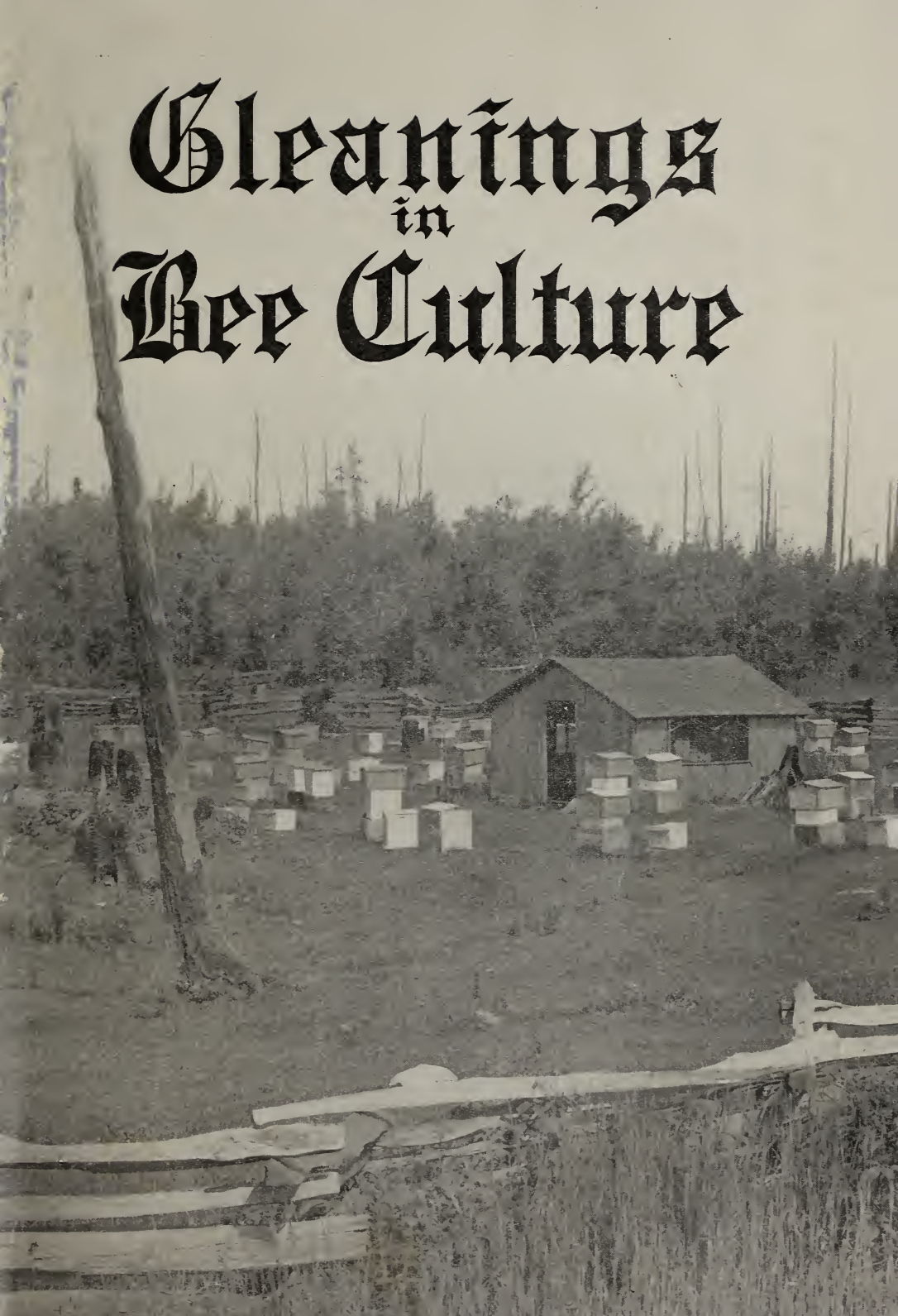
Gleanings in Bee Culture



VOL. XLII. MAY 15, 1914, NO. 10.

HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING RULES

Adopted at Cincinnati, Feb. 13, 1913.

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH:

1. *Extra Fancy.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white, and not more than six unsealed cells on either side exclusive of the outside row.

3. *No. 1.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2.*—Comb not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR.

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT.

1. *Heavy.*—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium.*—No section designated as medium to weigh less than twelve ounces.

3. *Light.*—No section designated as light to weigh less than ten ounces.

In describing honey, three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY:

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

HONEY-GRADING RULES ADOPTED BY THE COLORADO STATE BEEKEEPERS' ASSOCIATION, DECEMBER 13, 1911.

FANCY WHITE.—Sections to be well filled, comb firmly attached to all sides and evenly capped except the outside row next to the wood. Honey, combs, and cappings white, and not projecting beyond the wood; wood to be well cleaned; no sections in this grade to weigh less than 13½ ounces.

NO. 1.—Sections to be well filled, combs firmly attached on all sides and evenly capped, except the outside row next to the wood. Honey white or very slightly off color. Combs not projecting beyond the wood; wood to be well cleaned; no section in this grade to weigh less than 13½ ounces.

CHOICE.—Sections to be well filled; combs firmly attached; not projecting beyond the wood, and entirely capped, except the outside row next to the wood. Honey, comb, and cappings from white to amber, but not dark; wood to be well cleaned; no section in this grade to weigh less than 12 ounces.

NO. 2.—This grade is composed of sections that are entirely capped, except row next to wood, weighing from ten to twelve ounces or more, also of such sections that weigh 12 ounces or more, and have not more than 50 uncapped cells all together, which must be filled. Combs and cappings from white to amber in color, but not dark; wood to be well cleaned.

EXTRACTED HONEY.—Must be thoroughly ripened, weigh 12 pounds per gallon. It must be well strained, and packed in new cans. It is classed as white, light amber, and amber.

STRAINED HONEY.—This is honey obtained from combs by all other means than the centrifugal extractors, and is classed as white, light amber, amber, and dark; it must be thoroughly ripened and well strained. It may be put up in cans that previously have contained honey.

INDIANAPOLIS.—Fancy white comb is being offered here at 16 to 17 cents per pound; amber comb, 14 to 15; white-clover extracted, 9 to 10 in 5-gallon cans. Much comb honey is being held here; but at this writing there is very little demand. Extracted is in fair demand. Producers are being paid 32 cents cash for beeswax, or 34 in trade.

Indianapolis, May 5. WALTER S. POUDER.

ZANESVILLE.—No. 1 to fancy white comb is quoted at 16½ to 18½ in a jobbing way; 18 to 20 wholesale. Best white extraxcted in 60-lb. cans, 9 to 10. These quotations are for white clover. Western honeys rule about a cent less. Market firm, but rather quiet. Producers receive for beeswax 32 to 33 cash, 34 to 35 in exchange for supplies.

Zanesville, May 5. EDMUND PEIRCE.

DENVER.—The market still remains about the same. It is cleaned up on comb honey pretty well, and looks as though it would be entirely used before the new crop comes on. We are jobbing as follows: Strictly No. 1 white, fancy stock, brings, per case, $2.52; choice, good color and heavy weight, $2.39; No. 2, well finished, fair color, $2.25; white extracted, 8; light amber, 7. We pay 32 cash and 34 in trade for clean yellow wax delivered here.

COLORADO HONEY-PRODUCERS' ASSOCIATION,
Denver, May 6. FRANK RAUCHFUSS, Mgr.

ST. LOUIS.—Our honey market is very dull, and but little comb honey is selling. Extracted honey is in a little better demand than comb honey, but stocks here are very light. Comb honey is plentiful, and it looks as if a great deal of it would be carried over into next season. We are quoting honey, in a jobbing way: Southern extracted in barrels, 6¼ to 6¾; 5-gallon cans, 6¾ to 7¼; dark, ½ to 1 ct. less. Comb honey, fancy clover, brings 15 to 16; light amber, 13 to 14; amber, 11 to 12; dark and inferior, less; by the case, fancy clover, from $2.75 to $3.00; light amber, from $2.50 to $3.00; amber, $2.00. Beeswax is very firm, and quoted at 34½ for prime; impure and inferior, less.

R. HARTMANN PRODUCE CO

St. Louis, May 5.

LIVERPOOL.—The market for all classes of honey is flat. The demand during the past winter has been the worst for many years, and sellers are left with heavy stocks of Chilian which look like remaining on hand for many months to come. The prices quoted are $5.04 for no pile, $5.52 for pile 3; $6.00 to $6.24 for pile 2; $6.72 to $7.20 for pile 1. To all intents and purposes the sales since the beginning of the year have been merely retail quantities. There have been very small sales of Californian at $10.08 to $10.80 and Jamaica at $6.00 to $7.20. The beeswax market is bare, and there is a good demand for Chilian f. a. q., in the neighborhood of $38.88 per cwt. c. i. f.; but so far buyers have been unable to get any thing under $40.08.

Liverpool, April 16. TAYLOR & CO.

Gleanings in Bee Culture

E. R. ROOT, Editor — A. I. ROOT, Editor Home Dept. — H. H. ROOT, Ass't Editor — J. T. CALVERT, Business Mgr.

Department Editors:—Dr. C. C. Miller, J. E. Crane, Louis H. Scholl, G. M. Doolittle, Wesley Foster, J. L. Byer, P. C. Chadwick.

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Contents for May 15, 1914

FOUND A COPY OF GLEANINGS IN THE STREET; A KIND WORD WITH A MORAL TO IT.

I am very sorry my subscription got so far in arrears, but it quite slipped my notice, and I should be very sorry not to receive the paper, as I am sure I owe a lot to A. I. Root. I was just a man working for a wage with no thought of bettering myself; but one day I found a copy of GLEANINGS in the street. I read it, got the bee fever, went home, and nearly talked the good woman into a fit. I bought four hives with bees, and in five years have made 100 colonies, and, what is better, have bought five acres of land, and half paid for it, all out of the bees. Both the wife and myself would like to shake hands with A. I. Root and thank him personally for the many good talks he has given us in Our Homes; but as that cannot be, we can only wish him many years to continue the good work.

Paki Paki, N. Z., Feb. 19. H. SHEPHERD.

Gleanings in Bee Culture

DEVOTED TO HONEY, BEES, AND HOME INTERESTS.

A. L. BOYDEN, Advertising Manager.

Established 1873. CIRCULATION 35,000 Issued semi-monthly.

Index to Advertisements

Gleanings in Bee Culture

Published by The A. I. Root Co., Medina, Ohio.

H. H. Root, Assistant Editor. E. R. Root, Editor. A. L. Boyden, Advertising Manager.
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VOL. XLII. MAY 15, 1914 NO. 9

EDITORIALS

The American Bee Journal thinks Dr. Miller is a half century younger than he says he is, viz., 38 instead of 83. If any man is young in spite of his years, Dr. Miller is that man.

The National Net-Weight Law

The reader's attention is directed to the article on national and State laws regarding the net weight on honey, on page 385 of this issue. Every one who has honey for sale (and that, of course, means most beekeepers) should read this very carefully.

A Big Year for the Beehive Factories

This is another boom year for bee supplies. Apparently all the factories are busy. The beekeeper who did not get his supplies early, when he could get a liberal discount, may find that there will be some delay in getting his goods. The Medina plant is working overtime, notwithstanding its increased facilities.

Cartoons for Gleanings

We are pleased to announce to our readers that we have engaged one of the best cartoonists in the United States—Donahey, of the Cleveland *Plain Dealer*—to make a set of pictures for Gleanings. Mr. Donahey is a back-lot beekeeper. He has kept bees long enough to acquire a good working knowledge of the business, especially back-lot beekeeping. We have already received a series of his cartoons; and to say they are rich is putting it mildly. They will begin in our next issue.

Beekeeping in Alaska

It requires somewhat of a stretch of the imagination to think of flowers and bees in Alaska; but the flowers and bees are there nevertheless. We give herewith a clipping from the *New York World* of October 20, sent us by Mr. A. T. Cook.

Fairbanks, Alaska, Oct. 18.—Two hives loaded with bees have arrived here, the first ever shipped to the interior of Alaska. They are for Mrs. Ed Wickersham and Mrs. M. M. Truxtun, who will experiment in bee culture. The fields and gardens in the Tanana Valley abound in flowers from the middle of May until the early part of September, and it is believed bee culture will be a success here.

Two different copies of Gleanings have been going to Alaska regularly, and it is to be hoped that the nucleus started by the two colonies mentioned in the clipping above may be increased as time goes on. Who can give us further particulars in regard to possibilities in Alaska?

Correction; Bees Wintered Well Around Philadelphia

In our April 15th issue, p. 282, editorial department, we stated that the bees had wintered quite well all over the country except in the vicinity around Philadelphia. Mr. F. Hahman, of that city, Secretary of the Philadelphia Beekeepers' Association, says that the bees never wintered better, and wondered where we secured our information. We saw a couple of letters from parties in the vicinity of Philadelphia early in the season, stating that they were fearful there would be a severe loss in and about the city, owing to the cold weather, and it looked like it at the time.

Beekeeping in Brazil

Brasilianische Bienenpflege, published in the German language at Porto Alegre, Brazil, publishes an account of our experiment with shipping bees to Florida, in its February number, and has the following to say:

It is quite a distance from Medina to Florida, but thus far the experiment seems to have been successful, and it seems to us that our German beekeepers might well consider this matter of migratory beekeeping, which could be practiced to a considerable extent in this country as well.

It may interest some of our readers to know that, while the Portuguese language is the official language of Brazil, the German language is spoken almost exclusively in the southern part of that country, where there are extensive German settlements, and, incidentally, a large number of German beekeepers.

The fact that beekeeping pays in Brazil, and that the industry has developed to a considerable extent, would seem to be proven by the existence of a number of bee-papers, the one mentioned above being in its 16th year, and also by a number of beekeepers' associations. *Brasilianische Bienenpflege* is the organ of the "Syndicato Apicola Rio Grandense," and is edited by Profesor Emil Schenk, who also has charge of the apicultural section of the Brazilian Department of Agriculture. He has done a great deal to develop modern beekeeping in that wonderful country.

Some Honey; a Crop of 540,000 Lbs. by One Man

Mr. Emilio Hernandez, of Cienfuegos, Cuba, has on hand a crop of 850 barrels of honey, or, more exactly, 45,000 gallons. At 12 lbs. per gallon this would make 540,000 lbs. or 270 tons. Perhaps Mr. Hernandez will be willing to tell us something about his extensive operations in Cuba. We do not know whether he produced these 850 barrels in one season or not; but we infer that he did. Apparently his problem is not so much to *produce* a crop as to *sell* it.

Perhaps we ought not to stir up a hornet's nest; but just suppose there were a few hundred beekeepers in the tropics like Mr. Hernandez, and that we had free trade. Free trade or protection, we do not imagine, we have any need to fear very greatly, because we have nearly free trade as it is on honey, and, moreover, we do not, and probably will never have a few hundred or even a dozen beekeepers who will produce 850 barrels in a season.

Prospects for this Season

With one or two exceptions the reports of wintering have been most excellent throughout the country. The spring has been favorable, and rains have been frequent enough to keep the soil for clovers sufficiently moist. But it is only fair to say that in our locality, at least, the clovers are not as promising as they were a year ago; that is to say, they are not as abundant, but there may be enough to take care of the bee season later on. There is no reason, however, to suppose there will not be a fair crop of clover. Some of the heaviest honey years have been when clover appeared to be very scarce; but there have been other years when clover was everywhere, and yet not much honey.

Some very fine crops of orange honey have been secured in Florida. One crop, by Prof. E. G. Baldwin, of Deland, Fla., if we may judge from a liberal sample sent us, is some of the finest orange we ever tasted; in fact, we should call it pure orange honey. Prof. Baldwin will have no trouble in disposing of it.

A New Bee Journal in Porto Rico

The first few numbers of *El Apicultor*, the organ of the Porto Rico Beekeepers' Association, have just been received, the first number of which publishes a letter written by Dr. E. F. Phillips, dated December 11, 1913, at Washington, D. C., in which he promises to assist the said association in any way that he possibly can. Dr. Phillips expresses the opinion that the island of Porto Rico offers a wonderful opportunity for the beekeeper, and that the formation of the society will undoubtedly help to promote the industry.

Mr. J. W. Van Leenhoff is the editor of the above-mentioned paper, and the said gentleman is likewise the President of the Porto Rico Beekeepers' Association, which has been incorporated as a branch of the National Beekeepers' Association of this country.

Beekeeping has developed in Porto Rico in a most wonderful manner within the last ten years, and we have no doubt that the formation of this association and the publication of *El Apicultor* will help very materially to further the interests of the Porto Rico beekeepers.

Marchant's Scheme of Transferring Not an Entire Success

On pages 345 and 346 of our issue for May 1 we illustrated and described the A. B. Marchant scheme of transferring bees from box hives into movable-frame hives on a plan that involved but little labor on the part of the beekeeper. This scheme at first worked out all right for Mr. Marchant; but later on it failed so many times that he cannot now recommend it without at least some modification, and has so advised us. Our readers will, therefore, take notice and be governed accordingly.

We were somewhat skeptical, but as the scheme had worked out all right up to that time we thought it worth giving to the public. The difficulty seems to be that the queen will not go above in all cases. Her failure to do this, of course, would make the scheme a failure.

If more of our correspondents would be frank enough to admit that some of their new schemes, after being tried out on a larger scale, are not a success, it would be better for the beekeeping public. Perhaps

the more critical ones will say that it would be better if the editor would go slower before giving them to the world; and to a certain extent that would be correct. But very often a discussion of these new and sometimes not thoroughly tried-out schemes develops a plan that finally proves to be a success. In this particular case Mr. Marchant has modified the plan, and later on will describe it.

Second Annual Report of the State Bee Inspector

WITH the second annual report on inspection in Iowa, the State Inspector, Mr. Frank C. Pellett, has incorporated the papers read at the second annual convention held in Des Moines, December 10, 11, and 12. The report as a whole is a great credit to Mr. Pellett, and will do an immense amount of good throughout the whole State.

Mr. Pellett makes the point that, according to the census report, more than one farmer out of every eight in Iowa keeps bees, but that the average value per farm was only $17.88 in 1910. However, most of the extensive beekeepers of the State do not reside on farms, and were, therefore, not enumerated.

Referring to the inspection, 311 apiaries were visited, and disease was found in 140. The total number of colonies inspected was 6973: total number diseased, 483. A considerable portion of those found diseased have been treated by the owner. In this connection Mr. Pellett strongly emphasizes the value of educational work.

A good description of the various diseases is given, including the disease sacbrood. There has been some inquiry from our readers of late in regard to this disease, and there seems to be some misunderstanding. We are, therefore, copying here the symptoms of sacbrood given by Dr. G. F. White, of the United States Department of Agriculture, as published on page 15 of the report.

> The strength of a colony in which sacbrood is present is frequently not noticeably diminished. When the brood is badly infected, however, the colony naturally becomes appreciably weakened thereby. The brood dies after the time of capping. The dead larvæ are, therefore, always found extended lengthwise in the cell, and lying with the dorsal side against the lower wall. It is not usual to find many larvæ dead of this disease in uncapped cells. Such brood, however, had been uncapped by the bees after it died. In this disease the cappings are frequently punctured by the bees. Occasionally a capping has a hole through it, indicating that the capping had never been completed. A larva dead of this disease loses its normal color and assumes at first a slightly yellowish tint. "Brown" is the most characteristic appearance assumed by the larva during its decay. Various shades are observed. The term "gray" might sometimes appropriately be used to designate it. The form of the larva dead of this disease changes much less than it does in foul brood. The body wall is not easily broken as a rule. On this account, often the entire larva can be removed from the cell intact. The content of this sac-like larva is more or less watery. The head end is usually turned markedly upward. The dried larva or scale is easily removed from the lower side wall. There is practically no odor to the brood-combs.

Along the line of treatment the shaking method is given for American foul brood, with some modifications. For European foul brood, requeening with pure Italian stock is recommended, and the shaking plan is also given, being recommended by Dr. E. F. Phillips.

Our Apalachicola Proposition; Four Carloads of Bees to Come Back from One Sent Down

THE last reports from our men in the field at Apalachicola, Fla., go to show that we shall certainly make an increase of three carloads of bees from the one sent down last November, and a strong probability of an additional car, or four cars in all. The first car starts May 8 by way of the river, Bainbridge, Ga., and Cincinnati. If it makes schedule time it will arrive at Medina on the 13th. The next two or three carloads will start May 20 or 22. One man will accompany the first car and two men the next two or three. Unfortunately the backward season in Apalachicola rendered it impossible to move the first car in time to get much of the fruit-bloom in and about Medina; so we have had to scratch around to find bees locally to take care of orchards in this vicinity.

Our boys have been able to secure a fair crop of honey, possibly enough to pay the freight on the bees back. But of this we shall speak more positively later.

The question may be asked whether our scheme of moving bees south for increase and honey, to Apalachicola, has been a success. As yet we are unable to give a definite answer. If we bring back four carloads of bees and twenty barrels of honey, the bees arriving in *good condition*, the venture will pay out well, without question; but

> There's many a slip
> 'Twixt cup and lip.

There are 6000 new combs just drawn from full sheets of foundation. While they have all been wired they will not stand a trip of this kind of some 1200 miles like old combs. If the weather should prove to be extremely warm while the bees are on the way, and if there should be poor connections, we might lose a considerable number of bees on account of these new combs melting down. All of them, however, will be

extracted so as to leave but very little honey in them—barely enough to carry the bees through to Medina.

To keep the bees cool there is nothing like having plenty of water at hand. There will be a barrel of water in each car, and these barrels will be replenished as often as they become empty. Past experience has shown that a carload of bees will use up a large amount of water—four or five barrels, perhaps, to the trip. If we can keep the bees cool by spraying or "wet blanketing" them, and if we can make good connections all along the route, it is safe to conclude the bees will get through in good order. In the mean time we are getting in connection with all the railroad people along the route to see that there is no delay. While the cars are moving there is no trouble to keep the bees cool; but when they stop for a few hours in midday the man in charge is kept busy in watering the bees.

The cars are to be hooked on as close to the locomotive as possible so as to avoid some of the bumping and to keep the bees out of the sulphurous smoke as much as possible when going through tunnels.

It is not expected that the men *en route* with the bees will have a Pullman-car trip. They will have to be up with the bees almost night and day to repair staging when an occasional bump jars it loose, and to fix the screens and give the bees water whenever they get hot. All kinds of weather, cinders, locomotive smoke, rain and shine, hot and chilly weather, cold lunches—all this is hard on the men, and of course it means extra time allowances. Taking it all in all, there are some heavy expenses in connection with a proposition of this kind; and the average beekeeper should go slow about making such a venture unless he can, from a financial point of view, stand a loss. If he moves all his bees south and then loses 50 per cent of them in moving back, even though he does make a good increase, he would lose out.

In our case we have one more bridge to cross, and that is to get the bees north in good condition. We shall be wiser and perhaps sadder by our next issue.

It is proper to say in this connection that the average northern man, even though he has had a large amount of experience in keeping bees will probably fail the first year after going south, for the reason that conditions are so very different. In our case we put a man in charge, Mr. J. E. Marchant, who was born and had been reared in Apalachicola, and who, under his father, A. B., had a very large experience in managing beeyards on the Apalachicola River before he went north. It takes a man of experience, both in the North and South, to make a scheme of this kind work out.

