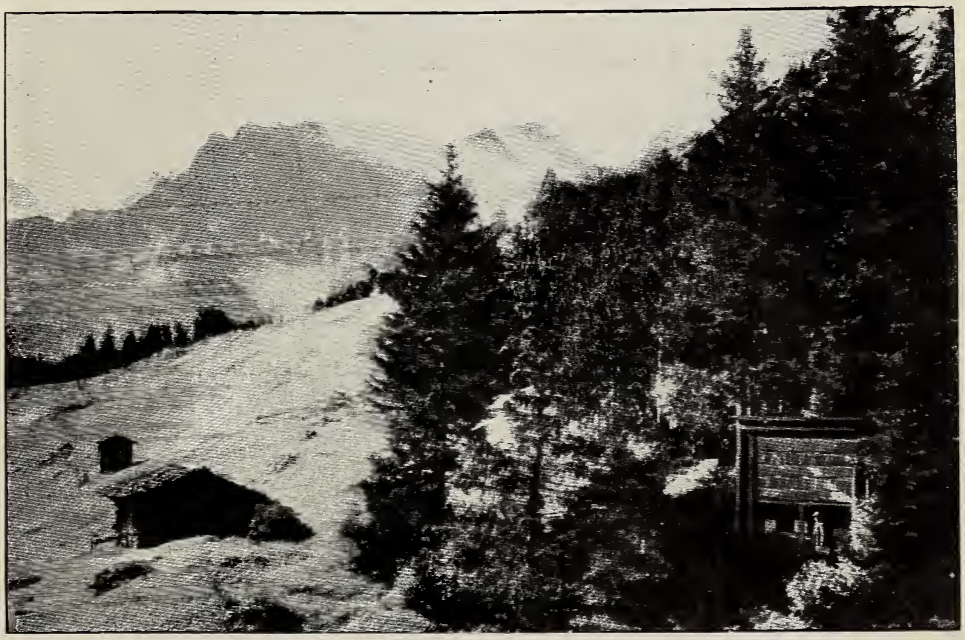
Gleanings in Bee Culture



Swiss Bee Station at Mürren.

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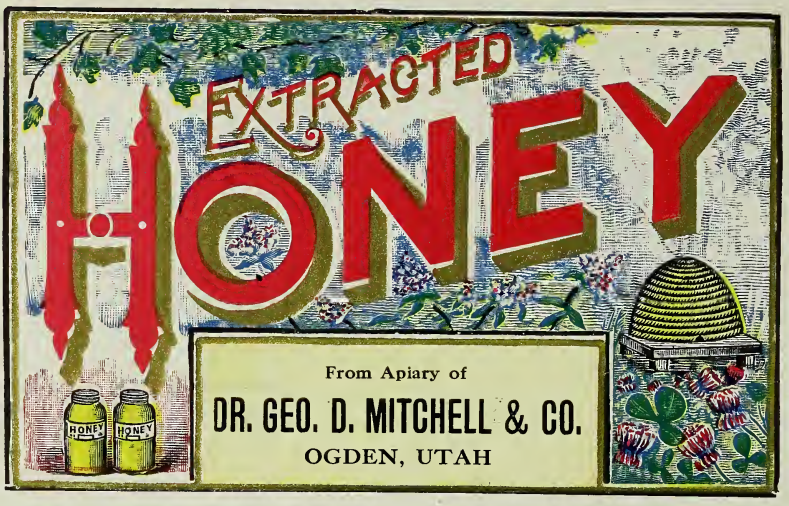
Vol. XXXVI JULY 15, 1908 No. 14

