—1952 model Electro-Flo filling machine $285.00 f.o.b. Hancock Honey House, Hancock, Iowa.

700 10-frame deep supers of combs and foundation, 300 bottoms, 300 covers. Disease free. Herbert Hodson, Converse, Indiana.

FOR SALE—Four frame Root honey extractor. Alfred Stutt, Rt. No. 3, Creston, Iowa.

FOR SALE—Thirty colonies Italians, ten-frame. John Schaefer, New Lebanon, New York.

FOR SALE — Neises filter $12.00, Neises Clarifier $18.00, 4-frame extractor $25.00, 80 excluders 50c each, copper steam generator $2.00, steam knife $3.00, Macy electric knife $10.00, pollen traps 2 for $5.00. Ed. Swenson, Rt. 2, Rochester, Minn.

STANDARD 10-fr. equipment, 30 hives bees, 45 Root thousand speeds extractor, capping melter, steam heated knife, wired foundation. Joe A. Anderson, 122 Boone St., Boone, Iowa.

FOR SALE—Used Root bee material. 1,500 supers $1.00 each, some shallow supers 75c each. With and without frames. Some metal covers and bottoms, all 10-fr. Montgomery County Apiaries, 114 Indianola Ave., Dayton 5, Ohio.

1 National Standard semi-automatic bottle labeler, first-class condition, new V-belt drive with motor, many extra parts—capacity 40 bottles per minute. Superior Honey Company, 4242 Elizabeth Street, Denver 16, Colorado.

125 colonies of bees. All have young resistant queens; double story. All inspected and in good shape for a real crop, ready to go by the 20th of May. $12.00 per colony. Reason for selling, old age. Wm. A. Mohr, 201 4th Ave. N.W., Milford, Iowa.

HONEY and BEESWAX WANTED

WANTED — Extracted honey, white or light amber, in 60's. State price in first letter. Ed. Heldt, 1004 W. Washington St., Bloomington, Illinois.

WRITE FOR SHIPPING TAGS and current quotations on rendered beeswax. Any amount from one pound up bought. If you have 25 pounds or more, save 25% by letting us work it into foundation for you. Walter T. Kelley Co., Paducah, Kentucky.

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WANTED—All grades comb and extracted honey, large or small amounts. Quote price in first letter. Mail sample. King Honey Co., 4308-10-12 E. Truman Road, Kansas City, Mo.

CARLOADS or less of honey and wax. Send sample and price. Alexander Co., 819 Reynolds, Toledo, Ohio.

COMB and EXTRACTED HONEY wanted. Truck or carload lots. Contact Victor Honey Farms, Josephine, Texas.

WHITE GRADES 11.4 and cans back, delivered. Mail samples. Cole Honey Co., 4460 Piedmont Ave., Oakland, Calif.

WANTED—Honey, amber or white. Mail samples and state quantity. No buckwheat. Holland Honey Cake Co., Holland, Mich.

WANTED—3 carloads of buckwheat honey, 2 carloads of Florida orange blossom honey in barrels or cans, 2 carloads of southwestern alfalfa or cotton honey. Cash and top prices. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

WANTED—Extra white and light amber honey. Let us ship you the containers. Sell us your honey for CASH on delivery. The Hubbard Apiaries, Manufacturers of Bee Supplies and Comb Foundation, Onsted, Michigan.

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NEW CROP OF HONEY shipped daily from producer in Florida. Pure orange blossom, 5-lb. pail $2.25. Pure Florida cut comb honey, 5-lb. pail $2.75. No C.O.D. orders; all shipments prepaid. E. R. Raley, Box 1610, Daytona Beach, Florida.

ANY GRADE — any amount. Alexander Company, 819 Reynolds, Toledo, Ohio.

ORANGE, PALMETTO and MANGROVE honey in new sixties. Peter W. Sowinski, Ft. Pierce, Florida.

CLOVER EXTRACTED HONEY in sixties. Ralph Gamber, 910 State, Lancaster, Pennsylvania.

HONEY, white clover, 17c per lb. 5 sixties or more 16c. Satisfaction guaranteed. Lose Brothers, 206 E. Jefferson, Louisville, Ky.

CLOVER, Goldenrod and Buckwheat. All size containers. A. I. Root Company of Syracuse, New York.

200 cases comb, 24 sections, good quality, condition, weights. Sweet clover-buckwheat, also goldenrod. S. T. Fish & Co., Inc., 1421 So. Aberdeen St., Chicago 8, Ill.

FOR SALE—Choice clover honey in sixties. Ranum's Bee Farm, Mt. Horeb, Wis.

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SOUTHERN CALIFORNIA HEADQUARTERS for Bee Supplies. Make our facilities your "Trading Post." Complete stocks. See our Bulletin Board for Budget Bargains. The Diamond Match Company, 1300 Produce St., Los Angeles 21, Calif.

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YOUR WAX WORKED into quality medium brood foundation for 23c pound; 100 pounds $18.00. Medium brood foundation for sale at 85c pound. Fred Peterson, Alden, Iowa.

NEW HEAVY DUTY 55 gallon steel drums, just emptied, removable tops with liners for southern producers, $3.45 each. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

BEE SUPPLIES—Catalogue free. Hodgson Bee Supplies Ltd., 565 13th Ave., New Westminster, B.C., Canada.

WANTED

WANTED — Used uncapping machine in good condition, preferably Stoller or Bogenschutz. Ranum's Bee Farm, Mt. Horeb, Wis.

900 acres alfalfa and sweet clover—need bees. Contact G. A. Rietz, Box 555, Aberdeen, S. Dak.

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