If we make a success of the plan this year, we ought to be able to do as well or better another year, because conditions this winter have been unfavorable. The cool months of February and March gave Mr. Marchant the blues. He had set his stakes for three carloads of bees and twenty barrels of honey; but when the whole of February turned out to be so cold, and the fore part of March being but little better, he began to be discouraged. But he made up his mind that the plan would *have* to succeed. So he has been crowding the queens by every means possible during the good weather we did have.* Had it not been for the unfavorable February and March we should probably have had all the bees up here in time to catch the apple-bloom. As it was, Mr. Marchant thought it best to catch the two tupelo flows and then move north.

The boys have been busy during the bad weather in making up hives and frames, and putting in foundation. No one knows, except the one who has tried it, that the nailing together and putting sheets of foundation in some 6000 metal-spaced Hoffman frames is no small job. No one man can do it in a month. In fact, it took an average of three men to do all the nailing and painting when they could not work the bees, between two and three months. They nailed and painted 500 hives with covers and bottoms, and 500 three-frame nuclei. Each colony and nucleus will be supplied with a queen—not of our own rearing, but of the rearing of Mr. A. B. Marchant, the father of the junior Marchant managing our bees. It will be seen, then, that we must charge up against the Apalachicola proposition queens, sugar for feeding, gasoline, launch rental, and a considerable amount of labor as well as freight; but as it would have cost us nearly as much to put the stuff together and paint it at our Medina factory, we will credit up this cost when the bees arrive in Medina.

There is one more item of expense, and that is platforms to hold the hives, and buildings to house the men during the bad weather; interest and depreciation. No one should get the idea that there is big money in moving bees south for increase and honey. There are some big risks as well as expenses.

* He has been crowding his queens so hard in brood-rearing that many of them are failing, and the bees are superseding. When we consider the fact that the bees have increased from 275 colonies, not overly strong, to 800 fair colonies, and 500 three-frame nuclei, we can readily understand why the queens are beginning to fail and the bees to supersede them.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.

SMITH gets 50 pounds of honey per colony; Jones gets 60 pounds. What per cent greater success has one than the other? I venture the guess that there isn't a man connected with The A. I. Root Co. who can give the correct answer in less than ten words. Nor a woman either. [The answer seems easy enough. What is the "catch"? We do not catch on.—ED.]

TERRY and wife use 3½ gallons of honey a year, p. 280. That's 1¾ gallons each. I use 3¼ gallons a year for my morning drink alone. All the same, you're right that it would give honey a boom if all would use as much as the Terrys. It would take for the United States about 2,000,000,000 lbs. My only reason for using honey instead of sugar in my drink is that it is better for health, and I'm fairly long on health.

D. M. MACDONALD, *British Bee Journal*, 72, questions calling worker-bee "fellows," I suspect because they are females. The Standard dictionary gives as the first definition of *fellow:* "A person or individual: a term of familiarity applied to almost any person of the male sex, and occasionally to a woman." That ought to let in worker-bees, especially where "votes for women" have given women equal fellowship with men. But when our Scotch friend, speaking of the Americanisms of an author, says, "His roof is a 'lid,' his flightboard an 'apron,' and he speaks of the 'Porter' 'escaping bees,'" I'd like to have him name the author. A roof is always called a "cover" here, and I've never seen either of the three terms he quotes in American writing, although I have seen "lid" in British writing.

"BEES can carry a blight of any kind," p. 300. I wonder. "Active hold-over cankers exude a sticky ooze, attractive to insects, ... and any insects visiting such cankers will become covered with the germs," p. 299. Now, did you ever see bees visiting such cankers? Don't they go straight for the blossoms and alight nowhere else? You know well that bees are strongly inclined to stick to the same flower or other source of sweets. Now, suppose a bee should visit a canker; wouldn't it keep on visiting cankers? so where's the chance of carrying infection to trees with no canker? [You are taking our language too literally. Bees will have little occasion to visit a sticky ooze, even though it might be very attractive to other insects. What we meant to say was that bees might carry blight if it were where they would be likely to come in contact with it. We will admit we are not well informed on the subject of blight; but twig blight and pear blight could be, and are, carried by bees, and in a form that might find lodgment in blossoms.—ED.]

"THE OCCURRENCE of swarms going into other hives that have just swarmed" is mentioned, p. 293, as "not common." With me it was painfully common when a number of swarms issued on the same day with clipped queens. The bees not being allowed to go off with their queen, likely preferred to return to some other hive than their own, and the swarmy noise at other hives attracted them. One day I had a case of that kind. I moved the hive to a new place, and the bees soon found it. Then I put it on a wheelbarrow and trundled it about. As long as I kept on the go it was all right, but whenever I stopped the bees found it again. [The reason it was "painfully common" was doubtless because when it did come, it came in a painfully inconvenient time. We have had for years something like 500 colonies in and near Medina, and the occurrence of swarming bees going into other hives is not common with us. As we do not clip queens, because many of our customers prefer them unclipped, it may be that this explains the difference.—ED.]

ON page 283 there seems a desire to discover some artificial pollen that will work out just the same as natural pollen. May be that would be no real gain. O. O. Poppleton says, p. 281, "My problem is not so much to encourage brood-rearing as to keep it down," and in Germany "late-breeders" are in general preferred to "early-breeders." If we could get a colony a month in advance of others in brood-rearing, it is just possible it might fall below the others in its season's storing. [Perhaps with the Northern beekeeper there would be no real gain by artificial stimulation; but in the case to which we were referring, inciting bees to breed by artificial means in Northern Florida to secure increase would be a decided gain. If an artificial substitute for natural pollen can be found that will cause bees to breed up as readily as on natural pollen it will mean a great deal to many Southern beekeepers who desire increase, but who sometimes find there is no natural pollen, notwitstanding general weather conditions are favorable. There is seldom a scarcity of natural pollen in the North except very early in the spring; but it is often lacking in parts of the South.—ED.]

J. E. Crane

SIFTINGS

Middlebury, Vt.

If Mr. F. A. Conner's jumbo hives are as great a success in producing honey as they are neat in appearance in the picture, page 183, they are a success, sure.

* * *

I have examined several yards of bees this spring, and those wintered out of doors appear to be in much the better condition in spite of the severe winter.

* * *

After reading Mr. Van Wye's experience in court, page 190, one can not help wondering if the old-fashioned rule of loving your neighbor as yourself is not, after all, the best way.

* * *

Wesley Foster says, page 166, that he has "made mistakes and always shall." Just so "me too;" but it is more than half the battle to acknowledge our mistakes. Give me your hand, my brother.

* * *

On page 163 Dr. Miller quotes from a German bee-journal the statement that honey from some soils contains 75 per cent more iron than that from other soils. This may have a bearing on the color of honey from different soils.

* * *

That house apiary of Mr. Newsome's, page 181, is certainly attractive. Such apiaries have some advantages. I run across them now and then in inspection work; but I find they have some disadvantages as well. They are, however, a complete protection against petty theft.

* * *

Do we beekeepers realize how fast the larvæ of bees grow? If a chicken were to grow as fast it would in a week weigh about 125 lbs.; and if a wee pink human baby were to grow as fast as these baby bees, it would weigh in the course of a week not far from four tons, and be as large as a good-sized elephant. These are, of course, estimates, and, like the weights on freight bills, subject to correction.

* * *

I will say in regard to that four-foot board referred to, page 85, by Dr. Miller, that one is enough for a yard. We give just one line across the board to a hive, and use shorthand thus. 27. s.6-20-×7-4 O. Let me read it: "No. 27 has a queen two years old; wing clipped; is strong in spring, and on June 20 found eggs in queen-cells. The queen was removed July 4th, and in seven or eight days a virgin queen was given, which in due time was found to be fertile." Having eight yards to look after, we haven't much time for bookkeeping, and a few signs seem to answer our purpose.

* * *

HOW THE MUCH-DESPISED SWEET CLOVER IS WINNING ITS WAY INTO FAVOR.

F. W. Lessor says, page 230, that sweet clover is a great crop, and he is going to sow nine acres of it this spring. Dr. Miller says, p. 205, that in his county the farmers have bought twenty bushels of the seed. A man in Kentucky writes me that he has sold a carload of sweet-clover seed; and our State Commissioner of Agriculture told me not long ago of a man in Kansas who had plowed up 4000 acres of alfalfa to sow to this despised sweet clover—not that alfalfa was not good, but that sweet clover was better, in that (for pasture) there was no danger of bloat in cattle. Let the good work go on.

* * *

REQUEENING WITH VIRGINS WITHOUT DEQUEENING.

On page 126, Feb. 15, I inquired how far young virgin queens could be introduced into hives having a laying queen, and have them become fertile, and take the place of the old queen without the trouble of looking her up. Mr. Adrian Getaz, of Knoxville, Tenn., writes me queens three or four years old will be destroyed invariably. Those two years old, not always. Those of the previous year's rearing will often succeed in destroying the virgins—how often, I don't know—perhaps in one-third of the cases—often enough to make the scheme unprofitable. I wish he would tell us how he introduces his virgin queens.

* * *

THE FELLOW WHO DOESN'T READ A BEE-PAPER.

An old gentleman offered me his entire lot of twenty colonies of bees in all sorts of hives, three years ago, for $60. I called to see him a few days ago. He was not at home, but his family informed me that the bees had increased to thirty-five colonies, and he was fixing them so as to put on sections, and had made 250 sections for use this season. I didn't smile—at least till I got away from the house. It wouldn't have been polite; but I couldn't help thinking that, if he read GLEANINGS or some other good journal, he would have wanted 2500 sections and 20 pounds of light foundation to go with it. How much it has saved him to go without a bee-paper or bee-book both in time and expense!

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas.

A TOO COMMON MISTAKE.

In GLEANINGS, April 15, are shown excellent photographs of various extensive apiaries, both of this country and from across the water. It will be noticed that the hives are in long rows, spaced the same distance apart in each row, and the hives entirely alike in almost every instance. In my own experience I found years ago that this was not the best way to place the hives, and I have called attention to the matter before. The danger of not only bees but queens mistaking the neighboring hives for their own is the main objection against such an arrangement. It caused me much trouble as long as I had the hives spaced in such systematic order on account of the many queens that were lost by going to the wrong hive. And this did not stop until I moved every other hive closer to its next neighbor so that the hives, while still in long rows, were arranged in pairs. Thus placed there is little if any danger of the above-mentioned trouble. I have wondered if other beekeepers who have their hives arranged in such regular order do not have these troubles. My information from a number whom I have asked is that they experienced a large number of missing queens, but they had not given the real cause of this any thought. After mentioning the matter as outlined above there was a general opinion that "there is something in it." What do others say?

* * *

WHAT TO DO WITH DARK HONEY.

The following letter has been forwarded to me for an answer:

Louis H. Scholl's objections to selling off-grade honey have prompted me to write for information. I agree with him in regard to the evil effect of selling the "stuff," as he terms it; but the question is, "What shall we do with it?" In my immediate locality we have honey-dew in almost unlimited quantities in the summer, just after the main honey harvest, and this is often mixed by the bees with more or less good honey. It is never mixed enough to make it any thing like a good grade of honey; but we are often compelled to extract quantities of it in order to make room for the queen to deposit her eggs; and as we don't need it for feeding purposes there is nothing to do with it but either to sell it, give it away, or dump it in the river. There is no market for it that I have ever been able to find. The biscuit companies refuse it, as they say they are not permitted to use it in their goods. If you can suggest some way to use it, or some profitable way of disposing of it, it will be appreciated. Would the name "honey-dew honey" on the labels of this grade of honey conform to the pure-food laws, or would the word "honey" have to be left off entirely?

Jonesboro, Tex., March 27. T. B. CANTRELL.

My claim is that we should not put any inferior grades of honey on the market as a good many beekeepers have done and are still doing from year to year. The result is that it has a material bearing on the price good honey ought to bring, and therefore should be avoided. In our own case we have a good deal of quite dark honey at times, and sometimes we get very light-colored honey. Now, instead of selling the very light honey alone, we use it with darker honey to make a light-amber blend that we have been selling for years. Long ago we found that this is by far the best method of procedure in a locality where honeys of different colors are harvested. We find it difficult to get enough more for our very light honey over a good light-amber grade to warrant us in selling it separately, and then, perhaps, run the risk of not being able to dispose of our darker grades. A good light-amber grade of honey always finds a ready market at a good average price. Besides this we now avoid the occasion for sending a customer some very light honey at one time and then filling his next order with dark honey or *vice versa*. Either may cause reason for complaint.

My advice about the handling of the honey crop in your locality would be to harvest your main crop just before you get any honey-dew mixed with it. The honey-dew honey can then be left on the hives for winter stores here in the South, as we have not found that any evil results follow its use as it might do in the North and East. In my own apiaries I would provide the queen laying room in some other way and leave the honey-dew in the combs for feeding stores in the spring. The result of this extra amount of food material during the heavy breeding season in the spring would mean rousing colonies for the honey-flows later. I am sure that it could be used to great advantage for this purpose. Instead of putting it on the market in the form of "honey," especially if of dark color, I would turn this product into increase of bees and then sell the extra bees. Such an exchange would prove profitable. It would be far better to use it up in this way than to put it on the market at a low price. This always has a tendency to bring the price of better honey down. [Honey containing honey-dew can be sold under the name of "honey-dew honey." This complies with a ruling under the national pure-food law.—ED.]

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.

BEES MOVING HONEY; A HONEY-BOUND BROOD-NEST.

A correspondent writes thus: "I should like to have you take up the subject of bees moving honey in your Conversation department in GLEANINGS. You advocate such in your "Management of Out-apiaries," where you speak of shaking a colony on to its own combs of honey that had been placed above a queen-excluder in an upper hive till the white clover begins to yield honey in sufficient quantities for work in the sections. You say that, when this upper hive is placed on the stand the parent colony has occupied, and the bees shaken from their combs of brood into it, they will carry the honey from these combs into the sections so as to give place to the eggs and brood the queen will fill them with. Now, I have never been able to get one colony to do such a thing. I note that Editor Root speaks of colonies getting honey-bound, and I have had many such cases myself, and that with plenty of room in the sections above. The past summer I placed heavy combs of honey right in the middle of the brood-nest to see what they would do with this honey. They shifted the nest and let the honey alone. If there is room, bees will move the brood-nest. If there is no room, they are "honey-bound."

I have no reason to doubt what our correspondent states. I have passed through just such experiences several times myself. But I found the removal of honey from the brood-combs to the sections in the supers depended on conditions, such as whether the bees wished to swarm, whether the queens were poor, or whether they were anxious for the queen to lay eggs, and feeding her for that very purpose. If the first two, then apparently nothing would cause them to remove honey. If the latter, nothing would hinder them from removing it from the combs in the brood-chamber, except no place to put it.

I well remember one colony which had commenced to work in sections nicely, when all at once they stopped and commenced to store more in the brood-chamber than in the sections. As this was a "pet" colony, and one I had made my "brags" on, I opened the hive to see what the trouble was. I found nine queen-cups started, and eggs in every one of them. I knew that swarming would blast all my hopes, so I determined on vigorous treatment. I cut out all the cell cups I could find, whether having eggs or not; put the frames having the most brood at the outside next either side of the hive, and those having honey in the center, believing I had things my own way.

Right here allow me to say that I have never had any success in stopping swarming through the cutting of queen-cells after the queen had laid in them and the "broody" fever had taken possession of the colony. After nearly half a century of this work I now consider such only a waste of time.

To return: Two days later I found "nothing doing" in the sections—opened the hive, found some twenty or more cell cups with eggs in, and the honey in the center combs untouched. I became desperate, cut out the cells again, and uncapped every cell of honey the brood-chamber contained, cutting the combs down even with the wood to the frames. Did they carry the honey to the sections? Not at all. It ran out at the entrance; and had it not been a time of a good flow of nectar I should have had a fine case of robbing on at the apiary. To clean up the "muss," they stored every available cell in the brood-combs with honey, started more cell-cups, and swarmed the next day with over forty cups with eggs in them. I now took out all the combs they had in the brood-chamber, filled the same with empty combs, hived the swarm back in their old hive, shook all the bees off their combs with the swarm, put the sections back on, and closed things for two days. I then looked in, found three combs cleaned for eggs, with eggs to the amount of perhaps a thousand in these combs. I next took out the other seven combs, and replaced them with seven combs containing solid sealed honey. Three days later the bees were making the combs in the sections grow like magic, and two weeks later I took off two supers of 44 sections each, and left another super of 44 sections well under way, while an examination of the brood-chamber found every cell filled with brood except those containing from five to seven pounds of honey and those necessary for pollen.

From this it will be readily seen that, when any colony is in a condition that makes them desirous of brood, they will feed the queen for the purpose of having her lay; and when they thus feed her they are sure to prepare the cells for those eggs if there is room in the supers for the storing of removed honey.

Now, if you will read "Management of Out-apiaries" carefully you will see that each colony, as far as possible, is brought

Continued on page 392

GENERAL CORRESPONDENCE

OPERATIVE COSTS IN BEEKEEPING; A VALUABLE ARTICLE FROM ONE WHO KNOWS

BY R. F. HOLTERMANN

The article of Arthur C. Miller, followed by your editorial on pages 290, 291, interests me. I believe the estimate of 10 per cent loss in the introduction of queens is not far from correct, although with me it generally runs somewhat less. I doubt if the beginner has a much heavier loss in introduction, as the rules for this work are pretty well known, and, if followed out at all, are likely to give just as good results with a beginner as with any one else.

In introducing queens, especially in the fall of the year, I feel sure that a matter that is overlooked is that, *at such time*, there are often two queens in the hive—mother and daughter. We found a large number of colonies in that condition last fall when introducing several hundred young queens.

STUDENTS.

In the footnote attached to the same article you are kind enough to value my time at 50 cts. an hour. The bee season lasts in all about six months, or close to 150 days. That would give me a wage of just about $750 per year. Would that not be a pretty handsome salary for a man who has been engaged for over thirty years in a business? I am afraid that, in counting the cost of honey production, there are a large number who do not consider that there are many days for a beekeeper when his time is worth little or nothing, and that he must "make hay when the sun shines."

Then as to students, you overstate what I pay them. I consider that it has cost me considerable to learn what I have by experience. Moreover, I have spent a good deal of money in going to conventions and privately visiting beekeepers. I am running something like 800 colonies; and whoever comes with me for a season should get the benefit of pretty long and wide experience. If a person goes to school, college, or university, it costs money, and I do not —*need not*—teach a young man his business and *pay him besides*. I have taken two more young men than usual this year, and could easily get as many more, to say nothing about several young ladies.

I want men of clean habits. I do not call tobacco-smoking a clean habit; for, even if smoking is not indulged in at work, or going back and forward to work with others, one using tobacco always smells of it, which is very unpleasant for those not using it. Then, if I judge from correspondence I have with those who are likely to be suitable, they come understanding they work as they learn, and get their board. That is all that is definitely promised them. Their washing is not promised them, but we have done that for them with the exception of fine shirts and collars. Then if I do well (which I fix as getting 50 lbs. of surplus per colony, spring count), *and they do well*, I promise them $35.00 at the close of the honey season, and the promise to stay for the season, April 15 to Oct. 1 (about).

I have no trouble in getting all the help I want, and I have generally succeeded in picking desirable and intelligent men. Mr. H. H. Root will not hesitate in saying I made a good selection last year.

What I expect from students is an interest in the work. The terms they come on would indicate that; but there is a great difference in men. Some are thorough in all they do, while others are the opposite. Some have their mind on what they do, and some have their minds on almost any thing except what they do. Others appear to have no mind at all. I have found, in the majority of cases, a well-brought-up farmer's son a good man. A shirker is a nuisance, and, as a rule, between us he manages to get his share of the load before the season is up.

Let me say here there is no trouble in sizing up people. It is only the selfishness of a person that prevents him from seeing that every one can read him as readily as he can an open book.

What I will not tolerate is a two-faced person—one who can do things well when some one is around, and any way but well when no one is around. I expect students to make mistakes sometimes. That is part of their tuition; but I do not expect them to make the same mistake over and over again. I do not expect them to make mistakes very often that a little foresight would have prevented. If they do it counts against them. I have much sympathy for a person not naturally very alert so long as I can see he is doing the best he can, particularly if he is frank.

I have had quite a lot of young men do well under my tuition and management.

Some, but not many, are fit to run 100 colonies after a season's practical experience. Others would be better off to take another season and work for pay with some one else, or to begin with half the number of colonies. Others have such careless ways, such a lack of thoroughness, that they had better not keep bees at all. I do not believe any one should make his first aim in life to earn his bread and butter. He should, rather, live for God; and what God gives him to do he will do well.

Brantford, Can.

[Our correspondent is one of the best beekeepers in North America—yes, one of the best in the world. The fact that he has been making money with his bees, and increasing year after year, shows that he is a business man as well as a beekeeper. Most business men have to pay dearly for their experience, and Mr. Holtermann is entirely right in contending that students that come to him to acquire practical experience should not expect ordinary wages. In former years, in England an apprentice had to spend seven years in learning his trade; and it was only during the last year or two of that period that he received any compensation whatever. If one desires to become a competent beekeeper he should be willing in some cases to work for nothing and board himself. In fact, we have two lady students who are coming to us this season, expecting to follow our experts around for what they can learn. Their labor will just about offset the inconvenience of showing them. The time may come, perhaps, when Mr. Holtermann will find that he can get all the help he needs from students who will be willing to pay for board and lodging, and in addition furnish their labor for what they can learn.

Perhaps we put Mr. Holtermann's hourly wage too low; but we figure it this way: The average expert beekeeper in most localities will consider that he is doing well if he earns 50 cents an hour; and in some cases at least the skill that will enable one to earn that wage during the bee season will enable him to make an equal compensation at something else during the other part of the year.

Mr. Holtermann says that he considers 50 lbs. average is doing well. He evidently considers this as a minimum figure on which to base his extra compensation, although during the season of 1913 his average would be, of course, beyond that. If we take a period of ten years, good and bad alike, the average might not come up to 50 lbs. Let us take a pencil and tablet and see how the figures run. Mr. Holtermann has 800 colonies, and he thinks his minimum "does well" if it is 50 lbs. average. This would make him 40,000 lbs., which, at 8 cts. per lb., would amount to $3200. The board and lodging of his students, including washing, would run up to about $5.00 per week, or $125 per season for one student. Six students would make this nearly $800. Depreciation on his equipment, and winter losses, on the basis of 10 per cent, would make another $800, or $1600 all told. This would leave him a net profit of $1600 for his labor, or what would be a little more than $5.00 for one year of 300 days or twice that for 150 days. His time then ought to be figured at nearly $11.00 a day on the minimum "do well." If he had only 400 colonies his earning capacity would be considerably reduced, and most beekeepers do not go beyond the 300 mark. But the late W. Z. Hutchinson advocated keeping "more bees." Let's see how this works out.

Four hundred colonies would make his gross income only $1600; but as his overhead expense would be higher in proportion his net income would be $800 or a little less than $5.00 for 150 days, or $2.50 for 300 days. If his knowledge and experience can enable him to handle twice the number of colonies, and make $11.00 per day, why shouldn't he keep 800, or, better, 1200 or 1500? That brings in new elements—more bee range which he may not be able to get, and longer distance to travel, and a greater cost of transportation. The "more bees" slogan can't be worked too hard.—Ed.]

GOOD COMBS; THEIR IMPORTANCE, AND HOW TO PRODUCE THEM

First Paper

BY ARTHUR C. MILLER

One does not have to serve long as an inspector, nor do much visiting among beekeepers, to become impressed with the vast number of poor combs in use. But one is surprised that so many beekeepers have not the slightest idea of the great loss in using such combs.

Not only are there many poor combs, but many are so placed in the hives that half of their surface is not available for brood.