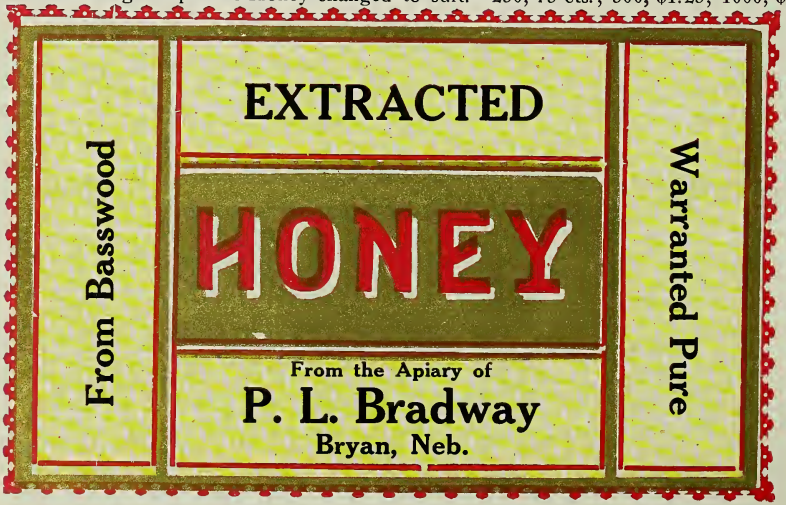
Honey-labels for Honey-packages



No. 81.—Wording below line Honey changed to suit. 250, $1.00; 500, $1.50; 1000, $2.25.

No. 86.—Wording except line Honey changed to suit. 250, 75 cts.; 500, $1.25; 1000, $1.75.

No. 83.—Wording except line Honey changed to suit. 250, 75 cts.; 500, $1.25; 1000, $1.75.



Send for catalog of 40 different labels.
Sent free on request.

The A. I. Root Company, Medina, O.

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 merchant. 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.

EASTERN GRADING-RULES FOR COMB HONEY.

FANCY.—All sections well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel-stain or otherwise; all the cells sealed except an occasional one, the outside surface of the wood well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

NO. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

NO. 2.—Three-fourths of the total surface must be filled and sealed.

NO. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

NEW COMB-HONEY GRADING-RULES ADOPTED BY THE COLORADO STATE BEE-KEEPERS' ASSOCIATION.

NO. 1 WHITE.—Sections to be well filled and evenly capped except the outside row, next to the wood; honey white or slightly amber, comb and cappings white, and not projecting beyond the wood; wood to be well cleaned; cases of separatored honey to average 21 pounds net per case of 24 sections, no section in this grade to weigh less than 13½ ounces.

Cases of half-separatored honey to average not less than 22 pounds net per case of 24 sections.

Cases of unseparatored honey to average not less than 23 pounds net per case of 24 sections.

NO. 1 LIGHT AMBER.—Sections to be well filled and evenly capped, except the outside row, next to the wood; honey white or light amber; comb and cappings from white to off color, but not dark; comb not projecting beyond the wood; wood to be well cleaned.

Cases of separatored honey to average 21 pounds net per case of 24 sections; no section in this grade to weigh less than 13½ ounces.

Cases of half-separatored honey to average not less than 22 pounds net per case of 24 sections.

Cases of unseparatored honey to average not less than 23 pounds net per case of 24 sections.

NO. 2.—This includes all white honey, and amber honey not included in the above grades; sections to be fairly well filled and capped, no more than 25 uncapped cells, exclusive of outside row, permitted in this grade; wood to be well cleaned, no section in this grade to weigh less than 12 ounces.

Cases of separatored honey to average not less than 19 pounds net.

Cases of half-separatored honey to average not less than 20 lbs. net per case of 24 sections.

Cases of unseparatored honey to average not less than 21 lbs. net per case of 24 sections.

CINCINNATI.—The market on comb honey is very slow; some new goods have arrived, but there is no demand, and it is selling slow at 14. There is some new white-clover extracted honey coming in, selling at 7½. Amber in barrels is selling at 6 and 6¼. Beeswax is selling at $33.00 per 100 lbs.

July 1. C. H. W. WEBER, Cincinnati, O.

ST. LOUIS.—The honey market is very quiet. There is absolutely no demand for comb honey. Extracted honey is also neglected, consequently the prices have declined. Quote as follows: Fancy white comb honey, 15 to 16; No. 1, white and amber, 12 to 14; broken and defective, less. Extracted white, in cans, nominal at 8 to 8½; amber, 7 to 7½; in barrels, 5½ to 6; granulated extracted honey sells at less. Beeswax, 29 for prime; impure and inferior, less. R. HARTMANN PRODUCE CO.,

July 1 St. Louis, Mo.