Part of this is due to faulty hives and part to careless spacing, though the self-spacing frames have largely overcome the latter. But it is of the quality of the combs that I am more particularly to write.

The standard L. frame of commerce has an area within bars of approximately 132 square inches, which, if filled wth worker cells, would contain approximately 6600 cells on the two surfaces. If we accept as a working hypothesis the figure of 3000 eggs in 24 hours as a queen's capacity, then one such comb will take two days' eggs, and 10 such combs (66,000 cells) will just do her for the 20 days and a fraction necessary for one cycle of brood.

But relatively very few "L" combs contain any such brood-cell area, either worker or drone, and very many contain a wastefully high per cent of drone. To illustrate these points I append photographs showing perfect, good, medium, and poor combs. In speaking of areas in what follows, I shall refer to one surface only. The good comb shown in No. 1 is nearly perfect. Incidentally I will say that I have hundreds as good or better. It not only costs no more to produce such combs, but it actually costs one less to produce them than it does other beekeepers to obtain poorer ones.

Comb No. 2 will be classed by most beekeepers as perfect, as almost the best they can ask for. It is a good comb, but it is not well fastened in, and there are nearly 30 square inches of waste space within the frame. Part of such is in the unfilled space next to the bottom and end bars, and part is in the shortened cells comprising the rounded edges of the comb. Under right conditions the space at the ends will be built in.

Comb No. 3 will pass for good by many. It is straight, firmly attached, fills the frame better than No. 2, but has about 20 square inches of stretched cells and drone comb, besides the short cells at the bottom edge, and the space next to the bottom-bar. All together it has only about 86 square inches of surface available for worker brood. Ten such combs are equal to little more than six like No. 1.

Comb No. 4 will be called poor by almost any one, yet the inspector finds many such, and many even worse, as he goes his rounds. It would take forty combs like that to equal No. 1 for worker-brood production.

Combs No. 1 and 2 are profitable to use; and if it were not easy to have combs like No. 1 then No. 2 would be almost good enough. But you may ask, "Why aren't they, any way?" Well, I never throw such away, you may be sure, but I am taking pains to get No. 1 type now.

Ten combs like No. 1 and 2, with a good queen and proper conditions, will furnish a beekeeper with a rousing colony. Ten combs like No. 3 and 4 will not. At best they have many per cent less available worker-brood area; and not only that, they contain an excess of drone comb, besides having stretched cells near the top-bar which will be filled with honey which should be in the supers.

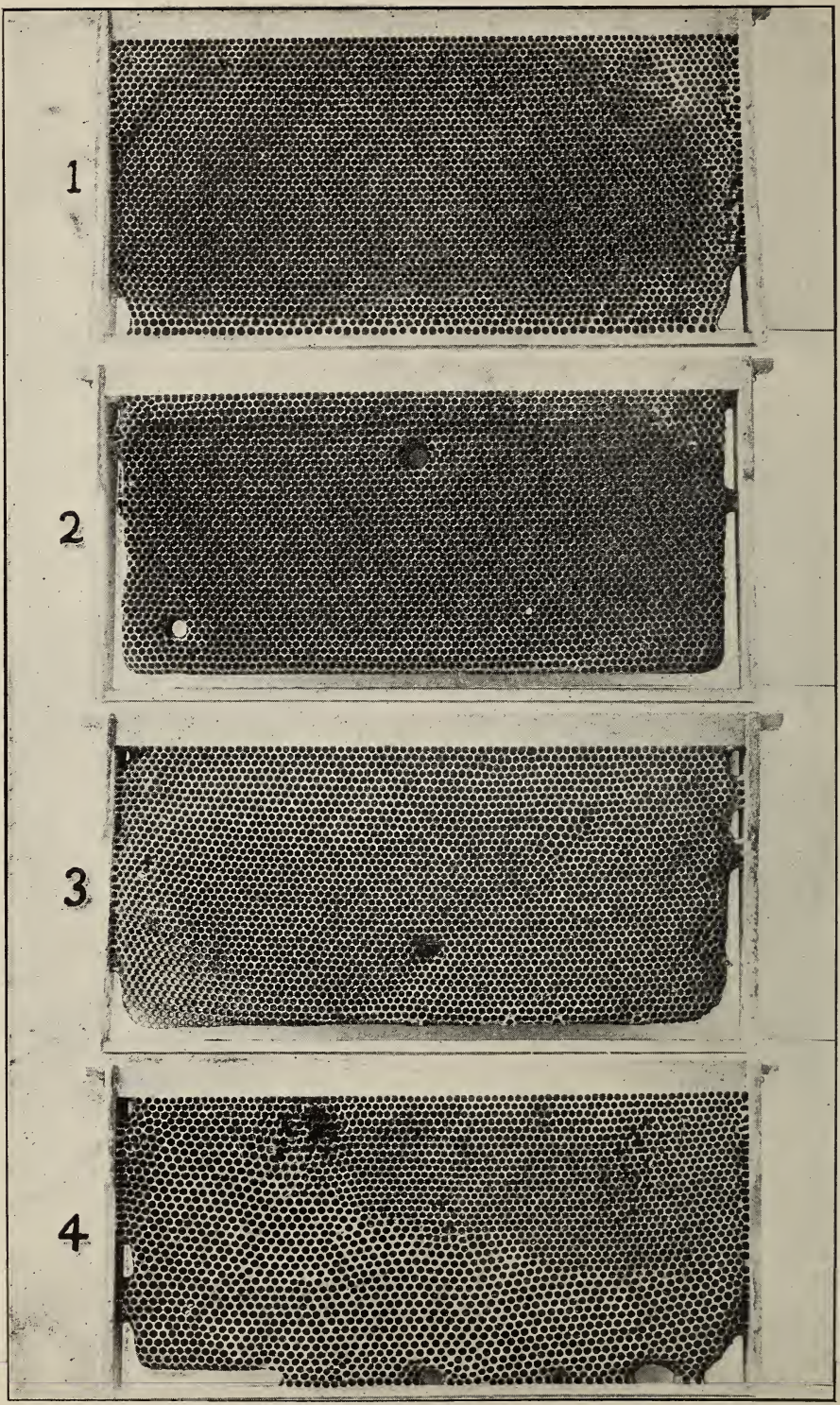
You hear of men advocating twelve-frame hives, two eight-frame or two ten-frame bodies for one brood-chamber. Examine their hives and you will, in most cases, find their combs are many per cent below what they should be. In other words, they are using double equipment in bodies, frames, and comb, or buying wide or deep hives at special prices, merely to get what they should and could have by proper attention to the production of their combs at the start.

Invested capital is too often lost sight of in the efforts to get results by manipulation of one kind or another. Do you hear the man who is talking two bodies for a brood-chamber mention that one body with combs represents a flat cost (without labor) of about $1.60, and that to get his desired results he proposes to invest $3.20 for each colony? He does not figure it that way. Those figures are based on his using full sheets of foundation in the ordinary way; and if his combs are of the average from full sheets, his two chambers will give more room than is needed.

If he chances to have tried to economize by using starters or half-sheets his double story may give him plenty of workers, but it will also give him a horde of costly drones.

I know one extensive beekeeper who, to economize, makes his own foundation, saying he cannot afford to sell his wax for 30 cents and buy foundation at 60 cents. He makes six L. sheets of foundation from a pound of wax, and then economizes(?) still further by using but half a sheet in a frame. His combs are only about 60 per cent efficient on a worker-producing basis. His foundation costs him five cents a sheet for wax; labor, he says, is nothing, for otherwise he would be idle in the winter. I buy foundation from the manufacturer at five cents a sheet, and have no labor in making, and get a better product than the man referred to. Who is the better off?

I use full sheets in nine of each ten frames, and a half-depth sheet in the tenth. I get the combs shown in No. 1 in nine frames, while the tenth is half drone. Why



1, perfect; 2, good; 3, medium; 4, poor combs.

do I do that? Because the bees insist on having some drone comb, and I prefer to have it all in one place, and have that place where it serves me best, which is at the *back* of the hive. My hives are all with the combs side to the entrance instead of end to the entrance. Why? Because I can work more easily with such arrangement; because I can remove most of the combs without disturbing entrance conditions—usually a small matter, but not always; because I can keep a small colony across the whole entrance where it can better defend itself, for I seldom fuss with reduced entrances except in extreme cases, and because my special drone comb is at the back, where it is not used until every thing else is full. The bees' convenience, or theory of warmth or cold, enters not at all into the arrangement. I use it because it suits me and serves my ends best.

The top-bar of that frame with the half-comb of drone is painted white—a practice I followed and advocated many years ago. So designated, it does not get put into other parts of the brood-chamber unless I purposely put it there for getting drones early or out of season, or from a special queen. But the instant the tops of the frames are visible, the location of such a comb is known.

I think I may properly call my ten combs so handled the perfection of comb efficiency and economy. My results (operations and colony conditions) are all that any beekeeper could desire, and I know that I do less handling and overhauling than most beekeepers.

There is one other item in my use of combs which has much to do with the results I obtain. My hives have half an inch more width inside than the standard, and the combs are offset from front and back walls rather more than two full bee-spaces. Why? See the solid sheets of brood in the outside surfaces of the outside combs and you will understand why. Does it pay? Go and examine the two outer combs in a standard ten-frame hive and you will see. The outer surfaces rarely have any brood, and the inner surfaces are not usually well filled. I cannot afford to lose the brood-containing use of one comb out of every ten; so, after I have obtained ten combs of the highest possible efficiency, I so place them as to have every inch available.

I think that the available worker-cell area in the run of ten-frame hives as the inspectors find them is equivalent to but six or seven combs of the No. 1 and No. 2 type.

If beekeepers would study their combs more closely they might discover the reason for some of the great differences reported from use of hives of different sizes, proportions, and protection. Poor combs are a serious loss to beekeepers in more ways than one, and it is the more grievous in that it is easily preventable.

I have said that it costs me less to produce my combs than it does the average beekeeper to produce less perfect ones, and in some future papers I will tell you how I do it. I use old and well-known methods, correcting a few errors, adding one or two things which I have found superior, all of which will be described and pictured, so that you can do the same if you will take the same pains.

In the meantime, ponder on the quality of combs, and the profit and losses arising from the use of the different kinds.

Providence, R. I.

IS THE SUPPLY OF HONEY LIKELY TO EXCEED THE DEMAND?

An Open Letter to Dr. Miller

BY RAY MITTOWER

Dr. C. C. Miller:—I am writing to ask you for a little advice. I am a man in my twenty-first year, and it is time I made up my mind what my occupation will be. I am a farmer's boy, and I have kept a few bees for the last eight or nine years. I take great interest in them, and have been successful, as this is a good location. I have always thought that I would make beekeeping my business. This part of the country is favorable for the production of comb honey. Here is where I should like to have your opinion. Is the supply of honey likely to become greater than the demand? Will honey be so plentiful that it will be a drug on the market, and the prices be so low that beekeeping would not be a paying proposition? You will find a little article on this subject in the Feb. 1st issue of GLEANINGS, page 89, by Wesley Foster.

West Lodi, Ohio, March 2.

[Dr. Miller replies as follows:]

All that Wesley Foster says is, unfortunately, only too true, and he is doing good service in trying to get beekeepers to face the situation. Your question is an impor-

tant one, "Is the supply of honey likely to become greater than the demand?" A search for the answer involves two other questions.

1. Is the supply of honey likely to become greater than the amount that can and ought to be consumed for the best interests of the public in general? The annual consumption of sugar in the United States is something more than 80 pounds for every man, woman, and child. I think the general consensus of opinion among the medical profession is that this is detrimental to the general health. There is probably little doubt that it would be greatly for the public good if three-fourths of this amount should be replaced by honey. Let us, however, be modest in our demands, and say that one-fourth of that amount should be replaced by honey. Let us be even more modest than that, and say that enough should be added to the amount of honey now used to total one-fourth of the number of pounds of sugar now used. That would make 20 pounds per capita. To supply such a demand would require a vastly increased production, such as is very unlikely to be reached in your lifetime. So we are pretty safe in replying to our first question that there is little danger that more honey will be produced than can be consumed, and that *ought* to be consumed for the best good of the nation.

We now come to our second question: Is it likely that the people will—not *can,* but *will*—be so awakened to their own interests as to demand and consume the amount of honey that they should consume for their best good? Replying to this question, I must frankly say I don't know. It lies in the hands of two parties. It lies in the hands of those public officials who are looking out for the public health, as the first party. The tendency is now in the direction of increased care for the health of the people; and if that tendency continues we may yet find government doing as much for the health of folks as it has been doing for the health of hogs. When that time comes, one of the things it may do is to urge the consumption of less sugar and more honey.

The other party to whom we must look to make known the virtues of honey is the brotherhood of beekeepers themselves. If they were all as wideawake to the necessities of the case as Wesley Foster, the case would be hopeful. Alas that they are not! Whether they ever will be to the extent of taking concerted action is one of the things in the realms of the unknown.

There remains, however, the possibility of individual action. There are individual beekeepers who have done much to educate the public in their immediate vicinity, and this offers an inviting field to any young man who contemplates adopting beekeeping as a permanent calling.

Suppose you are located in or near a city of 2000, or in a rural community of that size, and that you have the field to yourself. It ought not to be an impossibility for you, by a continuous persistent effort, to educate your clientele so that they would consume the 20 pounds per capita already mentioned. That would call for 2000 times 20 pounds, or 40,000 pounds of honey. That looks as if there would be no trouble about the demand, but that you might have trouble about securing the supply.

I am not a prophet; but if I might be allowed to make a guess, I should say that the prospect for the right man is just as good now as it ever was, if not better.

Marengo, Ill.

EXPERIENCES OF A VETERAN BEEKEEPER

A Monstrous African Bee-tree; the Remarkable Career of a Beekeeper, Missionary, and Explorer in Africa

BY REV. J. M. LEWIS

I have read with unsual interest the writings of A. I. Root, especially those on health and how to live long, and his frequent references to Terry. In looking at their pictures, which have at various times appeared in GLEANINGS, and having noted their gray hair and other marks of advanced age, I have wondered if, with their careful diet and rigid mode of living, they were more robust and energetic than the average, or had retained their youthful appearance above the average man of seventy.

I am sending you a photograph taken on my 70th birthday. I think I can claim the honor of being a veteran beekeeper, having been born among the bees and keeping them at various times all my life. At the present time I have twelve colonies, and am doing nearly all the work on a small farm where I have three cows, a horse, and a hundred fowls. I have scarcely a gray hair; my teeth are exceptionally good, so that I crack nuts and bite off a twine string with the greatest ease. I have lived a very active life, and

A beekeeper who, in spite of an eventful and active life, is 70 years young.

much of the time a laborious and trying one. For several years I was employed in the manufacture of furniture and children's carriages, often making long trips, going over a large part of the South and West, buying stock and soliciting trade.

During those years I was interested in Sunday-school and evangelistic work.

In 1887 I was called to go to Africa, and in March of that year I started for the "Dark Continent," and entered the mouth of the Congo River two weeks behind Henry M. Stanley when in search of Emin Pasha. I traveled a thousand miles into the interior and went where a white man had never been, going several months without seeing the face of a white man. I encountered many dangers, and some narrow escapes from death, and endured hardships trying in the extreme.

After five years of missionary work in the hottest part of the world I returned to my native land with health impaired, but with courage and a good constitution, and took up pastoral work. My longest pastorate was seven years, and the shortest two years, with one of three and one of four years. I concluded that, by long service, I was entitled to a less strenuous life.

THE LARGEST BEE-TREE IN THE WORLD.

I retired to the farm where I could keep bees, which have been one of my hobbies, and one I can ride with a great deal of "sweetness" and very few stings. I not only have the honor of being a veteran beekeeper, but of discovering the largest bee-tree in the world, a photograph of which I send you (see Fig. 1), with some others taken while in Africa. I also claim the honor of making the first and finest collection of photographs of that country ever brought to America.

The tree is the baobab (*Adansonia digatata*). It measured sixty-five feet in circumference. The bees entered the body of the tree near the first branches. Some of your readers may ask if I cut the tree down to get the honey. Not much. Too hot. Fig. 2 is the trunk of the same tree with four boys standing several feet apart to show its enormous size.

No. 3 shows the blossoms of the tree, any one of which would nearly fill a peck basket. The fragrance is delightful, and can be detected a long distance.

Fig. 4 is the oil palm showing how the natives climb the trees. They gather the fruit, which they use for food, and also the sap, which they drink. This is procured by

Fig. 1.—The largest bee-tree in the world—65 feet in circumference.

Fig. 2.—A closer view of the largest bee-tree in the world. The native children in the foreground give an idea of its size.

cutting a gash at the base of the leaves. The blossoms of the tree attract the bees, which procure honey from them.

Fig. 5 is an African jungle where the hum of the bee and other insects is heard by the thousands, and where also is the home of the elephant and leopard besides many reptiles.

Fig. 6 is one of my latest productions by way of a fancy hive. It is made in three sections, and is double-walled. The inside is a regular ten-frame Danzenbaker with two supers. The foundation on which the hive stands is of stone laid in cement. The stones were gathered from Maine to California, some from all the New England States, and some from foreign lands. One of them a friend brought from the shores of Galilee, where Christ spent so much time with his followers.

In closing this rambling article I want to say that I believe it is not so much *what* we eat that gives us a long and vigorous life as *how* we live. I have eaten nearly every kind of food that ever found its way into a human stomach, and food cooked by nearly every race of people. I have lived among cannibals; but while among them I ate no meat—for my own *special* reason. I have sailed on English, French, Spanish, Portuguese, and Dutch steamers, and ate what was set before me, and asked no questions. I have a good constitution, inherited from the old New England stock, many living fourscore years and more. As a child I was considered frail, but have wept at the graves of many of my associates and friends whose prospects for a long life were far better than mine. I have always been strictly temperate, using no intoxicants nor tobacco in any form. Unlike Bro. Root and Terry I do not care to live to the century mark. In tracing my ancestry back for more than four hundred years I find some of them nearly reached that age. The oldest recorded was over 97.

I am not so much interested in what the next thirty years will accomplish by way of great achievements as I am in the great unknown and the Father's house where are many mansions, and the location of that city which is to be my future habitation. I would rather leave this world with an active brain and a mind unimpaired by the feebleness of old age than to reach the century mark with mind gone and body weak and tottering, and a burden to those around me.

North Westport, Mass.

Fig. 3.—Flowers from the biggest bee-tree, any one of which will nearly fill a peck basket.

THE GOLD IN THE BEE COLONY; ONE FOR ALL, ALL FOR ONE

BY DR. BRUENNICH

The deeper we penetrate into the mysterious life of the bees, the more we find feelings and passions kindred to our own—love and hatred, delight and devotion, jealousy and wrath—yes, even kindness and avarice, and also fright, terror, and bravery. If we investigate more closely the character of the little creatures we shall conceive of the colony with its thousands of individuals as a harmonious unit. We begin to understand therein the totality of the workers, the queen, the drones (for as long a time as they exist), and the wax edifice with its dormant brood containing its treasures of pollen, and its fluid *gold*—the honey. Such a colony may reach an old age, perhaps thirty years; but its workers and drones are renewed every year, and the mother queen is replaced every three or four years by a daughter. From time to time a new colony is brought into existence by the act of swarming, when the old mother moves out, as a rule, leaving behind her a number of queen-cells in which are sleeping the future young queens.

From another point of view one may be justified in introducing a new entity—that is, the bee-state from one spring to the other, especially since all individuals except the queen are renewed and replaced by new ones from year to year.

In February, when the sun begins to draw larger circles, the quiescent bee slowly awakes to new life, and softly stirs around in the contracted cluster, in the warm center of which (the temperature curiously enough corresponding to our own blood temperature) the queen is nursed and cherished. The queen soon begins laying eggs in the cells, increasing the number of them from day to day with the growing warmth. At first the brood circles are small in diameter; but soon they increase to considerable dimensions. Three weeks after the commencement of egg-laying, the first young bees begin emerging from the cells, and, corres-

Fig. 4.—The oil palm that furnishes food and drink, also honey.

ponding to the swelling brood surfaces, they augment the number of little citizens. They are kindly accepted by their elder sisters, who clean them and give them food. This, then, is the youth of our bee-state—the time of immolating love. All effort is aimed toward warming and nourishing the little helpless babies. And those tiny larvæ, so recently from the eggs, really need a great deal of maternal care. However, their growth is extraordinary; and after nine days they build their own cocoons for sleeping during their metamorphosis, which requires twelve days. At intervals of a few hours the young nurse bees give these larvæ exquisite food which they secrete from their milk-glands situated around the cerebrum. Only by a strict admirable arrangement is made possible the enormous growth, from about 15,000 inhabitants to 70,000 and sometimes 90,000. For the preparation of the milk (jelly) a great deal of albumen-furnishing pollen is needed, besides water and some honey.

The oldest bees undertake the dangerous task of gathering the water. This water can not be stored directly, but indirectly; a great deal of the water is deposited in the honey near the brood-nest, and last, but not least, in the very blood of the bee. If, after a long period of rainy or snowy cold weather, all the store of water is consumed, thousands of valiant workers fly out if the weather permits, and many remain on the battlefield of work, and never return to the well-loved home. Some become chilled, and others are thrown by the rough wind into the water which they are trying so vainly to take.

Other bees bring pollen from the willows, alders, and other plants, for the treasures of pollen in the combs stored by the sisters, long since dead, begin to diminish rapidly, and the bees do not like to live from hand to mouth.

In our country, toward the end of April the love of the worker bees has a new attractive object—that is, the care of the male habitants of the hive—the drones—which are nursed with peculiar attention. As the first drone youths are hatching in their manly vigor and beauty, it is a joy for the young sisters to cherish and nourish the chivalrous knights; for at this time it is beneath the drone to seek food in the comb. Booted and spurred they stride proudly across the rows of their devoted sisters; and when they fly in search of a bride one can easily distinguish their loud bombarding tones.

This is the flowering time—the prime of life of the bees—and at such a time it is a pleasure to deal with them, for they know nothing of vigilance, hatred, jealousy, or

revenge. The greed for gold is still slumbering.

The more of the liquid gold that the bees store, the more does love recede — exactly as with men. The covetous ones begin to listen to suggestions of Malthusian ideas. The brood is restrained more and more, and the number of births diminishes fearfully; and when only a little of the gold is coming in a great change takes place. The drones, once the charm of the sisters' hearts, have grown old, and the bees recognize that they are practically parasites at present, and it is no longer worth while to feed them. Almost in a night the bees have become niggardly and selfish, and their sole object in life seems to be to hold together their riches. Cruelly the little amazons push out the defenseless ones through the entrance, or they place them in the background of the hive, thus inducing starvation. Soon thousands of drone corpses cover the ground before the hive.

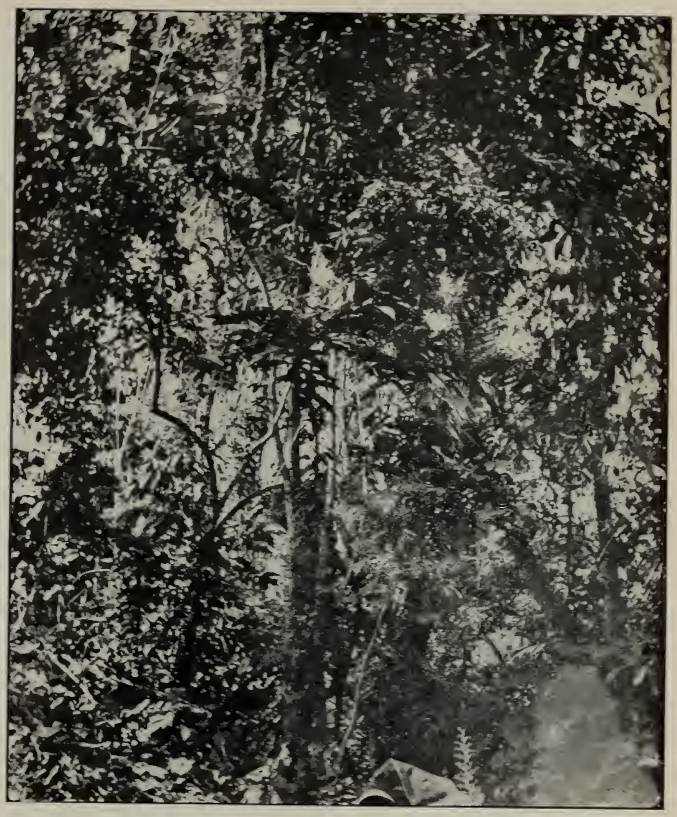


Fig. 5.—An African jungle, the home of bees, elephants, and reptiles.

At such a time it is not pleasant to deal with the resentful bees. They watch the entrance suspiciously, and woe to the strange bee which they surprise on the alighting-board. Two or three rush upon it, dragging it by the wings and legs, and try to kill it. A bee which has stung another bee seldom loses its weapon, as the barbs are not caught in the smooth edges of the wound made in the stiff chitinous harness.

In this country, in July the honey-flow may again reappear with a consequent revival of enthusiasm on the part of the colony getting old. For a short time the bees nurse the brood with more love than before; but all the brightness of youth has disappeared, and there remains only the suspicion and the greed for more gold. In the last days of summer the bees prepare themselves for another winter's sleep by pitching all the cracks of their home with propolis. They have filled their storerooms with gold, and occasionally a bee is seen flying out to get more pollen from a retarded flower. Finally the bees again go to sleep, sometimes for months, and the life in the hive pulses but faintly. Quietly the bees cluster around their queen, taking as little of their stored treasure as possible, and distributing it to their sisters. The food is thus transformed into the necessary warmth to preserve the inhabitants from chilling. The honey is more valuable to the bees than gold is to mankind, for the honey not only heats the bee-home by its slow combustion in winter and spring, but it gives vigor to the muscles, and enables those active little pets to do their stupendous work in and out of the hive. The honey is an important component of the food of the young generation, and the very wax palace in which the bees live is nothing but transformed honey—transformed in the body of the bee by certain glands. It is, therefore, no wonder that the bees set a high value upon their treasures of gold, and watch them suspiciously. There are a few poor creatures that, for one reason or another,

FIG. 6.—Mr. Lewis' ornamental hive. The foundation stones came from all over the world.

have almost no stores. Perhaps their mother queen was old, and unable to perform her duties as she should have done, and the bees failed to replace her at the right time. Or on the other hand, perhaps the colony was a strong breeder, and all available cells were filled with brood, so that most of the surplus honey was consumed for the purpose of feeding this brood. Or, again, perhaps the bees were short-lived or not diligent, etc.

Then there are great capitalists among the bees whose storerooms are filled with plenty of honey. Each cell is carefully closed with a cover of wax, and only a small number remain open for daily use. These bees go with only the greatest reluctance to open their trunks of gold—like the miser who turns the dollar in his hand, taking sorrowful leave of it when it goes. But pitiless man demands of these devoted workers a part of their treasure, for well he knows, too, the noble virtues of the fluid gold of the hive.

How much the love of gold, especially in late summer, domineers the character of the bees, and even misguides them, is shown by the following: If we disturb a hive by opening it or by knocking on the side of it, the bees whose honey-sacs are empty hasten to the open cells for filling these honey-sacs, for these latter are the purses of the bees. The bees do not know what the trouble is; but in any event a full purse is a good thing, for if by some unfortunate chance a bee loses its home, and is obliged to go begging a place in another hive, it succeeds by the help of its full purse. The first guard it meets asks its tribute of a minute drop, and this satisfies the rough officer.

The bees, when preparing themselves for swarming, never fail to fill their pockets with the gold of the hives. If one drops a little honey on the alighting-board the vigilant insects gather around, greedily taking it up, and they forget to hear or to see. In this condition they do not resent an intrusion in front of the hive, as they might under normal circumstances.

Under these conditions the curse of the gold appears in an ugly form in what are called robber bees. As a rule these are old bees from a neighboring hive, which had discovered that gold obtained by stealing is more convenient and more quickly secured than by honest work in the field. Well aware of their shameful trade they fly cautiously and cunningly around the entrance of the hive they intend to rob. Watching carefully while they keep coming nearer, they fly back in an instant if a guard in a menacing manner demands the password. Immediately it comes back again, searching for an unguarded place. If it ventures to enter it may be grasped by one of the guards; but as soon as it escapes it begins anew its shameless game. After some more fruitless attempts the robber may try another hive in the same manner. If the guards here do not watch carefully it succeeds in gaining a sly entrance, and then proceeds to the first open cell and fills its honey-sac to overflowing. More than half its own weight such a robber may take away. In this connection it has been interesting to me to observe that, the shorter the distance the robber has to fly to its own hive, the more honey it will carry. If it comes from a distant hive it may take only half a load. The escape from the hive is generally easy because the guards pay more attention to bees that are entering than they do to those that are going away. Therefore, as quickly as the heavy burden allows, the robber goes to its own hive, where it discharges its stolen load.

If one bee succeeds in its attempt at robbing, others of the same hive are excited to the point of taking a similar risk, and at

once go to the hive which is not guarded as carefully as it should be. More and more of the insolent bees come around the entrance. The longer they keep at it the bolder they become, and soon it is impossible for the guards to make any resistance. Here and there, it is true, we may observe an isolated duel on the alighting-board, but soon complete demoralization ensues among both robber and robbed bees. The first spare nothing. In their fury they demolish even the wax cells, and tear the brood out of the cells, and sometimes kill the queen. The robbed bees have lost their senses, and in a kind of stupor they fill themselves with honey and look on, perfectly helpless, in the wild jumble.

Almost more perfidious are the *highwaymen* which may be seen occasionally when the honey-flow is poor. The honey-loaded workers come wearily homeward, many being obliged to rest on the wall of the hive or on the alighting-board, for their last force is spent because of the long distance they have had to fly. At such a time one of these watchful brigands throws itself on the worn-out bee, settling itself on the back or the side of the tired bee, for, to come honestly in front, the rascal does not venture. There it helps itself sumptuously to the gold; and the poor exhausted gatherer, knowing nothing better to do, gives of its honey. Like diligent worker bees flying from flower to flower, these highwaymen rush from one to another of these resting bees, sometimes four or five assaulting a single worker. This profession seems to be profitable, for these robbers quickly obtain purses well filled with gold.

The bee-state is certainly an ideal community. The maxim, "One for all, all for one," is carried through to the end. Each member acts for the welfare of the whole, whatever that may be, without reflecting on its own individual sacrifice, especially if it sees the colony in danger. At first sight one might say that the bees are without vices, but we have shown that there is a big vice, *the greed for gold,* which is able to corrupt the good—yes, even lead them to crime—exactly as the same vice does in the case of mankind.

Zug, Switzerland.

A NOTE FROM OKLAHOMA

BY N. FRED GARDINER

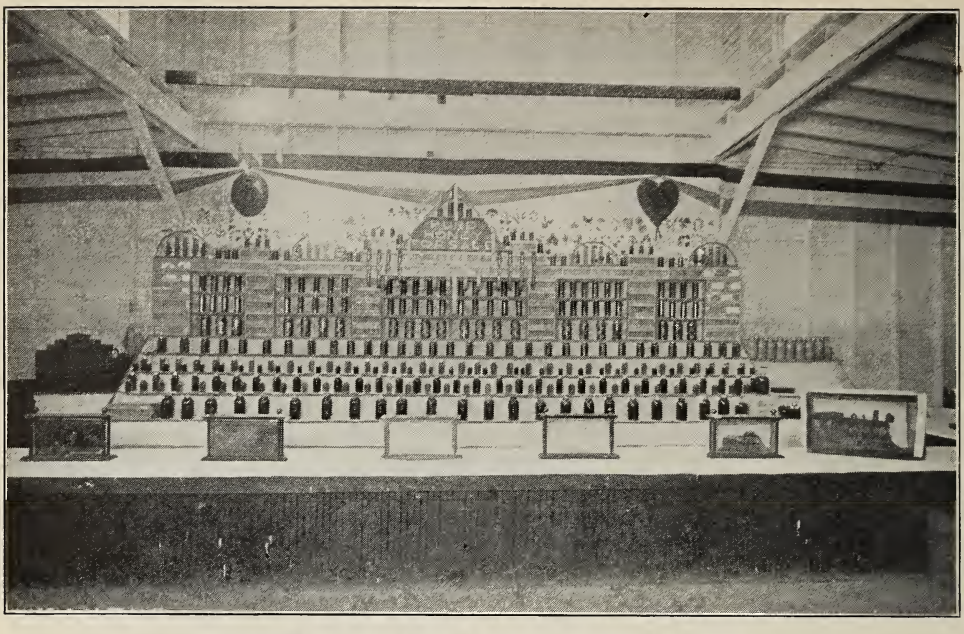
The photograph submitted with this article is that of the honey and wax exhibit of B. F. Bartholomew and family at the 1913 State Fair. This is one of the five individual exhibits made at this fair, the premiums being closely divided between this one and Garee & Garee. W. H. Hobson and J. H. Burrage had creditable displays.

As the product of this display of Mr. Bartholomew was all "home grown," and only a continuation of what he has done for years, it indicates what may be done repeatedly in good locations in Oklahoma by one who knows how. Mr. Bartholomew has such a location, and can be depended on to be on hand with an attractive display of honey each season. His wife puts on the finish with the decorations in wax.

On the extreme right of the photo can be seen the model in beeswax of a locomotive protected by a glass case. This was the clever work of Master Earl Bartholomew. Plans have been started to provide a special department for the boys and girls for another season. We have in this State, under the Agricultural and Mechanical College, what is known as the "Extension Department." In this department the boys and girls are organized for club work, and some wonderful results have already been obtained by the boys in growing corn, cotton, kaffir, and other crops, and by the girls in canning and preserving fruits and vegetables.

Upon the suggestion of Prof. C. E. Sanborn, the entomologist and beekeeper at the college, the idea of including beekeeping in the work of this Extension Department is being developed. It is hoped that, by the time of the next fair, a special department will be provided in the apiary building for the boys and girls to display the results of their work and study with bees. Suitable prizes will be offered, and the young folks should begin to plan early to enter the contest. Announcements will be made later as the plans are perfected, through the college press, GLEANINGS, and the farm papers of the State.

On one evening during the fair a meeting of beekeepers is always held. The fair managers have always been liberal in providing seats and lights, and the meeting is held in the building where these exhibits are displayed, which helps to provide inspiration. If in the future we can have a



Bartholomew's honey exhibit at the 1913 Oklahoma State Fair.

good attendance of these boys and girls it will be doubly interesting.

The annual meeting is held each January at the A. and M. College, Stillwater, Okla., during the "Farmers' Short Course."

The authorities of this college are recognizing the importance of beekeeping, and are lending much encouragement to its extension. Those interested in beekeeping in Oklahoma should make it a point to attend one of these meetings of the Oklahoma Beekeepers' Association, and both of them if possible. They owe this much to those who are keeping up the work of the Association and to the new methods they may learn.

Geary, Okla.

[Prof. Sanborn and Mr. Gardiner, as we happen to know, are live wires. They are doing much to advance the cause of beekeeping in Oklahoma, not only to make better beekeepers, but to eliminate bee disease. The beekeepers of the State should make an effort to attend the State beekeepers' convention, especially if they wish to keep disease out of the State.—Ed.]

REPORT OF THE PENNSYLVANIA STATE CONVENTION

BY H. C. KLINGER, SEC.

The Pennsylvania State Beekeepers held their tenth annual meeting in the State Capitol, Harrisburg, Feb. 20, 21. It was a very lively meeting, and, from the point of enthusiasm, perhaps the best ever held.

Dr. H. A. Surface, State Zoologist, who is the President, was in charge of the meeting. The address of welcome was given by Hon. N. B. Critchfield, Secretary of Agriculture of Pennsylvania.

The subject of comb and extracted honey in the same apiary was discussed by H. P. Faucett. He runs his yard for both kinds of honey, and says that colonies that sometimes can not be coaxexd into section supers will work in extracting-frames.

F. G. Fox spoke on 500 per cent increase and a crop of honey. He demonstrated how it is possible, with natural swarming, to take the parent colony after the swarm has issued, and divide it into nuclei and build these up into full colonies.

The foul-brood inspectors, Geo. H. Rea and J. O. Buseman, made their reports on inspection. These were quite interesting in facts, and exceedingly amusing in the experiences the inspectors had with the different kinds of people they met in their rounds. Inspection is doing a great work for beekeeping interests, simply by the contact of the inspector and the education that is spread over the State in this way. Bees are

yet kept in all sorts of ways—logs, bee gums, straw skeps, soap-boxes, and some have even been found in beer-kegs.

The Coons hive and comb honey was a demonstration made by R. L. and A. N. Coons, of Coudersport. This is a shallow-chamber hive of their own make with which they have been very successful. This year's crop was 28,000 pounds of section honey from 400 colonies. These beekeepers (father and son) are the largest producers in the State.

Dr. E. F. Phillips, of the University of Philadelphia, who was on his way back from the National convention at St. Louis, and who was the delegate of Pennslyvania to the convention, gave an address on two essentials in honey production. He laid emphasis on having the bees go into winter quarters strong and with plenty of stores so as to have plenty of bees early enough to get the honey-flow when it comes. A large number of us have plenty of bees when the main flow is over and when the bees are not needed.

F. J. Stritmatter spoke on house apiaries. This subject aroused considerable interest, as it is quite novel to Pennsylvania people. One of his buildings is three-story, 20 x 30 ft. This contains 86 colonies in hives built solid to the floor of the room. His experience tells him that he has solved, to a great extent, the wintering and the swarming problems by means of the house apiary.

"Soil Fertility and Honey Production" was the subject of the president's annual address. Dr. Surface told the beekeepers to increase the fertility of their soil by sowing the legumes—clover, alfalfa, vetches, etc., and by so doing reap another crop, that of the sweet nectar which these secrete.

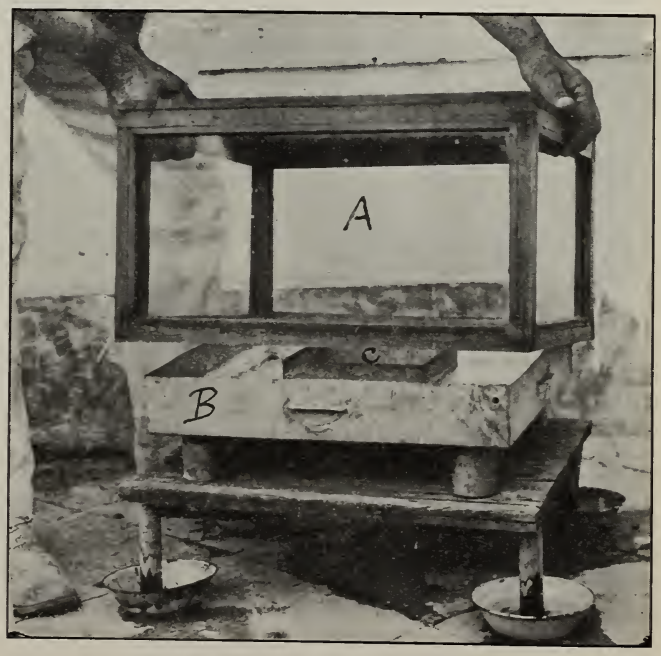
Dr. H. A. Surface, Harrisburg, was re-elected President; H. C. Klinger, Liverpool, Secretary; Hon. E. A. Weimer, Lebanon, First Vice-president; Mrs. Dr. L. M. Weaver, Philadelphia, Second Vice-president; R. L. Coons, Coudersport, Third Vice-president.

Liverpool, Pa.

ENEMIES OF BEES IN CYPRUS; A CLEVER SCHEME FOR CATCHING THEM

BY M. Y. DERVISHIAN

The principal enemy of the honey-bee in this island is a large red and yellow banded hornet. These hornets increase in August, September, and October. They weaken strong colonies of bees to a great extent and extinguish weak stocks by capturing a large number of bees from the entrances. They hover about the entrances; and if they do not find guardian bees there they go into the hives and destroy the bees and carry the honey to their nests. To prevent this, about a thousand or two thousand bees guard the entrances and often assault and ball the hornets. The damage done to the bees, grapes, figs, and other sweet fruits is considerable. Their nests are found in the ground in the fields and in the cracks and hollows of walls. These hornets prosper in this country because it does not rain from April to Sep-



A device for catching hornets that kill bees.

tember, and in some years it rains very little, perhaps once or twice scantily. When rain commences in October the hornets disappear, as rain destroys them. They do not keep stores in their nests, and in rainy weather they cannot fly.

For ten years I have been using the trap shown in the illustration. The top "A" is glass in a wooden frame. The lower part "B" is made entirely of galvanized sheet iron. We fill this with soapsuds about ¾ inch. The frame of the top fits over the lower part. Underneath the square opening marked "C" a piece of liver, meat, or any thing similar is used as a bait over a board resting on four legs. Under the legs of this board are put small vessels containing about ½ inch of water. This water prevents ants from going to the baits. This device is important, because if ants go to the food the hornets will not venture near it. Each trap catches about one thousand hornets a day. Honey makes the best bait. A sheet of queen-excluder or wire netting of about ¼-inch mesh should take the place of the top glass in order to let the bees out.

When a number of hornets are caught in the trap, honey-bees will not visit it. This trap has done excellent work. In three or four days all hornets were trapped and live bees saved. They enter from the bottom and rise up into the trap and fall into the soapsuds. This affects their eyes so that they can not rise up again, and in an hour's time they are drowned. Vinegar will do as well as soapsuds. Many beekeepers have copied my glass trap as a substitute for their bottle trap.

Nicosia, Island of Cyprus.

MOTT'S OFFICE AND QUEEN-BREEDING YARD

BY E. E. MOTT

Fig. 1 shows a partial view of the home apiary of 275 colonies. The honey-extracting room is the first building at the right. The second building at the right is the office, and the third at the right is the storekeeper's dwelling. One long building at the left is the warehouse and cellar that safely winters 300 colonies of bees.

Fig. 2 shows the office at north end. The bay window gives a sight of east, west, and north, while at the desk.

Glenwood, Mich.

Fig. 1.—Mott's home apiary of 275 colonies and mating-yard; extracting-house and office in the right background. The mating-hives are shown scattered between the large hives.

Fig. 2.—Mott's office at north end of the apiary, affording through the bay window a view of the whole yard.

NATIONAL AND STATE LAWS REGARDING NET WEIGHT ON HONEY

BY C. A. KINSEY

In a conversation with the Deputy Sealer of Weights and Measures to-day I find that he is of the opinion that the law applies to honey in sections as well as other articles of merchandise. This law will certainly give the old-fashioned 4¼ x 4¼ sections the best of it over the 4 x 5 plain sections. So far as has been my experience, the 4¼x4¼ sections always weigh more than the 4 x 5 plain, commonly used in the Danzenbaker supers. The 4 x 5 sections will seldom weigh full 16 oz., while the 4¼ x 4¼ usually will weigh full 16 oz., and generally more. C. A. KINSEY.

Belgrade, Mont., Feb. 11.

[The above was referred to the proper authority at Washington, whose reply follows.—ED.]

The A. I. Root Co.:—Your letter of February 20, addressed to Dr. E. F. Phillips, Philadelphia, has been referred to this committee for reply.

For your information I enclose Circular 21, which contains the text of the Food and Drugs Act as amended. The weight and volume amendment of March 3, 1913, will be found on page 20, section 8, "in the case of food," paragraph third, together with footnote.

The regulations contemplated for the enforcement of this amendment have not as yet been approved, and when they are issued you will be sent a copy.

It would appear from the Act that all packages of food products, whether in bottles, jars, or other wrapped or closed containers, will be considered foods in package form, and required to be marked with a statement of the quantity of the contents. The law requires that this statement shall be plain and conspicuous, and also provides that tolerances and exemptions for small packages shall be established by regulation. These will undoubtedly allow for such necessary variation as occurs in weighing or measure under careful commercial conditions.

A. S. MITCHELL, Sec. to Com.

Washington, D. C., March 3.

[The weight and volume amendment, paragraph 3, with footnote, is as follows:]

Third. If in package form, the quantity of the contents be not plainly and conspicuously marked on the outside of the package in terms of weight, measure, or numerical count: *Provided, however*, That reasonable variations shall be permitted, and tolerances and also exemptions as to small packages shall be established by rules and regulations made in accordance with the provisions of section three of this Act.

The Act of March 3, 1913, provides that no penalty of fine, imprisonment, or confiscation shall be enforced for any violation of its provisions as to domestic products prepared or foreign products imported prior to eighteen months after its passage.

[In addition to what Secretary Mitchell, of the Committee, says, we may add that

sections of honey are undoubtedly included under this net-weight and volume law. When a shipping-case of sections is sold the net weight of the sections of honey in the crate should show. When the sections are sold individually by carton, a close *approximate* weight of the section must show. In the proviso, paragraph 3 as quoted above, "reasonable variations" are permitted; but care must be exercised not to take too wide a "variation" or there will be trouble. We are allowed a variation, as we understand it, of one ounce on the weight of a section—that is to say, there must not be more than one ounce *below* the marked weight, although it may be any thing above. In packing our carton honey it is our practice to run from one to two ounces *above,* as honey that has been stored in a dry room for two or three months at a temperature of 70 or 80 degrees to prevent granulation will lose slightly in weight. Another thing, it is well to understand that there are State laws as well as the national. Some of the former, with reference to net weight, have been in effect for some time back; and if one does not know where his honey is to go he should be on the safe side, and that means, do not depend too much on the national law that allows of a "reasonable variation" in the weight of an individual section.

Our correspondent is mistaken in thinking that the 4¼ x 4¼ section has the advantage over the 4 x 5 because it weighs more. If the law provided that all sections should weigh a pound, then the 4¼ would have a slight advantage; but a statement in *ounces* of the weight complies equally with the law the same as when the net weight is stated in *pounds or fractions thereof.*

It will be apparent that all packages containing foods must be marked with their net weight within 18 months after March 3, 1913, which will be Sept. 3, 1914; but the wise producer or packer of food stuffs should begin (if he has not already done so months ago) marking his packages ahead of that time; and practically all of the packers in the country began marking their goods immediately after March 3, 1913. The purpose of the law was to give the sellers an opportunity to clean up and dispose of all unmarked goods before the law went into effect.—Ed.]

WHEN IS THE BEST TIME TO REQUEEN?