NEW YORK.—Comb honey: The demand is next to nothing, and has been so for the past four months. A few crates of fancy No. 1 white are called for once in a while, while off grades and dark are entirely neglected. As there is practically no demand, quotations are simply nominal. We have more in stock than we can dispose of. The honey will have to be carried over until next fall. We can not encourage shipments of comb honey, as we do not think we shall be in position to render account of sales within reasonable time. Extracted honey: Demand better and market slightly improving. New crop is arriving quite freely from the South, where the yield seems to have been pretty large. We quote California white sage at 8½ to 9; light amber, 7½ to 8; amber, 6 to 6½; new crop Southern from 58 to 75 per gallon, according to quality. West India honey is arriving in fairly good-size lots and finds ready sale at from 60 to 62 per gallon, duty paid. Beeswax in good demand, and firm at 30 to 31.

June 24. HILDRETH & SEGELKEN,
265-7 Greenwich St., New York.

ZANESVILLE.—There is a little better demand for honey on this market. No. 1 to fancy white comb brings wholesale about 17 cts. for Cuban and 18 for native. For clover honey grading No. 1 to fancy, jobbers are paying 15 cts. on arrival. There is a very limited demand for extracted. For good yellow beeswax I offer 30 cts. f. o. b. here in exchange for bee-supplies.

EDMUND W. PEIRCE,
July 7. Zanesville, O.

INDIANAPOLIS.—A large crop of honey has been secured throughout the clover belt, and the quality is above the average. The demand is excellent, but thus far no established schedule of prices can be named. I would urge producers who ship their honey to have an understanding about prices, and not consign their goods to commission houses, as it is the commission house that beats down the prices in competition. Beeswax brings 28 cts. cash or 30 in exchange for goods.

Indianapolis, July 4. WALTER S. POUDER.

DENVER.—We are entirely closed out of comb honey, and ready to receive consignments of new-crop comb, the first arrivals of which should move quickly at good prices if fancy stock. Extracted honey is in fair demand. We quote white extracted, 8 to 9; light amber and strained, 6¾ to 7½. We pay 25 for clean yellow wax delivered here.

THE COLORADO HONEY-PRODUCERS' ASS'N,
Denver, June 23. F. Rauchfuss, Manager.

SAN FRANCISCO.—The receipts of honey are still quite light, and every one is preparing for a short crop. Prices remain unchanged but firm. All honey is sold readily on arrival. Water-white comb, 16 to 17; white, 15; water-white, extracted, 8 to 8½; light amber, 7 to 7½; dark amber, 5¼ to 5¾; candied, 5¼ to 5¾.—*Pacific Rural Press.*

LIVERPOOL.—Our market is firm, though no business has been done. Only a little inquiry, and quotations remain unchanged. Chilean, 4 to 6⅓; Peruvian, 3½ to 5½; California, 7½ to 9; Jamaican, 4 to 5½; Haiti, 6⅓ to 6½. Beeswax is firm. African, 30 to 32; American, 31 to 34; West Indian, 29 to 32; Chilean, 31 to 36; Jamaican, 34 to 35.

TAYLOR & CO., 7 Tithebarn St.

CINCINNATI.—The demand for comb honey has fallen off considerably in the past twelve months. Last year the comb-honey market was bare in February, but this season finds an abundance of that article everywhere at this date, which is late for last season's crop. We can not tell at present what effect this state of affairs will have upon the market when the new honey comes in. The market on extracted honey shows some life, but is not moving rapidly. Quote amber in barrels at 6 to 6½, according to the quality; fancy extracted honey, 7½ to 9. For choice yellow beeswax, free from dirt, we are now paying 28 cts. cash and 30 in trade, delivered here.

June 25. THE FRED W. MUTH CO., Cincinnati, O.

PHILADELPHIA.—The prospects at present are for one of the largest crops of honey we have seen in the East for the last ten years. The result is, prices are uneasy and have a strong downward tendency. Some few little lots of comb honey are being offered, but not enough to establish a price. We are looking for very low prices the coming season. Beeswax is firm at 28.

June 30. WM. A. SELSER, Philadelphia, Pa.

BOSTON.—Fancy white comb honey, 17; No. 1 white comb, 16; California white sage, extracted, 9; California light amber, 8; Southern honey in barrels, slow sale, 5 to 6.

June 22. BLAKE-LEE CO., Boston, Mass.

GLEANINGS IN BEE CULTURE

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Devoted to Bees, Honey, and Home Interests.

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J. T. CALVERT, Business Manager.

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GLEANINGS IN BEE CULTURE

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H. H. ROOT, Ass't Editor

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CONTENTS OF JULY 15, 1908

SUBURBAN LIFE.