Nature Bred vs. Artificially Bred

BY F. GREINER

The above topic has been discussed a great many times in conventions and in the press; but the case has not yet been settled to the entire satisfaction of all. It seems to me that the question is not so much *when* we shall requeen as it is, *when can we rear the best queens?* Nature has selected the early summer, when the trees are blooming, and flows are yielding pollen and honey profusely, and has practiced the rearing of queens at this time for untold centuries. Could nature have made a mistake? I doubt it. The first symptom of a colony's broodiness is the rearing of drones, and this antedates the rearing of queens by several weeks at the least. We can hardly hope, therefore, to bring a colony into a condition, a frame of mind, by a few feeds to do its best at queen-rearing. The slow and long-continued spring honey-flow and pollen yield can not be equaled by artificial feeding. Most noted authorities of Switzerland and Germany are of this opinion, and advise rearing queens during the time when bees usually swarm. It may be more cheaply done at the close of the season, and some of our American beekeepers have practiced it more or less extensively at such a season without apparent detrimental result to the vitality and utility of the stock of bees. We must not forget, however, that our bees are thoroughbred by many thousands of years' breeding by nature's methods; and the mistakes that we may make are not at once noticeable. It is with the bee as it is with man—his nature is strong enough to endure all sorts of mistakes and abuses. If it were not so, the human race would have long since died out; and the bee would have degenerated under the often irrational treatment. Fortunate for us that the honey-bee is constituted as it is! Undoubtedly we have blundered along many a time, and we are still continuing. We are transferring larvæ. We think it is all right. We are depriving a colony of all its brood in order that the bees may more lavishly feed the royal larvæ. We try to have young queens mated from baby nuclei, and we do other things out of the regular order of things. Is there any evidence that we are rearing better queens than formerly? any evidence that the race has degenerated? What do we know about it?

Our friend House advocates requeening in September or even later. I don't mean to quarrel with Mr. H., and I have no objections to any one requeening at any time when good queens may be had, and when it is proper to open hives. Personally I don't care to tear hives open in the late season. And, by the way, I have hunted out queens without removing a frame from the hives. When it may be done in this way requeening is quite practicable, even in the winter. But, generally speaking, during the summer season is the best time to handle bees; and beginners particularly will do well to bear this in mind.

Objections have been raised to early-raised queens. By "early raised queens" we understand such as have been raised during the early honey-flow from fruit-bloom. A certain per cent of our colonies will, some seasons, make preparation for swarming, and often do swarm, unless we intercede. With us this may happen about the middle of May or thereabouts. I hold that queens reared under these perfectly natural conditions are as good as any. Our friend House objects to the queens reared at this season because he has lost the majority of them while mating or attempting to, the weather usually being unfavorable—cool and rainy. I have to consider such an occurrence as very unusual. Before I had discovered that our bees, particularly those in the outyards, had to be looked after during this early period in order to avoid losses by swarming, I not unfrequently found colonies in each outyard at the close of fruit-bloom, which had cast swarms contrary to my expectations. It was usually discovered, before any queen-cells had hatched out, and my practice at such times had been to divide the parent colonies into three, four, or five nuclei. I do not remember ever missing or losing any of the young queens. On the contrary, I was enabled to build up these nuclei into prosperous colonies with the brood-combs accumulating from shaking swarm-ripe colonies, etc. I can not agree with Mr. H. that it should not be a good time in May, when there is an abundance of bloom all around, to rear good queens. I should much prefer them to those reared in August or September, after all the bloom is over and stimulating by artificial methods has to be resorted to. In buckwheat sections the swarming fever sometimes breaks out anew in the month of August. This is an indication that good queens may be reared at this time in that particular locality.

How the conditions are in southern climes, in countries where our early queens are reared, I do not know; but I guess that their March and April may correspond with our May and June, and I have suspected that the queens we purchase from the South for May delivery were reared under such natural favorable conditions as outlined at the beginning of my article.

There is at present a great call for May queens here among the honey-producers of the North. We find it a profitable investment, though the queens may cost a little more then than they will later. Even if we had requeened every last colony during the month of September and October, we would still want the queens in May, possibly even more of them on that account. It pays us to divide the extra-strong colonies, such as might be expected to cast swarms during apple-bloom, and provide each queenless half with a southern early-reared young Italian queen. Thus, instead of having one colony ready for the harvest, we may have two, and avoid natural swarming by the procedure. Southern queen-breeders ought to realize that it is a great disappointment to us when the queens ordered from them for May do not reach us till June.

Naples, N. Y.

BEES AND BULK COMB HONEY AT THE KENTUCKY STATE FAIR

BY J. P. MARTINE

Our display of bees, supplies, and honey at the Kentucky State Fair, held Sept. 15-20, 1913, attracted considerable attention. It seems as though almost every one is interested in bees.

The queens in the observation hives, and the handling of the bees in the demonstration cage, were the centers of attraction. In the demonstration cage we explained fully the manner in which the bees gathered and stored honey; how honey is taken from the bees by means of bee-escapes; how the cappings are removed, and the manner in which the honey is extracted. We also, while in the cage, gave talks on the subject of bees, explaining the part that the queen, drones, baby, and worker bees take in carrying on the different functions of the hive.

During these talks and demonstrations we never failed to have a large and appreciative crowd.

We did not make a large honey display,

J. P. Martine's exhibit at the Kentucky State Fair September 15-20, 1913.

as our object was to advertise the manner in which we put up our comb honey—that is, we cut the comb from the frames in strips about one inch in width and five inches in length, placing the same in wide-mouth white-glass jars having perpendicular sides so the cappings are shown to advantage, and filling in the space with extracted honey. This was favorably commented upon by a great many, and we sold quite a number of jars at 75 cts. each.

We have been putting up our comb honey in this shape for the last three years, and have never failed to dispose of all we could produce at 75 cts. a jar. We have been offered 65 cents per jar by the gross.

Louisville, Ky.

THE SMOKE METHOD OF INTRODUCING SUCCESSFUL FOR NEARLY THIRTY YEARS

BY MAJOR SHALLARD.

Please credit the discovery of smoke introduction of queens to me, Mr. Editor, unless some one has a claim prior to 1885. I started to introduce queens by the smoke method at that date, and have continued ever since. My method has been to remove the old queen, and to give the new one at once, to close the hive, and then use smoke. I can hardly recall a failure. I have removed an old queen, and have given a virgin at once. I have even removed an old queen, and given a cell immediately, without any protector. In fact, one can do almost any thing with bees if they become demoralized and all have the same smoke odor.

My wife took over my queen-rearing business for one season, 24 years ago, because I had too many irons in the fire, and some were getting burnt. She also ran the home farm of 250 colonies for honey. I may mention that she is an expert beekeeper. She introduced all the queens that year with smoke. She introduced virgins into the nuclei, and had very few if any failures. She took nine tons of honey that year with the help of two girls, and her experience with swarms was somewhat unique.

The season was a great swarming one. One morning a swarm came out and settled on the trunk of a tree. Almost immediate-

ly another one came out and started for the same place; and before she had the hive ready to put them in, the second swarm started to settle with the others. She did not know what to do, and she could see another swarm issuing down among the hives. Suddenly it occurred to her to cover them up; so she put a sheet around the bees and tied it on the tree above them. The new lot settled on the sheet. The next swarm came along, so she covered up the second swarm with a chaff bag split open, and the third swarm settled on the bag. Then four more swarms issued almost at once, and they all made for the same tree. She divided the swarms as well as possible with the sheets, table-cloths, etc., and when the swarms stopped issuing she had nine on that tree, and all separate. Soon they were all hived satisfactorily.

On another occasion she had 15 swarms out during one morning, and seven of these in the air at once; but she managed to keep the latter apart with the spray pump.

Some time ago I wrote that a good queen would not go into the top box, and the genial Dr. C. C. Miller reckoned all queens would do so if pressed for room, to which I say amen; and some other gentleman said they would go up, but "of course I would use queen-excluders." That is just the point I was making. I want queens that do not need excluders to keep them down. The old-fashioned leather-colored Ligurian queen would stay down in the bottom box and have a nice compact brood-nest, although the hive was a four-story one, and all the top stories empty; but a badly bred queen, although she may be pure, will not do this. In times of dearth she will go upstairs and transfer her brood-nest from the bottom to the top story.

So. Woodburn, N. S. W., Australia.

THE SHAKEN-SWARM PLAN AFTER MANY YEARS' TEST

BY M. A. GILL

In that masterful work of Moses Quinby he tells how he drove swarms from old box hives for the purpose of transferring, just at the time they were preparing to swarm. The splendid results he obtained, according to his book, written over sixty years ago, induced me during my early beekeeping to try the same method; and after securing the same splendid results he describes I was led to ask, if a swarm would do so well driven from an old box just before a swarm issued, why wouldn't it do as well if shaken from a frame hive just before it was to cast a natural swarm? After trying the plan until the results proved I was doing it correctly, I have never abandoned it, nor do I think that L. Stachelhausen ever did while he lived.

I can't tell when a colony is going to swarm without some kind of examination. Of course, an experienced eye can cruise a whole apiary and give a good estimate of how many colonies are about to cast a swarm; but a thorough examination will reveal the fact; and this is quite necessary, or else the work would be as unsatisfactory as putting a boy or man to watch for swarms at an out-apiary who would allow half of them to go off while he enjoyed a nap under some inviting shade-tree. So if in doubt, an examination of from three to five combs for queen-cells is absolutely necessary if one intends to prevent natural swarming.

Modern medicine advises prevention rather than cure, and thus all the little kinks should be and can be used during the swarming season to prevent it. But after a colony shows a second inclination after being once thwarted, it is wise to shake it, for any further meddling will result in loafing or the raising of a new queen.

The idea that the season's results from a shaken swarm are not as good as from a natural one is erroneous; for when the brood is carried to a new stand, as it always should be, the new colony receives all the flying bees, and in many cases the combs are shaken clean, as the brood is needed for weaker colonies. I can not imagine why any apiarist should prefer to wait a few hours, or perhaps a few days, to allow a colony to cast a natural swarm that might cluster where he has to shin up a tree, when he can make just as good a swarm in from five to fifteen minutes, and the work is a pleasure.

Three people can handle from one thousand to twelve hundred colonies in out-apiaries. Of course, it is needless to say that this can not be done without a month of almost slavish work. But three can not attend to that many comb-honey colonies scattered over the territory they would require if allowed to swarm naturally.

The whole fraternity has been seeking for years for a race of bees, or a particular hive or some system of management, that will eliminate swarming when working for comb honey, and about so often some few declare themselves "progressives," and will fly to the journals that they have "the hive" or "the race," and that the time has come when all progressive apiarists should handle hives instead of combs; and then the first season something out of the ordinary happens, and all their hopes are shattered. In my opinion the way to do is to reduce swarming to the minimum by all the known methods, and then handle the minimum by the shaken-swarm plan when working outapiaries for comb honey.

It seems to me that so much has been written upon the mode of procedure during the past ten years that the details are unnecessary. Some complain of absconding. This will often happen if the operator fails to give a frame of brood or shakes the swarm into a hot hive and then leaves the hive out in the hot sun. Temporary shade, at least, should be provided at such times. During the past season we shook 300 swarms, and I do not recall that a single one absconded. Any one who thinks this system will propagate a swarming race can replace the swarm-cells with cells raised from their non-swarming colonies. From four to five visits every seven days will practically cover the swarming season.

Hyrum, Utah.

THE LET-ALONE HIVE; THE "LONG-IDEA" AGAIN

Producing Wax and Honey

BY A. W. YATES

It is quite natural to assume that outapiaries are those operated by persons who are in the business for the dollars and cents there are in it, or who take as much from their bees as they can with as little outlay as possible. One motto of the late E. L. Pratt was, "Make your bees pay their way and a little more." Beekeeping as a hobby and beekeeping as a business are two different propositions. If we are in it for business we must make them pay their way and a little more or we shall soon go under.

The great drawback in the maintenance of outyards is the disposition of the bees to swarm. If this could be done away with, and the mass of bees held together, all other difficulties could be overcome. The modern hive as it is constructed to-day was never built with this thought in view; and if such hives are used for this purpose they require constant attention, and at times are the source of a good deal of annoyance. If at the same time some one bobs up with something new in a hive our manufacturers are skeptical, and very apt to look aghast at it unless it presents something very striking in its favor.

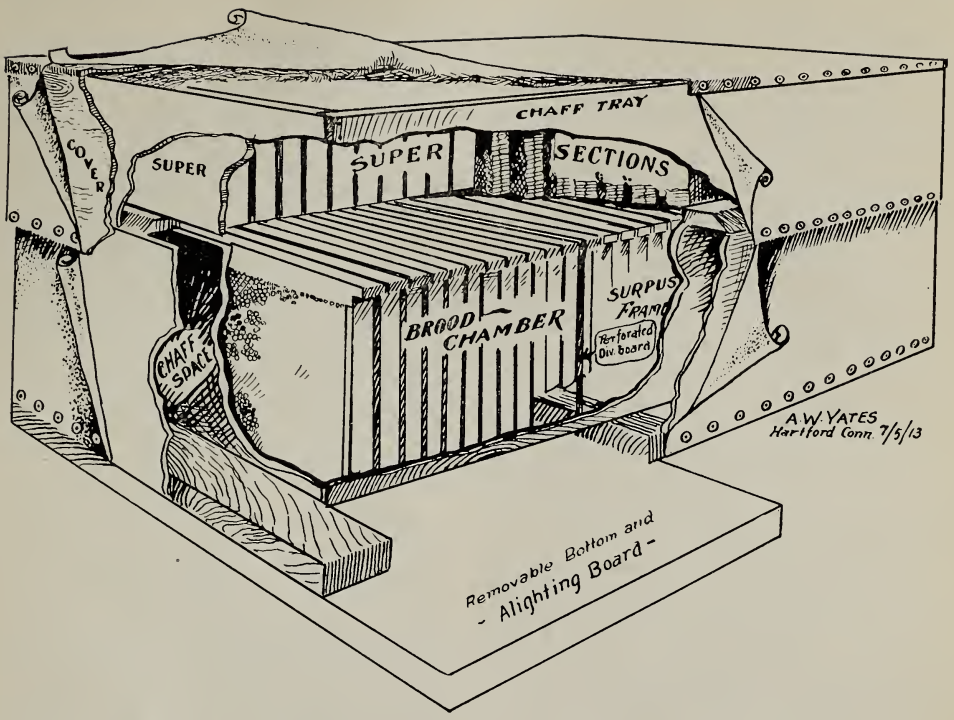
It has been said that "Bees, when given plenty of room, will spend less of their energy in swarming and more to the production of honey."

A few years ago I constructed several large hives holding 25 frames each. These hives came so near filling the bill that I made more, and am using one of similar construction altogether at present.

It will be seen by a glance at the illustration that this is a double-walled hive; and, being covered with a good quality of roofing paper, it is both warm and dry, and at the same requires no paint nor even lumber of first quality in its construction. Living near a city I am usually able to obtain shipping-cases at the hat-stores for about ten cents each, one of which contains nearly enough lumber to build the body of a hive. The hive I shall describe is intended for the "L" frame; but it can be used with other styles of frames.

The side boards are 39 x 9½ inches, four for each hive, nailed together in pairs, as in A in diagram. The inside board of the front end is 18¼ x 9½ inches, while the outside board is six inches longer, and nailed together, as in B, so as to lap by and form the corner, as in C. The opposite end of the hive, being used only in summer, is of single thickness, as is also the bottom of the surplus compartment. When the hive is nailed together the walls are packed with planer shavings or chaff. A narrow board, E, is nailed on the upper wall edge to hold the shavings in place. The eight-inch telescope cover gives plenty of room for a chaff tray for winter, or two supers side by side in summer.

This hive, when so constructed, will hold 25 frames, ten of which answer for the brood-chamber, and are separated from the others by a perforated division-board, D, reaching within half an inch of the bottom of the hive. A narrow strip of tin bent at an angle of about 45 degrees is fastened to the bottom edge of it, and this is placed in



the hive with the bent tin turned toward the brood-chamber. The object of this is to allow the bees free access from the entrance direct to rear of the hive beneath the division-board; but in case the queen should come in contact with it she will walk down until she comes to the tin, which will turn her back to the combs.

This division-board, although not designed by me, I consider an important feature of the hive. Sometimes, as in case of a virgin queen returning from her wedding-flight, or by the excessive use of smoke over the brood-chamber, a queen will find her way to the rear of the hive; but care should be taken to provide a young laying queen.

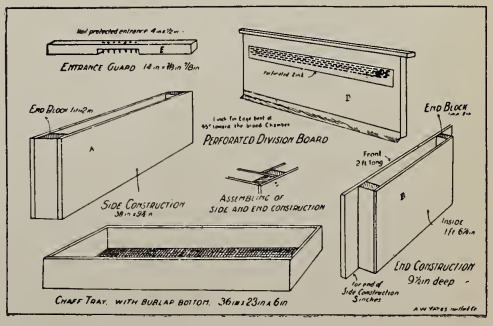
The bottom and alighting-board are removable, and the summer entrance, 7/8 x 14, or the full width of the ten frames, is closed for winter with a block, E, through which wire nails are driven 3/8 inch apart as protection from mice.

Some points in favor of this hive are simplicity and cheapness of construction; easily built by any one at all familiar with tools; no paint; provides plenty of room so that three or four visits during the season are all that is required; and the protection it affords for wintering.

It has always been an opinion of mine that bees produce wax at all times when producing honey, and that this wax, unless they have a place to use it, must necessarily go to waste; that they will produce both much faster when allowed to hang in their natural clusters. Taking advantage of this fact, only narrow starters are used in the 15 frames for surplus honey; and as these frames are all in one lower story they are accepted one at a time, and for that reason will be finished much quicker than if the bees had to go above.

These fifteen frames, holding, when completed, about 90 pounds with 64 sections in the two supers above, give the hive a capacity of about 150 pounds, or sufficient, usually, for the season in this section.

The season's work is commenced during April. The chaff trays are removed, the chaff division-boards that are used during



winter are exchanged for the perforated zinc ones, and, after examining the colonies for queens, etc., the frames and supers are put in place and need not be looked at again during the season, although I try to see them two or three times.

When the honey is harvested, large covered cans are taken to the outyards, the surplus frames are removed from the hives, and held toward the light to see where the light and dark honey lie; the light honey is cut out into one can, and the dark into another. In this way we are able to grade it—something we are unable to do in extracting. It is taken home to be separated from the comb, which is accomplished by means of strainers. A table is used for this purpose having a top made of galvanized-wire screen, three mesh to the inch. A cheese-cloth strainer is made to hang below to catch the particles that pass through the wire screen. An uncapping-can may be used for small quantities.

When every thing is in readiness the chunks of honey in the cans are all mashed fine and poured on top of the wire-top table to drain. The table should be elevated above the storage tank so that the honey will flow into it without extra handling.

It will be noticed by the foregoing that no extractor or expensive extracting outfit is required. The crop can be handled leisurely, and at a time when the weather is more agreeable than it is sometimes when extracting. Results can be obtained with much less labor, time, and expense. Colonies are less stirred up and excited from giving up their stores. We are able to produce fully as much choice honey, I think, as by any other method, and a good many pounds of the very finest virgin wax, which of itself is no small item.

Hartford, Ct.

[A number of beekeepers in New England, particularly Mr. Allan Latham, Norwichtown, Ct., and Mr. Yates, have been working on this let-alone principle of keeping bees—that is to say, they have been experimenting with large hives (or Long Idea hives)—so large, indeed, that they have sufficient capacity to carry a whole season's crop with little or no manipulation on the part of the beekeeper. A year ago last summer, when attending a convention of beekeepers at Amherst, Mass., we listened to an address by Mr. Yates which he delivered on this subject before the convention. At that time we requested him to prepare an article, with illustrations, showing his system of management, and the foregoing is the result.

Mr. O. O. Poppleton, of Stuart, Fla., has long advocated the use of a 24-frame or Long Idea hive having a capacity similiar to the one here shown. Many years ago he used a 24-frame double-walled hive in Iowa. He liked it so well that when he went south he continued to use the same hive, but, of course, without the double walls. We will have an illustrated article showing Poppleton's entire system, which he was using till within a year ago. That there are advantages in the system cannot be denied. Whether the disadvantages for the average beekeeper will outweigh the advantages we will not attempt to say; but it is a system that the average reader can afford to look into with an open mind. A little later on we shall show another system somewhat similar, and yet very different, by J. E. Hand. This is a 16-frame hive capable of vertical expansion. More anon.—Ed.]

Conversations with Doolittle

Continued from page 369

up to a condition where no desire to swarm has become manifest; and those that have become "broody" are allowed no comb of brood, but several thousand empty cells at the time of shaking. In the mean time the super of sections right above the combs they are shaken on has from four to twelve sections full of drawn comb left over from the previous season. In this way the colony which has not become broody at time of shaking keeps right on with feeding the queen, removes the honey in the brood-combs to the sections, and the queen deposits eggs without interruption. On the other hand, the bees and queen from a broody colony find their "house all swept and garnished," with no incentive but to go right to work as any good swarm should when coming in possession of a new home. The condition and tendency in both cases is to rear brood in the brood-chamber and store honey in the supers to the best possible advantage.

Spacing Danzenbaker Frames Wider Apart in Extracting Supers

I have found the most effective method for spacing Danzenbaker frames for extracting to be to remove the supporting rivets and replace them about two inches nearer the top-bar. This can be done without mutilating the comb badly. The end-cleats of the hive must then be raised to a corresponding level, and the frame will hang perpendicular by its own weight, just as do the shallow Danzenbaker extracting-frames. As one seldom wants to reverse the frames, this position for the rivet is as good as the center.

Stouffville, Ont. F. L. Pollock.

Heads of Grain from Different Fields

Too Much Honey in the Brood-nest for Satisfactory Breeding

We have a yard of 108 colonies in which the bees are very strong for this time of the year, having at this writing an average of four frames of brood; in fact, they have almost every empty cell filled with brood. The other four combs are solid with honey to the bottom-bars. There is, of course, some honey in the frames having brood. In this locality the fruit-bloom is on about May 5 to 10, to be followed immediately by locust, then clover and sumac, with practically no playspell between. Now, in your judgment which would be the best—to extract about two combs or put on supers early and have them carry up the honey in order to give the queen room for laying? We run this yard for comb honey. Do you think the queen should have six combs for brood two weeks before fruit-bloom? Last fall these bees had every frame solid with honey to bottom-bars with an exception in most cases of a small nest extending about three inches from the bottom-bar in two combs. They wintered finely.

Conneaut Lake, Pa., April 8. R. A. NUSBAUM.

[We are a little in doubt as to what kind of answer to give. As a general proposition, plenty of honey in the brood-nest, where there are at least six frames of brood is a pretty good asset. In the two weeks intervening, considerable of this extra honey will be consumed in brood-rearing providing there is no source of nectar at the time. That being the case, we would not advise disturbing the brood-nest You have an almost ideal condition.

You might try taking away two combs of stores from a few colonies, but we would not extract, because you may desire to give them back to the bees later on, and there is nothing like combs of honey for brood-rearing. Of course, the two combs removed should be replaced by empty combs in which the queens could lay.

It is very doubtful if the bees would carry the honey up into the supers, although they might do so —ED.]

Plan for Requeening

Referring to the article, page 234, in the March 15th issue, "To make increase and prevent swarming," I should like to inquire how it would do to place the old queen above with a queen-excluder between the brood-chambers, with only one frame of eggs below. The excluder would prevent the old queen from coming out with a swarm. When the young queen below would begin laying, the old queen could be destroyed. Would not this be a good way to requeen each year and prevent swarming?

GARDNER B. WILLIS

Providence, R. I., March 20.

[We can see no good reason why you should not be able to requeen your bees successfully by the method which you describe, providing the colony is very strong and honey is coming in every day. Without these conditions the lower story might not start cells. However, in case the honey-flow should be cut short before the young queens hatch, you might awake some morning to find them all destroyed.—ED.]

A Swarm that Stored More Honey than old Colonies

I have some strong colonies that make but little honey. Last year we caught a swarm on May 1 as it came over our farm. It filled its hive and two full supers and part of another. My old colonies, apparently as strong, filled only one super with honey, and two did not make any surplus, though strong, These were very cross. In the fall we could detect a sour smell about the hive. Can you tell me what to do? Do I need new queens?

Roxbury, Ohio, April 7. G. E. MORRIS

[For some reason a swarm, as a rule, works with a vim not known to the colony which does not swarm. This will partly account for the fact that your newly hived swarm produced more honey than your old colonies. They should have produced some honey; and since some of them did not, it would appear that there must be something wrong. Some colonies of bees, although strong, never do much in the supers, and in such cases it is wise to requeen.

It may be that the queens are old; and while your colonies were apparently strong, yet the failure of the queens to keep the brood-nest filled with eggs and young brood would allow the bees to store the honey there instead of in the supers. Requeening would be the remedy for that also. Since you detected a sour odor in the fall we would advise you to look sharp for European foul brood, although this odor may have come from a honey-flow from fall asters or goldenrod.—ED.]

More about that Peculiar Disease

The editor asked for information, pages 547, 548, Aug. 1, 1913, regarding a peculiar disease appearing in Colorado and California. We have the same trouble around here. It starts about the last of June or first of July, and lasts six or seven weeks. I first noticed it three years ago. I thought the bees were robbing. The front of the hive would be covered with bees, and the ground alive with crawling bees too weak to fly. Each hive seemed to be killing its own bees. They kept at it till all or almost all the old bees were killed. The combs were well filled with brood of all ages. There was no honey coming in at the time, and the strongest would rob out some of the weakest.

Napa, Cal., Feb. 19. W. E. GRIFFIN.

Satisfactory Experience with Light Brood Foundation in Sections

Referring to Geo. T. Whitten's article, Feb. 15, page 139, I have had three years' experience with light-brood foundation in sections. My bees work this more readily, and have very much increased my honey crop since using this foundation. I can also do a faster and better job by putting it in the sections. I have tested the honey by cutting out the partly filled sections, and I find the midrib at the top slightly heavier than in sections. Where I used super foundation, especially next to the wood, when cut ⅛ inch below, I can tell no difference. I have asked my customers if they have any complaint about the midrib, but none have had any so far.

Ceres, Va., Feb. 25. F. A. CRABTREE.

A Note of Appreciation from a Back-yarder

I have, for several years, been a subscriber to your paper, and have always read it with considerable interest, but never before have I felt it my duty to make any special comment on it. However, I feel quite confident that the last issue, that of April 1, is by all odds the most valuable and interesting to beekeepers of any periodical I have ever read on the subject of beekeping. I enjoy very much the experiences of those old tried beekeepers, and their explanations are of such a character that almost any person, though quite young in the beekeeping game, could surely understand them.

I am what is commonly called by the big men in the game one of those back-yarders; that is, I have what I think is the nicest little apiary of its size, from every standpoint, located in Nebraska. I have seventy colonies of bees, all in up-to-date ten-frame

hives, placed in pairs on cement foundations, and all the necessary apparatus for working them. I have been in the business nine years, and have made a success of it every summer. I made one bad winter failure when I commenced cellar wintering. The first season I prepared my cellar in accordance with the instructions of several men who had practiced cellar wintering. I put in thirty colonies of bees, and took out seven living in the spring. Since that time I have used some methods of my own for forced ventilation, and have never lost a colony of bees that could have endured one month of cold weather out of doors. Last season I commenced with forty-two colonies; increased to seventy, and netted myself $900.

I have noticed in GLEANINGS quite a number of arguments from beekeepers for and against cellar wintering. I am quite confident that in this locality cellar wintering is by all odds the better. The saving in honey would amply pay for the construction of the cellar. I wintered my bees in 1912 on an average of 8 lbs. and 2 ounces of honey per colony, weighing them in and out.

Omaha, Neb., April 14. H. C. COOK.

Some Interesting Questions

1. Where "shook" swarming is practiced, how soon can the two colonies be united without danger of swarming?

2. Will queen-cells in an upper story with wire cloth between the two stories have a tendency to induce swarming?

3. How much space can I leave between the bottom-bar of frames and the hive floor without danger of combs being built between?

4. How much space can I leave between dummies, and have no comb built between?

5. What should I do with combs that become moldy?

6. Will the steam-heated uncapping-knife work satisfactorily on combs of cold honey?

Coffeyville, Kan., April 16. BIRD HART.

[1. Your question implies that you wish to practice "shook" swarming as a method of swarm control and not for increase. The intervening time between shaking and uniting again without danger of swarming would depend considerably on the honey-flow. If uniting were done near the close of the honey-flow there would be little danger of their swarming for the rest of the season; but if honey-flows should come on later the bees would be likely to swarm.

2. In our experience we have not found that queen-cells in an upper story with wire cloth between two stories have any tendency to make the bees swarm.

3. It is generally regarded that if more than one inch of space is left between bottom-bars of frames and floor boards there is danger of combs being built in the space. However, some beekeepers report leaving much more space than that, without that trouble.

4. That depends on how much the bees are crowded during a honey-flow. Three-eighths to one-half inch is about right.

5. A hive containing moldy combs may be set under a very strong colony where the combs will be cared for and cleaned up; or one or two moldy combs may be placed at a time in the brood-nest of a strong colony.

6. On combs containing cold honey is just the place where the steam-heated uncapping-knife will do the most satisfactory work. It is hard to keep an unheated knife from gumming on such combs.—ED.]

Getting Wild Bees out of Caves in the Rocks in Nevada, etc.

I am very busy at present, nailing up and getting ready for increase of my bees. They have been building up fast since the 8th on buckbrush.

I started in three years ago with GLEANINGS and the A B C of Bee Culture, knowing practically nothing about bees. I took them out of buildings and cavities in the rocks, and used good queens. I had 21 swarms a year ago, and increased them to 43 last season and got 2300 lbs. of surplus honey from them—half fancy comb, half extracted, and captured 27 more swarms, so I am starting this season with 70. So you see bees "go some" in Nevada, even if it is classed as a desert, in the East.

Mason, Nev., March 20. A. J. TEDDER

A Queen-excluding Honey-board Under the Hive to Prevent Swarming

I have 14 stands of bees in Danzenbaker hives. I am a day laborer, and do not want many more bees. How would it do to put a queen-excluding honey-board on the bottom-board under the hive at swarming time, so that the queen cannot get out?

Flora, Ind., April 6. S. W. HIGH.

[Our opinion is that your plan would be a failure, because the queen-excluder would soon become clogged with the bodies of dead drones; and, besides that, it would be a serious hindrance to the loaded bees passing through. A better plan would be to use an Alley queen-and-drone trap on the front of the hive.—ED.]

Feeding and the Kind of Sugar to Use

How do you prepare sugar for feeding bees? Is there any profit in feeding? What kind of sugar is used?

Oakland City, Ind., Mar. 27. ALBERT JORDAN.

[Sugar is prepared for feeding by dissolving it in water, thus making a syrup of a consistency varying with the time of year in which it is to be fed. For fall feeding it should be about half and half. For spring feeding within the hive it should be about three of water to one of sugar; and for outdoor feeding about nine water to one sugar. Generally speaking, stimulative feeding in the spring is a very good thing for the beginner to let alone. Granulated sugar only should be used.—ED.]

Ground Ants Bothering Bees

My bees are bothered by the ordinary garden or ground ant in the summer. Do they hurt any thing? Tell me how to get rid of the pests.

Gilbert, Pa., March 30. ELMER E. HINTON.

[You can get rid of the ants by finding their nests, and with a crowbar or some similar instrument punch a hole down about two feet into the ground in the middle of their hill. Drop in about a tablespoonful of carbon bisulphide, and cover it up. This ought to get rid of all the ants. If they should bother you again from the same nest, give them a little heavier dose.—ED.]

Value of Bees in a Cucumber Greenhouse

A neighbor (a market gardener) has four colonies of bees to fertilize his hothouse cucumbers. I take care of them, and get the honey. From them and two in our back yard last season I obtained 1007 lbs. of extracted honey, which we sold at 12½ cts. per lb.

The second week of picking, the owner of the four colonies picked 200 dozen cucumbers per day, and received an average of 80 cts. per dozen.

Elmira, N. Y., March 18. P. F. CONKLIN.

Preventing Bees from Flying when it is Too Cold

The best method I have found to check spring dwindling is to place the front of the hive to the north and put a shade-board on the south side. When it gets warm enough so the bees can fly they can nearly always get back to the hive.

Elsie, Mich., March 22. C. E. CARTER.

A. I. Root **OUR HOMES** Editor

Fear not them which kill the body, but are not able to kill the soul; but rather fear him which is able to destroy both soul and body in hell.—MATT. 10:28.

MORE ABOUT THE BOY WHO WAS DROWNED AND AFTERWARD RESTORED TO LIFE.

The matter for Our Homes in our issue for May 1 was prepared hurriedly, so as to be in time for that issue. Later I found out where the boy lived, and visited his home. A little inquiry elicited the fact that the two boys mentioned were truants from school. The teacher imposed some penalty —I think staying after school, or something of that sort; but, like many another thoughtless boy, he sought to outwit his good teacher by running away from school and going in swimming. I wonder if a guilty conscience did not have something to do with his getting "rattled" while in the water, so that he could not swim. I suggest this because of some experiences of my own when I was about his age. This boy's name is Vaughn Tharpe, and he lives in the outskirts of Bradentown. Let me digress a little.

When I saw that boy repeatedly going down into the water, and was evidently nearing his death, a terrible load of responsibility rested on my shoulders. I recalled vividly a recent story in one of the dailies of a boy about his age who was run over and killed by an electric car. When the poor mother saw his mangled and lifeless body she became a raving maniac. It took several strong men to hold her, and her screams of mental agony were heart-rending. I thought of *this* boy's mother. Suppose she saw *me* standing apparently helpless while her boy was going down to death. If the readers of GLEANINGS could have seen me run as I rushed to the house to tell Mrs. Root to alarm the neighbors and to get a doctor, they would have scarcely believed I was close to 75 years of age. Luckily I was very lightly attired; for in spite of Mrs. Root's protests I work in the garden with just as little clothing as possible. When we get to be past threescore years and ten, most of us get along with our work better by disposing not only of every pound but of every ounce of useless apparel. I think I can run for a short distance about as fast as I ever could. A sacred responsibility rested on me to spare no effort, physical or otherwise, to restore that boy to animation; and, by the way, every man, woman, and child should be taught by competent authority *what* to do in case of drowning. I knew the water must be first gotten out of the boy's lungs, for I had an experience of my own of that kind years ago, when I, too, nearly lost my life. I had sense enough to lie down on my face with my head downhill; and it was a feeling of relief I shall not soon forget when I found I could breathe again. I supposed the boy would revive in a like manner; but he showed no signs of life until Wesley turned him with his head up hill and began to roll and rub him. I was not present when he revived; but Wesley tells me the boy finally coughed and sneezed, and then expelled another great lot of water from his mouth and nostrils. When I reached the place, just after calling the town doctor, the boy was able to sit up and talk. Several days afterward, when he and his mother called at our place to thank Wesley and myself, I questioned him about playing truant, and he replied, "Mr. Root, you may be *sure* I will never run away from school again as long as I live."

Let us now consider our text for a moment. You may wonder what it has to do with what I have been telling you. Let us look at it this way:

In answer to my prayers—mental prayers, perhaps, although I think I spoke out loud when the boy sank for the last time—God heard me; and when the water threatened to be over Wesley's head,* so that he feared he could go no further, I prayed for footing for the next step, a little higher up, *that* prayer was answered; and the third time, when Wesley said all his efforts were unavailing, I prayed again as I hastened off for the doctor. The prayers were answered, and the boy is now alive and well.

But, my friend, what does it all amount to, providing this boy should grow up to be a drunkard, or, what is more likely, a cigarette fiend? This "Safety First Society" that promises to do a mighty work in saving the lives of our children is a grand undertaking. Every man, woman, and child should join it and work for it. The mothers

* I tell you, friends, that was a serious and critical time when I took the responsibility of telling Wesley, a man who could not swim, to push ahead when he had to raise his chin to keep his mouth out of the water. I came very near indeed having not only a drowned *boy* on my hands and conscience, but a drowned *man* also. Some of you may think that one who cannot swim could push ahead a few feet under water. Not so. In a second more the water would have taken him off his feet, and then he would have been as bad off as the boy. There was no one near except the other boy, standing still and shivering on the opposite bank. I could not get *him* even to run for help; and there was a tangled thicket along both shores of the stream, and it was quite a distance to any house. If there was ever a time when one needed to pray for *God's* help with all the faith and energy he possessed, that was the time.

especially will do this; but what *does it* amount to if we simply prolong life and do nothing for the immortal soul?

Lucy Page Gaston (may God bless and sustain the woman) informs us through the *Union Signal* that last year there were manufactured in the United States *three billion eight hundred million cigarettes.* She says that new factories are constantly springing up to make cigarettes for the boys. Many of the older factories are working night and day, the demand is so great. If you take a little pains you will discover that children are learning to use cigarettes on the sly almost if not quite all over the land. They are hired by the manufacturers to distribute cigarettes and help cultivate an appetite for them. Many a parent does not know his boy has ever touched a cigarette until the child is pretty well along in the habit.* The government of the United States some time ago started a crusade against "*habit-forming* drugs," and later still a movement against "*baneful drugs.*"

Now, wouldn't you think these two organizations would hit cigarettes? So far as I can learn, they overlook or ignore cigarettes because of the great American Tobacco Co. The liquor business has shown itself to be bigger than Uncle Sam; but just now Uncle Sam is waking up and rolling up his sleeves. The Anti-saloon League has sometimes suggested that we should not undertake *too many* jobs at once. I think that at one great temperance convention they thought best that Lucy Page Gaston should not talk about cigarettes, as it might divert attention, just at a crisis in enacting laws against the liquor-traffic. May be that is wisdom; but, oh dear me! can we neglect our boys?

Once more: A kind Providence permitted me to save that boy's life. Is that all? Shall I now drop him and let him drift away out of my sight among the multitudes? God forbid. The poor mother said he had not been going to Sunday-school since they moved into Bradentown because he could not dress as well as the other children. But I talked with the mother and with the boy, and I also talked with Mr. Rood, the superintendent of our Sunday-school, and he will look after the boy. Furthermore, I am going to send the boy GLEANINGS; and while you are reading the words I am now dictating, the boy may be reading them also. I prayed that his life might be spared, and God heard and answered. Now will you not unite with me and pray that a higher and more important *life* may be developed, and that the boy may grow up to be a *benefit* to humanity? And while we think of him and pray for him, shall we not also think of and pray for all the boys (and girls too) of our great nation and throughout the wide world? I am rejoiced to know that there are movements on foot to save the lives of the boys and girls in India, China, and everywhere else, where they are neglected and suffering.

When I was two years old the doctors told my good mother that there was no hope —I could not live. But she prayed, and had faith to believe that I might live in spite of what the doctors predicted. Of course she was thankful for this; but she was not satisfied, and kept insisting and declaring all the time, until I was a married man and had children of my own, that there was a higher life for me that I had not yet touched. I, a grown man, laughed at her faith and her continued prayers and importunity. She said, as some of the older readers of this journal may remember, that I was yet going to work for Christ Jesus exactly as I had been so far working for the honey-bees; and that is why, dear friends, I am exhorting you all to-day not only to care for the physical health, life, and well-being of these little ones growing up in your homes, but for that other life in God's spiritual kingdom—that "kingdom" we talk of in that wonderful prayer, "Thy kingdom come, thy will be done on earth as it is in heaven."

* The city of Tampa is about sixty miles north of Bradentown; and besides a railway there are two steamers that make the trip from Bradentown and return every day. These steamers not only bring cigarettes but liquors as well into Bradentown, which has never had a saloon, and, by God's grace, it never will have.

After the above was put in type I came across the following which I clip from the *Union Signal:*

"In Tampa and Key West the conditions are appalling. About eighty per cent of the children between eight and sixteen are or are becoming confirmed tobacco victims. The crusade there should be continuous and persistent, educational, and in the line of law enforcement."

SHOULD A MINISTER OR SUNDAY-SCHOOL TEACHER USE TOBACCO, ETC.?

Dear Brother Root:—I say, God bless the man who strikes such blows at the liquor, cigarette, and (for that matter) all other conventional follies right from the shoulder. May he give more strength to your muscle.

It is, perhaps, none of my business; but candidly I should like to know, if you were a regularly ordained minister, would you dare to speak as plainly to your flock as you write with your pen? If so, I venture the assertion you would be asked to get "down and out."

Please come with me to one of the largest churches on this coast. Its pastor gets a big salary—I can not say how many thousand dollars. It makes me feel unusually "warm above the collar" when I think of *another* pastor with a large family who gets $700, lives in a place where you would hate to put your chickens to roost, and can't afford to give his children a ten-cent ride to the beach while the other takes his annual trip abroad or across the continent.

Well, the pastor of the big church thunders against the liquor traffic, white slavery, the slit skirt, tango,

and all other up-to-date dances, and about every thing else under the sun but *tobacco*. On this theme he is delightfully silent. Many of his officials, including deacons and Sunday-school teachers, smoke and chew, and he knows on which side his bread is buttered.

Allow me to introduce you to a lad about eighteen. A year ago he was a church and Sunday-school goer. To-day he is in the high school, and smokes cigarettes. Does he still come to Sunday-school? Of course not. For convenience I will call him Tom. Meet him, if you will, Mr. Root, and say, "Tom, my dear lad, cut out those cigarettes. Don't you know they will ruin your mind, body, and perhaps your soul?"

If I were Tom I'd say, "Mr. Root, go to Mr. Blank, the church deacon, and Mr. Dash, the Sunday-school teacher. Get *them* to give up smoking, then come to me. I'm following their example.

"Yes, but you say they smoke cigars. So will I when I can afford to. It costs 10 cts. and up for a cigar. I can get a dozen cigarettes at that price."

From my observation this condition obtains in all churches. In face of these facts, is not the church (no, not the church, heaven forbid, but so-called members) responsible for our boys going to the devil by way of the cigarette route? My wife (one of the very best on earth) is an ardent worker among the little folks in Sunday-school. I tell her if we had a boy I'd hesitate sending him to Sunday-school for fear lest, some day, he would come home and say, 'Father, my teacher smokes; and when I can earn money I shall do the same." See the point? Paul says, "If meat make my brother to offend I will not eat it (not much danger nowdays of meat making our brother to offend—the price is too high); but the good Lord knows tobacco is making our boys "offend" beyond all conception; and to my mind there is no factor helping to spread this blasting plague more than the example of church folks.

In talking this way to some people they say we ought not to look at church members; we should look at Jesus. What silly rot! If church members are not to be looked at and imitated, then in the name of the Master what on earth *are* they for? What does the average boy or girl know about Jesus, any way? Ask them why we observe Christmas or Easter. They know it has something to do with Santa Claus or a new Easter bonnet. Beyond this they are ignorant, and why not? They learn nothing of him in the public schools, nor in their homes, and they don't go to church or Sunday-school. No, they can't see Jesus; but they do see church members, his professed representatives; and if their example is not fit to follow, then in all common sense whom *can* they follow? My feeling is, "when the roll is called up yonder," 95 per cent of our church members "won't be there" unless they get a "move on" and change tremendously their fashion of living. If this is not so. I need to be shown, and I'm not from "Missouri" either.

Yours for Christ and the boys,
Dixon, Cal., Dec. 18. JOHN T. BOWEN.

My good brother, I fear you put it too strongly. Our Medina, O., pastor and our Sunday-school teachers do not use tobacco, and I think I can safely say the same here in Florida. Our Sunday-school superintendent *frequently* talks to the boys very plainly and emphatically about avoiding tobacco. Billy Sunday, whose converts are *continually* going up into the thousands, hits heavier than I do, yet his "audiences" don't seem to grow small. Don't we all need a little more "Pollyanna"?

POULTRY DEPARTMENT

STARTING THE EGGS UNDER HENS.

Mr. A. I. Root:—I am much interested in your writings, especially on poultry. I am in the poultry business in a small way, and I want to tell you about my splendid hatches with a fifty-egg Cycle incubator.

Several years ago you suggested starting the eggs under hens, testing out the infertile ones, and at the end of a week putting the fertile eggs in the incubator and setting the hens over again. The first time I tried your plan I put 56 eggs under hens, and on the fifth day tested out five infertiles, and at the end of one week put the 51 fertile eggs in the incubator and set the hens over again. Out of the 51 eggs in the incubator I got 50 chicks. The second time I put 52 fertile eggs in the incubator and got 52 chicks—fine, strong, and vigorous. Every egg hatched. I couldn't have done better. I call this way of hatching chicks the *Root* plan.

I have one good vigorous yearling cock (S. C. W. Leghorn) mated with 25 splendid two and three year old hens, and the fertility has been very good indeed; but I find that hens will start every germ, which an incubator will not do; so if one has enough hens to start the eggs for a small incubator it is quite a saving in eggs. I am using Buff Orpingtons for sitters. I made a tester after your plan, out of a "Mother's Oats" box. I like it very much indeed, but think I have improved it somewhat by having my wife sew some soft cloth around the open end that fits up to the forehead and nose. Being soft, it shuts out every particle of light, fitting closely to the face.

We use the sun for testing when possible, and can do it more thoroughly and quicker than with a lamp. I have 104 fertile eggs in two Cycle incubators, and really I shall be disappointed if I don't get more than 100 chicks. I have hatched several hundred this spring, and have had only one cripple. I have advertised a little, and found that there is a good demand for baby chicks. Several of my six-day-old White Leghorn incubator chicks followed a neighbor a quarter of a mile from the house, came back with him, and seemed as fresh as ever when they got home. I have never had such vigorous chicks before.

DWARF ESSEX RAPE FOR CHICKENS.

I do not remember ever hearing you say any thing about rape for chickens. In my estimation there is no green quite so good for poultry as dwarf Essex rape. You can sow the seed here about the middle of August, and in six weeks you can begin to cut or turn the chickens on it. It can be mowed or cut (if not too low) three or four times during the year, and will grow right up again.

I have a small patch that I sowed the middle of August. When it was large enough I turned the poultry on it and they stripped the leaves right down to the ribs. Then I cut the old ribs off and let it grow out again. It is now fine and large, and ready for the knife or the flock. It certainly is a wonderful plant for poultry.

At first I tied the leaves in bunches and threw them in the pens; but, of course, that way they could not eat the ribs, which was a great waste. I

now have a clover-cutter, and cut the leaves, ribs, and all, so there is nothing wasted.

Lakeland, Fla., April 28. C. H. TIDD.

Our friends, or some of them, at least, will recall that this matter of starting eggs under a hen came up some time ago, and several communications have indorsed what I said—namely, that a sitting hen would produce more fertile eggs from a given number than any incubator made. If I am correct, even the Cyphers people were obliged to admit that this is true, at least to some extent. My experience would indicate that letting a hen have the eggs for just three days is an advantage, for in three days' time, with the egg-tester mentioned in the above letter, the fertile eggs could be readily picked out.* The suggestion of having the pasteboard box lined with cloth where it touches the face is a very important one, for just a little light getting through a crack or crevice will mar the vision; and the very best place to use it is in a dark room where a single ray of sunshine comes through a knothole or crevice. If you wish to be able to test out the fertile eggs in *three days,* be careful to have every thing just right. I am glad to see such a good report from near my Florida home.

HIGH-PRESSURE GARDENING

THE DASHEEN; KEEPING IT CLEAR FROM WEEDS, ETC.

There is one important point in regard to this new vegetable that I think I failed to mention. When it first comes out of the ground, as perhaps hundreds of our friends are now noticing, it has a single point, almost as sharp as a needle. This will push its way through very hard and uninviting soil. In spading our ground over where we had dasheens last year, many of the small tubers were turned under; and as I directed Wesley to go down a full foot with his spading, many of these little tubers were a foot under ground; and although it was some time before they got up to the top they did eventually, almost every one of them. I have mentioned this matter before in speaking of the "dasheen asparagus." The shoot or stalk will, of course, be bleached white until it reaches the surface. Now, when it once gets up to the light, if you throw some dirt over it, it will keep right on shooting up; and in this way you can get these asparagus shoots, as we call them, not only a foot, but even 18 inches long. Now comes the point of my discovery:

Many of you have weedy gardens; and as the dasheen is sometimes three or four weeks or more in starting, there may be quite a growth of weeds. If so, you need not try to pull them unless you choose. Just hoe some nice mellow earth right over the dasheen plant. The dasheen will shoot right up through this soil, but the weeds cannot do it. So here is a short cut in the way of cultivation. Plant your dasheen tubers in a moderately deep furrow, as we plant potatoes. Now, instead of filling up the furrows with dirt, just fill them up about half way. When the weeds and dasheens both get a start, throw on a little more soil. In a few days the dasheen will get up through this additional soil, and perhaps some more weeds may start. If so, just turn on a little more dirt, and in this way you can have a clean field without any hand-hoeing at all. The cultivation can all be done by a hand or horse cultivator.

THE AMADUMBE OF SOUTH AFRICA.

Just before we left Florida we tested the amadumbe by taking off some of the side shoots, tops, and tubers; and it is so near like the Trinidad dasheen we have been talking about, that we will call it all one and the same thing. Thus it seems to transpire that the dasheen that is so new to America has for years past been one of the main products for human food over a large part of the world. Once more, what is the matter with our American seedsmen who have heretofore been so eager to find something new and valuable for the home garden?

THE DASHEEN IN ALABAMA.

Dear Mr. Root:—I took pleasure in reading what you had to say about dasheen in a recent issue of GLEANINGS. The Bureau of Plant Industry was kind enough to send me 24 tubers or bulbs last May. These were planted about May 10. The first part of the season was very dry; but in August the rains were plentiful. In October I used a common scoop shovel and dug the crop. The ground was rather wet, and I was afraid they would freeze if left longer. The entire roots, corns, tubers, and dirt, with a portion of the rank necks, were banked in dirt. The dirt was allowed to fall in between the roots so that no two plants touched each other.

To-day, March 17, I took these dasheens out of the dirt, and every one of them was as sound as a

* As to why a sitting hen is able to start the germ in eggs that will not show any signs of life at all when placed in an incubator, no one has so far been able to tell, so far as I know; not withstanding, I do believe it will pay to keep sitting hens employed, especially the large breeds that want to sit so much, in preparing eggs to be put in an incubator. My experience agrees exactly with what our good brother tells us.

dollar. Not one had rotted. One corm, after all the tubers, roots, and dirt had been separated from it, weighed one pound and 15 ounces. The corms kept as well as the fresh or young tubers.

My reason for calling your attention to this is because you mentioned the fact that the corms were not so easy to keep as the young tubers. Of course my hill was protected from the rain, and the dirt was thick enough to keep out frost. Lowest temperature this winter was 16 F. The sap had never left these plants, and most of them had strong new sprouts and roots to them, so that they are ready to go right to growing in the pots where they were placed. And, by the way, I am debtor to you for the idea of starting them in pots. My pots are heavy manilla paper sacks, which I expect to peel off and set the rooted plant, dirt and all, in the open ground about May 1.

Pell City, Ala., March 17. BAYS D. CARTER.

My good friend, we are exceedingly obliged to you. The above demonstrates that, with a little care and pains, the dasheen may be kept with little trouble so it will be available for food every day in the year; and, more than that, tubers kept in this way will start out with wonderful vigor, and in good soil ought to make plants as high as your head before frost comes again. I am pleased, also, to note that you have succeeded already in getting corms weighing close to two pounds, and that even the *corms* went through the winter without any loss.

Just now one of my good friends said in one of his kind letters he hoped I would let up a little in regard to dasheen. All right. The dasheens are planted and growing finely, and we will now talk about sesame for people and chickens. *Another* of God's unnoticed gifts.

"SESAME"—THE NEW FOOD PLANT; SEE PAGE 239, MARCH 15.

After getting the seeds from South Africa they were planted at once, but for some reason none came up. Later I found the plant already growing in Florida, and succeeded in getting a few seeds which were planted and came up very promptly. When I left Florida, about the last day of April, they were up so as to show the second leaves. Here is something from the West Indies in regard to the same plant:

Permit me to say to Mr. Root that I grow sesame, and have been selling quite a lot by mail to nearly all the Southern States—mostly in ounce packets at 10 cents. The sale was brought about by a letter from myself to the *Southern Ruralist* of Feb. 15, describing the seed and some of its uses. I am out of seed now, except for planting, but will be ready with more in about four months.

JOHN M. BREWER.

Columbia, Isle of Pines, West Indies, April 20.

Later.—After the above was dictated I ran across the following, which I extract from the *Florida Grower;* and from what I know of it I have no doubt that these little seeds will be the nicest things in the world for little chicks. Some years ago we purchased some French bread—I think they called it French—that was very highly recommended, and all over the glossy surface of this bread were some little seeds that gave the bread a peculiar and (to me) very enticing flavor. From what follows below I think that, without question, these little seeds were sesame. Now read the following:

Of all known plants the magicians have selected one, the sesame, or bene, as their own. Presto, change! Open, sesame! These words are known wherever the magician plays his art. It is simply a transformation; he uses the first incantation; but if from some closed or hidden source is to proceed some marvel, as a white rabbit from your hat, or a twenty-dollar gold coin from your empty pocket, in all such cases he says, "Open, sesame!" But how many of us know why he says so?

The sesame is an oriental plant. India largely supplies Europe with the seed, which go mostly when compressed into sesame oil. China exports thousands of tons to America, which all Germans and Greeks especially are fond of, whether eaten like peanuts or put into bread, cake, candies, or sausages. The seeds are small, somewhat like tomato seed, and are rich, nutty, and oily in their taste. Each plant, about five feet high and widely branched, produces 25,000 to 30,000 seeds. The leaves have medical virtues, and, though not disagreeable to the taste, the plant is never eaten by cattle.

The plant is the greatest known attractor and feeder of birds in fields, parks, and game preserves. The game preserves about my home here at Augusta, Ga., have had finest results from sesame. It is equally good about the home for birds, poultry, or little chicks. Doves and quail are exceedingly fond of it, and it serves as a great attraction for them. It is an annual—grows anywhere. When regularly planted in fields, plant 3½ x 2 feet, 5 pounds to the acre, in June, and it ripens in about 100 days—ripens as far north as Kansas or Missouri. One acre makes from 1000 to 1500 pounds of seed.

The five or six branches of the plant are loaded with pods, and there are fifty or more seed to the pod, which lie over and on top of one another. These pods are about 1¼ inches long, and have three or four seed-chambers.

The magician comes in just here. The ripened pods have a queer, quite magical way of suddenly bursting and sending out in all directions showers of seed. The force of the explosion sends this mist of seed to quite a good distance. In the dry August and September days these explosions are incessant. One who sees them well understands why the world's magicians have so long and so exclusively claimed this plant as their own.

N. L. WILLET.

Editor's Note.—*Sesamum Indicum,* to which our correspondent refers, has been extensively cultivated in Asia and Africa since times immemorial. Sesame oil, extracted from the seed, known in India as "til," is used for the same purposes as olive oil, and, although less widely known by name, is commercially a much more important oil. The leaves are used medicinally in cases of dysentery and diarrhea in children, and the soot obtained from the burning oil constitutes one of the ingredients in India or China ink. Large quantities of oil and seed are imported into Europe from Asia for the manufacture of soap and adulteration of olive oil. This plant might be cultivated with advantage in South Florida.

If the sesame makes as interesting a breakfast food as is described it ought to be very useful to Florida folks, and I am quite anxious for the summer rains to get here so that I may plant the seed for which I have sent. Judging from the descrip-

tion it must be that the old time "benny" or "bene" as some spell it, is a relative at least of this sesame which is now being started on its popular way. The old benny is described as dark-colored, making its pods only at the tips of branches, while the present sesame species carries pods in long rows along the branch and main stalk; and the seed, which is parched and used as a cereal, is nearly white. It is a rainy-season crop, moreover, and said to grow quite easily on soil that is not especially rich. Besides being used for cereal the parched seeds are ground at home in the kitchen grinder, and used in pancakes. If there is any thing as easily made as this is reported, and available for two such uses, it will surely make its way in Florida as soon as tried out. I am sending also for enough to see what the flavor may be. The sesame which I have seen sprinkled over bread baked by Syrian bakers in the New York quarters lends a fine flavor to their crust. These foreigners may use it also in some way corresponding to our cereal; but so far as my acquaintance with them goes they are not strong on so-called breakfast foods.

TEMPERANCE

THE "OPENING CHASM."

A correspondent of the Medina *Gazette* writes about the "chasm" that separates the Progressive and Republican parties, to which Editor Rowe replies as below:

There is another "chasm" opening. It is a single issue that is going to be presented at the bar of public opinion in Ohio this year that will make this "chasm" one so wide that there will be no bridging it if it separates two parties. It is going to make a "chasm" through the whole length and breadth of this nation before another presidential year has come around. It is the proposition for the absolute extinction of the American saloon—the wiping-out of the nation's greatest curse by the national prohibition of it. Business as well as the church, the home, and the individual are rising in their wrath and might against it. It has got to go—and the Progressive party of Ohio is this year going to declare absolutely for its extinction—for wiping it off the face of the earth—without compromise or paltering.

Won't it make a "chasm"? Will either of the old parties dare line up on the issue? Will they do any thing but evade and shuffle and compromise with it as they have always done?

Amen to the above sentiment. It is the best illustration of boiled-down "common sense" I have seen in a long while. Once more I ask, "Will the old parties *dare* line up?"

"OUR CUSTOMERS ARE YOUR PROSPECTIVE PATIENTS."

Please read the following, which we clip from the Cleveland *Plain Dealer:*

William H. Anderson, president of the New York Anti-saloon League, placed in the record a letter addressed to a whisky "cure" concern at Dwight, Ill., and signed by a distillers' distributing company at Kansas City.

"Our customers are your prospective patients," it read. "We can put on your desk a mailing list of over 50,000 individual consumers of liquor. Each individual on the list is a regular user of liquor. The list of names is new, live, and active. We will furnish this list in quantities at the prices listed below."

A scale then was given.

Wayne B. Wheeler, superintendent of the Anti-saloon League of Ohio, declared that the fight against the liquor traffic had been finally brought "to the last stand of the liquor interests, the barricade of the national protection of the traffic."

What you do think of the above for "cheek"? These liquor-dealers not only offer to *sell* the names of their patrons, but coolly own up that their customers will sooner or later wind up in a "*Keeley cure*" institution; and, by the way, is that not also rather a "fling" at the whole "cure" business? Our older readers will remember that when the Keeley remedy first came out I strongly insisted that the only cure was the gospel of Christ Jesus.

"GOD'S KINGDOM COMING."

We clip the following from the *American Issue* of April 18:

Last week was certainly a nightmare to John Barleycorn. It must have reminded him of the effect he has on his victims. The week started with the announcement of the Chicago *Record-Herald* that it would not longer accept liquor advertisements because it did not care to commend that which society regards as a menace. Then came the order of Secretary Daniels prohibiting the use of intoxicants in naval stations, in navy yards, or on board Uncle Sam's ships. This was followed by the abolition of one thousand saloons by the voters of Illinois and the cleaning-up of wet territory in Michigan, Minnesota, and Nebraska. All this did not tend to boost brewery stock. Before the week was half over, the common stock of the Hoster-Columbus brewery, the biggest concern of its kind in Central Ohio, was down to one-fourth of a cent on the dollar, while for its preferred stock but five cents on the dollar was bid.

LONDON TEMPERANCE HOSPITAL; A FAMOUS NON-ALCOHOLIC EXPERIMENT.

Mr. Root:—In GLEANINGS for Dec. 15, page 914, you speak of a hospital in England which has not used liquors for 40 years. Now, that is a clincher. Please write me the name of the hospital, and where located. I have never seen the *Union Signal.*

Bergville, Minn., Jan. 10. A. B. WHITE.

The above letter was submitted to the *Union Signal,* and they reply as follows:

Mr. A. I. Root:—Replying to your letter of January 16, inquiring as to the full address of the hospital referred to in the article in the *Signal* of Nov. 6, we beg to say the only address we know is The London Temperance Hospital. We are sending to Mr. White a marked copy of the Nov. 6th paper. If you or he desires further information in regard to the matter we would advise you to correspond with Mr. Chas. E. Bailey, 1 Stanhope Road, Wheatley, Doncaster, England. He has been a contributor to *The Union Signal* for a number of years, and we have always found him accurate in his statements. We feel sure that what he says in the article is correct.

Evanston, Ill., Jan. 21. JULIA F. DEAN.

Classified Advertisements

Notices will be inserted in these classified columns at 25 cents per line. Advertisements intended for this department can not be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the Classified Columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

FOR SALE.—Finest quality buckwheat honey in cans and kegs. Clover honey all sold.
C. J. BALDRIDGE, Kendaia, N. Y.

FOR SALE.—No. 1 white comb, $3.00 per case; fancy, $3.25; 24 Danz. sections to case, six cases to carrier. WILEY A. LATSHAW, Carlisle, Ind.

HONEY AND WAX WANTED

WANTED.—Comb, extracted honey, and beeswax. R. A. BURNETT & CO., 173 So. Water St., Chicago.

WANTED.—Comb honey and beeswax. State what you have and price. J. E. HARRIS, Morristown, Tenn.

WANTED.—Honey, extracted and comb. Will buy or handle on commission. Beeswax—will pay highest price. HILDRETH & SEGELKEN, New York, N. Y.

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Full line of Root's goods at factory prices. E. M. DUNKEL, Osceola Mills, Pa.

FOR SALE.—Better hives for less money. Beekeepers' supplies and standard-bred Italian bees. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

FOR SALE.—Root's goods at factory prices. Fresh stock and prompt accurate service. Let's get acquainted. L. W. CROVATT, box 134, Savannah, Ga.

FOR SALE.—Empty second-hand cans, two cans to the case; good as new; 25 cts. per case.
C. H. W. WEBER & CO., Cincinnati, Ohio.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. CO., Greenville, Texas.

Thick-top L. frames, f. o. b. Blountstown, at $2.00 per 100, in flat; $18.00 per 1000. Sample by mail, 5 cts. TUCKER & BAILEY, Blountstown, Fla.

FOR SALE.—100 Heddon hives and appliances to run 100 colonies. Bargain to clear out. Write soon.
MRS. R. L. GRAY, Rt. 4, Lapeer, Mich.

We are among the largest growers of alsike clover in this country, and offer good clean seed. Bushel, $11.00; half bushel, $5.75; peck, $3.00.
C. J. BALDRIDGE, Homestead Farm, Kendaia, N. Y.

The A. I. Root Co.'s Canadian House, Dadant foundation, bees, queens, honey, wax, poultry supplies, seeds. Write for a catalog. THE CHAS. E. HOPPER CO., 185 Wright Ave., Toronto, Ontario.

FOR SALE.—Smokers and feeders slightly damaged by flood, at one-half catalog price. Bargains. Mention what you want and enclose remittance. We reserve right to substitute.
E. W. PEIRCE, Zanesville, Ohio.

"Root" bee supplies, "American" honey-cans, and "Weed Process" foundation exchanged for beeswax and honey. Cash prices on request.
SUPERIOR HONEY CO., Ogden, Utah.
(Branch at Idaho Falls, Idaho.)

FOR SALE.—150 10-frame dovetailed hives nearly new, $1.20 each with new frames. Better order those Peerless hives to-day.
L. F. HOWDEN MFG. CO., Fillmore, N. Y.

FOR SALE.—Eight-frame Danzenbaker supers, one pair scales, Root section press, 2-ton motor truck, wax press, 2-frame extractor, sample mailing cases, empty 60-lb. cans, power washing machine.
MRS. F. B. CAVANAGH, Hebron, Ind.

I thank the beekeepers for the interest shown in my double-section super described in March 15 GLEANINGS. I received an interesting letter from Hawaii. Will give all a chance to try it at small cost. Will send the 10-frame size, all set up, by parcel post, postage paid up to and including the 4th zone, for $1.10; longer distances, add extra postage. You will try it eventually if you are an up-to-date beekeeper. ELMER GRESSMAN, Hamburg, N.Y.

WANTS AND EXCHANGES

FOR SALE OR TRADE.—Package 500 two-beeway sections, unopened; also comb-honey fixtures.
A. LYNN STEPHENSON, Brownsville, Tex.

WANTED.—To sell untested queens from my superior clover-strain Italians in quantities.
I. F. MILLER, Brookville, Pa.

WANTED.—Best offer on thirty 12-section safety cases of No. 1 to fancy clover-heartsease honey placed in our hands for disposal. Color light as average clover. E. W. PEIRCE, Zanesville, Ohio.

FOR SALE.—Complete advertising course, $15. Cost $115. Secured me position as adv. manager of a daily. Or will exchange for 8-fr. hives or plain section supers. N. GUTE, Owosso, Mich.

WANTED.—Copies of GLEANINGS IN BEE CULTURE for January 1st, February 1st, and March 1st, 1914. Soiled or torn copies *not acceptable*. Will any subscriber who has a copy for any of the dates mentioned, which he is willing to supply, please notify THE A. I. ROOT COMPANY, Medina, Ohio?

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1914. Our catalog and price list will be mailed to you free. Order early and get the discounts.
C. E. SHRIVER, Boise, Idaho.

REAL ESTATE

Virginia fertile farms, $15 an acre up. Easy payments. Send names of two friends interested in Virginia, and receive our beautiful magazine one year free. F. H. LABAUME, Agr'l Agt. Norfolk & Western Ry., Room 246, N. & W. Bldg., Roanoke, Va.

BEES AND QUEENS

Bees by the pound, $1.25; queens, $1.00.
J. B. MARSHALL, Big Bend, La.

Phelps' Golden Italian Queens will please you. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

Pure Italian bees or their hybrids, in L. 10 frames, wired, full foundation, 1 or 100.
JOS. WALRATH, Antioch, Cal.

Golden Italian queens, good as any. Tested, $1.00; select tested, $1.25; untested, 70 cts.; dozen, $8.00.
D. T. GASTER, Rt. 2, Randleman, N. C.

Connecticut queens, 3-banded Italians only; large and vigorous; ready May 15. Price list.
W. K. ROCKWELL, Bloomfield, Ct.

FOR SALE.—18 colonies bees, $4.50 each. Second-hand extractor wanted. H.W. FULMER, Andalusia, Pa.

Phelps' Golden Italian Bees are hustlers. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

FOR SALE.—A few good swarms of Italian bees. No disease. Reasonable.
E. R. THOMAS, Nashotah, Wis.

BEES FOR SALE.—100 colonies, L. frames; boat for moving to mangrove, and automobile, very cheap. 34378 Box 163, Stuart, Fla.

Try my bright queens. Select untested, $1.00; $9.00 per 12. Safe arrival and satisfaction guaranteed. M. BATES, Rt. 4, Greenville, Ala.

Leather-colored Italian queens June 15. Circular free. No foul brood. One, 85 cts.; 6, $4.50; dozen, $8.00. D. G. LITTLE, Hartley, Iowa.

Three-frame nucleus for sale with queen, $2.50; 3 or more, $2.25, on Langstroth frames; commence to ship about May 15. W. H. STANLEY, Dixon, Ill.

Three-band Italian queens. Tested, $1.00; untested, 75 cts. Ready May 15.
S. CLICK, Mt. Jackson, Va.

FOR SALE.—40 colonies Italian bees in ten-frame Langstroth hives, wired Hoffman frames. No disease. J. B. RATCLIFFE, Amboy, Minn.

Queens by return mail, three-band untested Italians, good as can be produced. No disease; 75 cts. each. W. D. ACHORD, Fitzpatrick, Ala.

FOR SALE.—150 colonies tested Italian bees; honey-house, tent-house, and complete extracting equipment. H. E. DIKE, Calabasas, Cal.

Queens by return mail, or your money back. See larger ad. Write for free booklet, "How to Transfer, Get Honey, and Increase."
J. M. GINGERICH, Arthur, Ill.

Italian queens. Warranted, 75 cts. each; tested, $1.25; choice breeding queens, $2.00 to $5.00 each, by return mail. STANLEY & FINCH,
1451 Ogden Ave., Chicago, Ill.

Untested queens, 75 cts. each; dozen, $7.50; nuclei, $1.25 per frame. Young bees by the pound, $1.50; ½ lb., $1.00. Full colonies, 8-frame, $6.50; 10-frame, $7.50. D. D. STOVER, Mayhew, Miss.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price $1.00; 6 for $5.00. WM. S. BARNETT, Barnett's, Va.

QUEENS OF QUALITY.—Three-band, leather color, select untested, 75 cts. each; $8.00 per dozen. Satisfaction guaranteed. Circular free.
J. I. BANKS, Liberty, Tenn.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; tested, $3.00; breeders, $5.00 and $10.00. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

FOR SALE.—Italian bees, 1 lb. with queen, $2.25; 1 frame with queen, $2.00. Queens, 75 cts. each. Safe delivery guaranteed; 30-page catalog with beginner's outfit, for stamp. THE DEROY TAYLOR CO., Newark, N. Y. (formely Lyons).

Queens and bees for sale.—See our large advertisement elsewhere in this journal, and read The A. I. Root Co. letter to us regarding our queens. Write at once for large bee and queen circular.
THE PENN CO., Penn, Miss.

California Italian queens, three-banded and Goldens; also bees by the pound for June and later delivery. Booked full till June 1. Circular and price list free. Write J. E. WING,
155 Schiele Ave., San Jose, Cal.

FOR SALE.—Fine Italian queens. See my large ad. in this issue.
J. F. ARCHDEKIN, Rt. 7, St. Joseph, Mo.

Golden Italian queens, Northern bred. Have wintered perfectly. Untested, 1, $1.00; dozen, $10.00.
J. STUART SCOFIELD, Kirkwood, N. Y.

Golden yellow Italian queens my specialty. Untested, $1.00; tested, $1.50. Ready April 1. Safe arrival guaranteed. E. A. SIMMONS, Greenville, Ala.

Keystone State Golden Italian Queens will please you for honey-gathering; healthy brood and nice gentle bees. Untested, $1.00; doz., $9.00.
WILL H. CARL, Elysburg, Pa.

My queens are bred from imported mother. For gentleness and honey-gathering they are unexcelled. Untested, 1, 75 cts.; 6, $4.25; 12, $8.00. Safe arrival. Address W. J. FOREHAND, Ft. Deposit, Ala.

Golden Italian queens that produce golden bees, the brightest kind, gentle, and as good honey-gatherers as can be found. Each, $1.00; six, $5.00; tested, $2.00; breeders, $5.00 to $10.00.
J. B. BROCKWELL, Barnett's, Va.

Golden Untested Italian Queens, $1.00; six for $5.00. These bees are gentle, prolific, energetic, and pretty. Under date of May 2 an old customer—Chas. Stewart, Johnstown, N. Y., State Bee Inspector—writes, "Received in fine condition 10 queens." Ready to mail. J. B. CASE, Port Orange, Fla.

Golden and three-band Italian and Carniolan queens ready to ship after April 1. Tested, $1.00; 3 to 6, 95 cts. each; 6 to 12 or more, 90 cts. each. Untested, 75 cts. each; 3 to 6, 70 cts.; 6 or more, 65 cts. each. Bees, per lb., $1.50; nuclei, per frame, $1.50. C. B. BANKSTON, Buffalo, Leon Co., Texas.

FOR SALE.—40 colonies bees in 8 and 10 frame hives; comb and extracted honey equipment; total equipment for about 100 colonies, 2-fr. Cowan extractor, queen-rearing outfit, Alexander feeders, and numerous other things, $300. Address
MARTIN S. BACKER, Fulton, Mo.

They have been bred for three points—prolificness, gentleness, and honey-gathering qualities. Select untested, each, 75 cts.; six, $4.25; 12, $8.25; 50, $32.50; 100, $60.00. Tested, $1.50; select tested, $2.00; three-banded breeders, $4.00; golden breeders, $5.00. GARDEN CITY APIARY CO.,
Rt. 3, Box 86, San Jose, Cal.

Famous North Carolina bred Italian queens for sale—(Red-clover three-banders); honey-gatherers, good as the best. Strictly reared from Geo. B. Howe's best breeders, mated with Root's, Moore's, Davis' select drones; bees that get the honey; free of disease. Untested, 1, 75 cts.; dozen, $7.50. Select untested, 1, $1.00; dozen, $9.00. Tested, 1, $1.25. Select tested, $1.50. Extra select tested, $2.00. Breeders, $3.00 to $5.00.
H. B. MURRAY, Liberty, N. C.

FOR SALE.—Early swarms at fall prices; ½ lb. bees, $1.00; 1 lb. bees, $1.50. Add price of queen if wanted. Untested three-band Italian queen, 75 cts. each; tested Italian queens, $1.25 each. These are bred from best honey-gathering strain. No disease. Safe arrival and satisfaction guaranteed. This is undoubtedly the best way for Northern honey-producers to increase and improve their stock. Delivery begins about April 5. Capacity, 40 swarms per day. W. D. ACHORD, Fitzpatrick, Ala.

BEES AND QUEENS.—Queens bred from Doolittle's best stock, untested, 60 cts. each; $6.60 per dozen; $50 per 100. Same stock of year-old queens removed from our colonies to prevent swarming, 50 cts. each; $5.40 per dozen; $40 per 100. Delivery guaranteed. Nuclei, two-frame, $1.50; three-frame, $2.00. Add price of above queens wanted. We have a rare bargain of apiary of several hundred colonies of bees for sale on easy terms. Particulars on request. SPENCER APIARIES CO., Nordhoff, Cal.

Try Forehand's three-band Italian queens. They are raised from imported stock, unexcelled for honey and gentleness. One untested, 75 cts.; 6, $4.25; 12, $8.00. Send me your order; and if not satisfied I will return money., Safe arrival.
N. FOREHAND, Rt. 2, Brewton, Ala.

FOR SALE.—Swarms of young Italian bees in packages. Replace winter losses and strengthen weak colonies with healthy young bees; ½-lb. packages, 90 cts. each; 1-lb. packages, $1.25 each; 2-lb. packages, $2.45 each. Young untested Italian queens, the three-banded hustlers, 75 cts. each. We guarantee safe arrival. No disease. For large quantities write for wholesale prices.
BROWN & BERRY, Hayneville, Ala.

FOR SALE.—Three-banded Italian queens, from the best honey-gathering strains, that are hardy and gentle. Untested queens, 75 cts.; 6, $4.25; 12, $8.00; tested queens, $1.25; 6, $7.00; 12, $12.00. Selected queens, add 25 cts. each to above prices. Breeding queens, $3.00 to $5.00 each. For queens in large quantities, write for prices and circulars.
ROBERT B. SPICER, Wharton, N. J.
Golden and three-banded Italians, ready March 1.

Three-banded Italian queens: Before July 1, untested, 1, $1.00; 6, $5.00; 12, $9.00; select untested, $1.25; 6, $6.25; 12, $11.00. After July 1, untested, 1, 75 cts.; 6, $4.00; 12, $7.00; select untested, 1, $1.00; 6, $5.00; 12, $8.50. One-frame nucleus, 75 cts.; two-frame, $1.50; three-frame, $2.25. To each nucleus add price of queen. Our queens are reared in a locality where there has never been disease, and reared from strong vigorous colonies. The apiary is under most competent supervision. Safe arrival and satisfaction guaranteed.
HORNER QUEEN & BEE CO., Ltd., Youngsville, Pa.

Guaranteed purely mated 3-band Italian queens, J. E. Hand strain, bred for gentle, prolific, honey-gathering, wintering, and long life. State Inspector's certificate. Queens by return mail, or your money back. Before July 1, select untested, one, $1; 6, $5; tested, one, $1.25; 6, $7; select tested, one, $1.75; 6, $9. Breeders, $5. After July 1, select untested, one, 75 cts.; 6, $4; 12, $7; tested, one, $1; 6, $5; 12, $9. Select tested, one, $1.25; 6, $7; 12, $13. Breeders, $4; 10 per cent discount on 30 days' advance orders on all queens to be mailed after June 20. Safe delivery guaranteed in United States and Canada. Reference, First National Bank.
J. M. GINGERICH, Arthur, Ill.

POULTRY

FOR SALE.—Sicilian Buttercup eggs for hatching, $1.50 per 15 eggs.
L. S. GRIGGS, 711 Avon St., Flint, Mich.

The Rex Gape-worm Extractors are a never-failing cure for gapes in young chickens. Write for circular. J. S. KLOCK, Box 301, Herndon, Pa.

Sicilian Buttercups. One utility flock. Eggs, $1.00 per 15; unsatisfactory hatches replaced at half price. WALTER M. ADEMA, Berlin, Mich.

EGGS.—20 for $1.00; leading varieties prize poultry, pigeons, hares, etc. Booklet free. Large illustrated catalog, 10 cts. F. G. WILE, Telford, Pa.

S. C. White Minorcas, $3.00 per 15; R. C. Buff Leghorns, S. C. Brown Leghorns, and Partridge Wyandottes, $1.00 per 15.
HILLCREST FARM, Winchester, Ind.

Royal Blue Orpingtons, Nicholson strain. Blue Andalusians; also pure-white Indian Runner ducks, blue-ribbon winners. Eggs for sale. Write me for special prices and description.
H. R. ROHR, Buckhannon, W. V.

INDIAN RUNNER DUCKS

Runner Duck Eggs.—Fawn, white-egg strain, $1 per 12 eggs. Single-comb R. I. Red eggs, and day-old chicks. Tompkins strain.
SARAH WIDRIG, Rt. 29, Burt, N. Y.

Runner and Pekin Ducklings and hatching eggs. White-egg strain, Blue-ribbon stock. Also drakes. Catalog for stamp.
THE DEROY TAYLOR CO., Newark, N. Y.

Eggs from a heavy-laying strain of White Indian Runner ducks, $2 per 13, $10 per 100. In the hottest competition the past winter I took every blue ribbon wherever shown. I guarantee a pure-white-egg strain. WM. DROMMS, Rt. 2, Schenectady, N. Y.

MISCELLANEOUS

FOR SALE.—Pheasants and eggs.
S. V. REEVES, Haddonfield, N. J.

HELP WANTED

WANTED.—Man (married preferred) experienced in queen-raising; employment by the year on a salary and percentage.
OGDEN BEE AND HONEY CO., Ogden, Utah.

WANTED.—Young man with some Southern experience, to begin work at once in my Jonesville, La., apiaries. Must batch it. Give all particulars first letter. H. C. AHLERS, West Bend, Wis.

Young man, preferably from near-by State, with a little experience, and quick thorough worker, valuing an insight into modern extensive beekeeping more than salary, could spend 4 to 7 weeks with us during the rush beginning May 15 to June 1. Write immediately, giving salary, age, experience, etc. We have 11 yards, more than 1000 colonies.
E. F. ATWATER, Meridian, Idaho.

SITUATION WANTED

Position wanted by expert beekeeper. Address
B. W. WELLS, Grand Rapids, Wis.

BEEKEEPERS' DIRECTORY

If you need queens by return mail send to J. W. K. SHAW & CO., Loreauville, Iberia Parish, La.

Nutmeg Italian queens, leather color, after June 1, $1.00 by return mail. A. W. YATES, Hartford, Ct.

Well-bred bees and queens. Hives and supplies.
J. H. M. COOK, 70 Cortlandt St., New York.

QUEENS.—Improved red-clover Italians bred for business June 1 to Nov. 15, untested queens, 75c each; dozen, $8.00; select, $1.00 each; dozen, $10; tested queens, $1.25 each; dozen, $12.00. Safe arrival and satisfaction guaranteed.
H. C. CLEMONS, Boyd, Ky.

SPECIAL NOTICES

By Our Business Manager

A BARGAIN IN ROTARY PUMPS.

We have a number of half-inch rotary pumps which, for thick honey, have proven not quite adequate in rapid work, but which for water or other liquids will handle two gallons per minute at 100 revolutions. Weight, without pulley, 5 lbs. Will furnish them at special price of $5.00 each while present stock lasts.

ALSIKE AND MEDIUM CLOVER SEED.

We still have a supply of choice alsike and medium clover seed which we offer at prices last quoted as follows, bags included, not prepaid: Peck, $3.00; ½ bushel, $5.50; one bushel, $10.50; 2 bushels, $20.50. Medium clover seed, peck, $2.60; ½ bushel, $5.00; bushel, $9.50; 2 bushels for $18.50.

SWEET-CLOVER SEED.

We are sold out of hulled white-sweet-clover seed for the time being, but hope soon to have a further supply. Prices last quoted are withdrawn and new prices will be quoted when we know what new supply costs. We have a good supply of other kinds which we have been offering, including unhulled white.

Prices in lots of	1 lb.	10 lb.	25 lb.	100 lb.
Melilotus alba, biennial:				
White sweet clover, unhulled	.21	$1.90	$4.50	$17.00
Melilotus officinalis, bien'al:				
Yellow sweet clover, unhull'd	.21	1.90	4.50	17.00
Yellow sweet clover, hulled	.28	2.60	6.25	24.00
Yellow sweet clover, annual	.14	1.20	2.75	10.00

SECOND-HAND FOUNDATION MILLS.

We have to offer the following list of foundation machines which have been used, but are in fair condition. In many cases they will answer as well as a new machine where you have only a moderate output. Send for samples of any mill in the list which may interest you.

No. 0139, 2½ x 6 hexagonal thin-super mill, in very good condition. Price $14.00.

No. 0140, 2½ x 6 hexagonal thin-super mill, in very good condition. Price $14.00.

No. 0142, 2½ x 6 hexagonal thin-super mill, in fair shape. Price $10.00.

No. 0153, 2½ x 6 hexagonal thin-super mill, in very good condition. Price $14.00.

No. 0154, 2½ x 6 hexagonal thin-super mill in very good condition. Price $14.00.

No. 0156, 2½x6 extra-thin-super mill, fair. Price $10.00.

No. 0165, 2½ x 6 hexagonal extra-thin-super mill in fair condition. Price $12.00.

No. 0183, 2½ x 6 hexagonal thin-super mill, very good condition. Price $14.00.

No. 0207, 2½ x 6 hexagonal cell thin-super Dunham mill in good condition. Price $10.00.

SPECIAL NOTICES

A. I. Root

HELIANTI, THE NEW WONDER PLANT; SEE PAGE 318, APRIL 15.

After the above was put in print I learned that the Burgess Seed and Plant Co., of Allegan, Mich., are not responsible for what I quoted from the circular in regard to helianti; and, furthermore, it is *not* the common artichoke, although it may belong to the same family. I have now two of the tubers in my possession. See further particulars in next issue.

DASHEEN TUBERS TO OUR SUBSCRIBERS.

On my return from Florida I brought along about two bushels of tubers left after filling all orders; and as they are still in good condition to plant, there is still a chance for some who may have put off sending for them. Any one who sends us $1.00 for Gleanings, or who has already subscribed for a year or more in advance, can have a couple of tubers on application. You need not take the trouble to write a letter. Just say on a postal, "I have paid up a year ahead, as you will notice, and would like a couple of the dasheen tubers as offered in Gleanings for May 15."

THE ANTI-SALOON LEAGUE YEARBOOK.

If any of our readers have any questions to ask in regard to the progress of temperance work they will find every thing answered, probably, as correctly as possible, by the Anti-saloon League Yearbook. It contains accurate maps of nearly every State in the Union, showing how much is dry and how much is wet; and it discusses the whole matter with a weight of authority probably exceeding that of any other book or periodical published in the world. A letter from friend Cherrington, the author, sums it all up in a better way, perhaps, than I could do it, even if I spent hours of time in going over it.

Mr. Root:—I am sending you, under separate cover, a copy of the Anti-saloon League Year Book for 1914, which is just off the press.

This is the seventh year for this annual publication, which is an encyclopedia of up-to-date facts and figures dealing with the liquor traffic and the temperance reform in the United States, and which has reached a circulation of almost a quarter of a million. In the volume for this year more detailed information on various phases of the liquor problem, with official statistics for every State, is given than in that of any previous year.

Perhaps the most striking new feature of the 1914 book is the comparative statistics of manufactures, crime, pauperism, insanity, industrial conditions, etc., in all prohibition and license States. These statistics are especially significant because the comparisons cover every State in the nation.

The tables on pages 18 and 19 are of more than passing interest, showing, as they do, the increase in ten years in the number of wage-earners employed and in the value of products of manufactures for each of the prohibition States, the near-prohibition States, the partially license States and the license States. Similar comparative tables of prison statistics on pages 53 and 54, those on pauperism on pages 46 and 47, and those on insanity on pages 50 and 51 are timely, in view of the general movement now on for State and national prohibition of the liquor traffic.

If this volume appeals to you as being worthy of notice in the columns of your paper, the writer will be grateful for any review notice or comment which you may feel free to make. You will notice that the paper-bound volume contains 244 pages, and is sold by the American Issue Publishing Company, Westerville, Ohio, at 25 cents postpaid. The cloth-bound edition, soon to be published, will sell for 50 cents postpaid.

Very sincerely yours,
Ernest H. Cherrington,
Westerville, Ohio, Feb. 11. Editor.

This book should be read and studied by every man, woman, and child in our land, even if it does cost the small sum of 25 cents.

Convention Notices

IOWA SUMMER MEETINGS.

The Iowa Beekeepers' Association has arranged for a series of summer meetings, the first of which will be held on May 19 and the last on Aug. 20. Most of these meetings will be in the nature of picnics. Everybody will bring a basket of lunch, the wife and babies, and enjoy the day.

The first field day will be held near McGregor or North McGregor on May 19. It is desired that the honey-producers of Iowa and Wisconsin meet together on this occasion, and McGregor has been chosen as a convenient point. N. E. France, of Wisconsin, will be the principal speaker, and a large attendance is expected. Beekeepers from considerable distances have already signified their intention to be present.

At Colo, June 10, the Ladies' Aid Society will serve dinner at a reasonable price, and the field meet will be held at the Hall home apiary, which is within easy reach of the station. Mr. Hall's big honey-house will be used for a convention hall in case of rain. Professor C. E. Bartholomew, of Ames, will give the principal address. So much interest has been manifested in the Hall methods of honey production that a good attendance is assured.

At Forest City, June 17, the meeting will be held on the grounds of Hon. Eugene Secor, former president of the National, and one of the best-known beekeepers of the middle West, who has kept bees continuously in his present location for forty years. It is hoped that a liberal representation of Minnesota beekeepers will be present here, as it but a few miles from the State line.

At Des Moines, July 15, a big day is planned at the Dustman apiary, which is convenient to the car line. The committee is planning a series of interesting demonstrations. The central location and splendid railroad facilities from all directions make Des Moines very easy of access.

At Mt. Pleasant, July 28, is to be held the fifth field meet of the season. The committee is already making plans for the program with C. P. Dadant, of Illinois, as one of the speakers. Beekeepers from Western Illinois and Northeast Missouri will find Mt. Pleasant easy to reach, and should plan to come.

On August 12, at Clarinda, the friends from Nebraska and Missouri will find a point easy of access, and the Strong apiary will be the place of meeting. Mr. Strong, the well-known queen-breeder, has been keeping bees for almost half a century, and will demonstrate his methods of queen-rearing. The program will be announced later.

For several years the beekeepers in the vicinity of Sioux City have held a tri-state meeting, the date of which this year is set for Aug. 20. Friends from South Dakota and Nebraska meet with Iowa beekeepers for an annual picnic at Riverside, and the committee in charge always plan an interesting time.

A meeting will also be held at the Coverdale apiary, at Delmar, the date of which will be announced later. Coverdale has become famous as a grower of sweet clover as well as being an extensive honey-producer. In planning these meetings the association has tried to place them so that at least one would be within reach of every Iowa beekeeper; and we hope note will be made of the times and places, and that friends from other States will attend in goodly numbers. F. C. PELLET.

FIELD-DAY DEMONSTRATION TO BE HELD AT FORKS OF CREDIT, ONT., CAN., MAY 25, 1914.

The First Canadian National Field Day Meet will be held on Victoria day, May 25, 1914, at the apiary of Mr. H. G. Sibbald, past president of the Ontario Beekeepers' Association, at the Forks of the Credit, Ontario.

This great event, which has slowly been gathering force since last December, has now reached that point where the various committees which have been working on the plan feel that it will surpass anything heretofore attempted in the British Empire.

Plans have been laid for handling a great crowd. Members of committees will be at the various stations from the city up to assist the stranger and bid him welcome. Special coaches will be placed on the train for the beekeepers' accommodation, and the good old-fashioned farmers' hayrack will convey the jolly crowd to the yard, some half mile away.

All the beekeepers within reasonable distance are requested to bring their well-loaded baskets, and prepare for two meals (noon and evening), to take care of those who come from long distances.

To the beekeeper confined within the narrow limits of city life this field day and picnic offers a day of relaxation and freedom from the cares and worries of business, while the producer from the country is afforded an opportunity to meet the city man.

The editors of GLEANINGS and the *American Bee Journal* have consented to be present and take a part in the work of demonstration, while our own fair Province will have its corps of brilliant men on the "firing line."

For a day's outing no spot in all this magnificent country of ours can surpass the beautiful Forks. Poets have sung its praises; historians have recorded its beauties, but the tongue of man cannot justly describe the sublime and majestic scenery.

Then, dear beekeeper, lay aside your cares and anxieties, come along and bring your families, and enjoy the pleasure of friendly intercourse with the great men of our ranks.

The committee herewith present the program with a feeling of pardonable pride. Never in the history of beedom in Canada has such a brilliant galaxy of men been brought together for such a purpose. In the evening of life, while dwelling on sweet thoughts of the past, may this great field meet induce you to say:

"Backward, turn backward, O time, in thy flight,
Make me a child again just for to-night."

PROGRAM.

C P. R. train leaves Union at 7:20 A. M.; arrives at Forks of Credit at 9:25 A. M.

10:00 A. M.—General inspection of apiary, honey-house appliances, etc.; conducted by Mr. Sibbald.

10:45 A. M.—Mr. J. L. Byer, President of the O. B. K. A., will officiate.

11:30 A. M.—Greetings to all sister organizations and delegates.

12:00 M.—Lunch, provided by ladies.

1:15 P. M.—Mr. C. P. Dadant, editor of the *American Bee Journal.*

2.15 P. M.—Mr. Morley Pettit, Provincial Apiarist.

3:00 P. M.—Mr. E. R. Root, editor *Gleanings in Bee Culture.*

4:00 P. M.—Mr. M. B. Holmes, Athens, Ont., director O. B. K. A.

4:25 P. M.—Mr. Wm. Couse, Streetsville, Ont.

5:15 P. M.—Lunch, toasts, greetings, etc.

Train leaves Forks at 6:15 P. M.; arrives at Union at 8:25 P. M.

Ladies' committee (white badge), Mrs. Sibbald, Pres. Please leave baskets with ladies' committee.
Information committee (blue badge), all stations.
Field committee (yellow badge), Mr. Wilson, Pres.
Fare, round trip, $1.15.

G. R. CHAPMAN, Pres.
CHAS. E. HOOPER, Sec.
Toronto, Ont., April 3, 1914.

No. 501 Set of Quality Knives

OUR set of "QUALITY" KNIVES is made up of one 8-inch SLICER, one 6-inch BUTCHER, and one 3½-inch PARING-KNIFE. A combination of three of the MOST USEFUL SIZES and DESIGNS that one can have in his home. In presenting this set of knives we want to impress upon the trade the fact that these knives are all their name implies, QUALITY IN THE STRICTEST SENSE OF THE WORD. There is nothing better in the way of cutlery to be had for IT IS IMPOSSIBLE TO MAKE ANY THING BETTER. The Set is MADE UPON HONOR THROUGHOUT to the MINUTEST DETAIL. BLADES are of the VERY BEST TEMPERED CRUCIBLE STEEL, SWEDGED, ETCHED, and FINISHED with the Highest Polish it is possible to put on metal. Handles are GENUINE COCOBOLO, Beveled Edges, Through Tang with Three Large Brass Saw Rivets. We ABSOLUTELY GUARANTEE the QUALITY of this set of knives to be Strictly First Class in Every Way and the BEST VALUE EVER OFFERED. LIST PRICE the set $1 00 postpaid.

Premium Offer

We will send this complete set of knives postpaid to any reader who sends us one new yearly subscriber to Gleanings in Bee Culture at $1.00 per year, or the same for four new six-months-trial subscribers at 25c. each

Canadian postage on subscription for one year, 30c extra. On each trial subscription, 15c extra.

A WORD OF PRAISE FOR THE PREMIUM KNIVES.

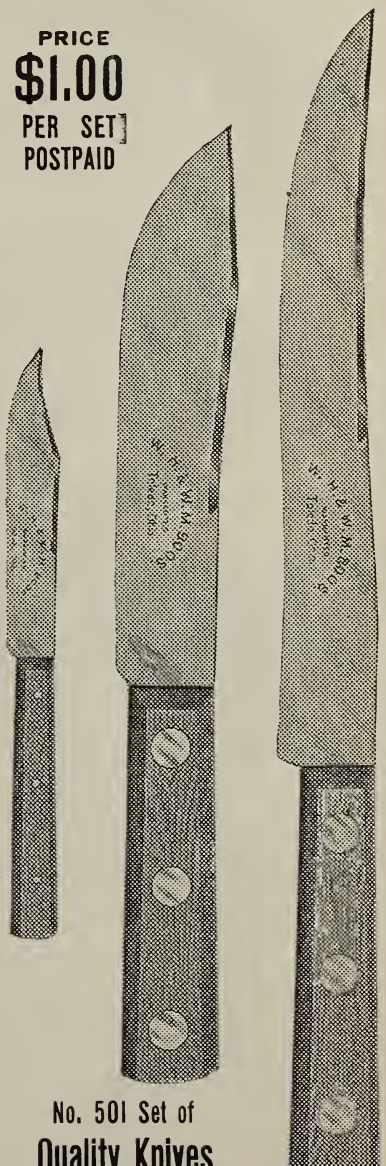
Calvert, Ala., Oct. 22, 1913.

The A. I. Root Co., Medina, Ohio.

I received the set of premium knives and am well pleased with them. Yours very truly,

R. RHODENBERGER.

PRICE
$1.00
PER SET
POSTPAID



No. 501 Set of
Quality Knives

The A. I. Root Co., - Medina, Ohio