The above is a periodical that has sprung into a wide popularity the last few years. There are several reasons for its large circulation. One is the whole-souled enthusiastic way it praises rural life. This causes the city man to remember the days of his youth when he was a raw-looking country boy picking blackberries on the old homestead. It causes the rural dweller to take a new interest in his quiet existence. He *spruces* up. His home is made far tidier and homelike than it used to be, because he is emulated by the excellent example of others whose work he finds exemplified in *Suburban Life*. The beautiful pictures he sees in this magazine fill him with a heart-felt desire to have a little of heaven here on earth. If the goodman of the house does not appreciate the charm of these pictures his wife does to the very utmost; and if *he* does not subscribe, *she* will. Many who never half appreciated the beauty of the fields and woods around the old homestead have been brought to a realizing sense of the charm of nature right where they live. They realize that country life is not lonely with lovely plants, birds, animals, and insects all around them in great numbers. The bright ideas they get from such magazines have a real value in dollars and cents, to say nothing about the inspiration conveyed by very many beautiful pictures, so that the subscription money is not begrudged. *Suburban Life* works on a far higher plane than the ordinary farm paper, and yet it does it in such a manner that he who runs may read, for the language is direct and simple. Many suppose that magazines of this class are gotten up for city folks or fancy farmers with much money to spend; but as a matter of fact they are not. The idea is to glorify rural life, to the end that the dwellers will be happier and more contented with their lot because of the great possibilities all around them.

A GOOD SEASON FOR QUEENS.

The season has proven thus far to be an exceptionally good one for raising queens. Every thing has been in the queen-breeders' favor, so that they not only have plenty of them but the quality is exceptionally high. We wish, therefore, to suggest that this is a very favorable time to purchase queens—that is, just as soon as the supers are off and every thing cleared up. By putting young vigorous queens at the head of every colony, you provide a sort of insurance for next season. There will be less trouble in wintering and springing, and also less swarming. The queen-breeders who are using our columns are a very intelligent class of men, and we believe they are doing their best to give buyers a square deal.

INDEX TO ADVERTISEMENTS.

WEST MICHIGAN STATE FAIR, GRAND RAPIDS, SEPT. 14—18, 1908.

PREMIUM LIST OF THE APIARIAN DEPARTMENT.

A. G. Woodman, Supt., Grand Rapids.

Competition open to Michigan only.

1. Entries must be made before 6 P.M., Sept. 3, 1908.

2. Nuclei must be exhibited in such shape as to be seen on at least two sides, and should not be so crowded with bees but that the queen can be easily found.

3. Bees must not be allowed to fly during the hours of exhibition; all honey shown to be the product of the exhibitor, and produced during the season of 1908.

4. All strains of bees are to be bred by the exhibitor, and grown or produced in Michigan. They must be plainly labeled, and placed in observatory hives, the appearance of the hive to be considered.

5. In judging the display of comb and extracted honey, a quantity up to the amount of 500 lbs. each will be considered in making the awards.

6. Exhibits of all kinds of implements and bee-keepers' supplies are invited, for which space will be provided. A diploma will be awarded for the best exhibits.

7. In judging honey, etc., the following scale of points will be used: Style, 10; body, 20; color, 30; flavor, 40.

LIST OF PREMIUMS.

1203 Display of comb honey—quality, quantity (up to the amount of 500 lbs.); appearance and condition for market to be considered. Premiums will be paid on a basis of 5 cts. per section for first; 4 cts. per section for second, and 3 cts. per section for third, for actual number of sections of comb honey shown. Maximum amount of premiums, $25.00, $20.00, $15.00 respectively.

1204 Specimen case of comb honey, not less than 10 lbs., quality and condition for market to be considered—$5.00, $3.00, $2.00.

1205 Display of extracted honey—quality, quantity (up to 500 lbs.); appearance and condition for market to be considered. Premiums to be paid on a basis of 5 cts. per lb. for first; 4 cts. per lb. for second, and 3 cts. per lb. for third, for actual amount shown. Maximum amount of premiums, $25.00, $20.00, $15.00 respectively.

1206 Specimen of extracted honey, not less than 1 lb —flavor, color, body, and style to be considered—$3.00, $2.00, $1.00.

1207 Display of extracted honey in granulated form—appearance, quality, and quantity (up to the amount of 150 lbs.) to be considered. Premiums are to be paid on a basis of 5 cts. per lb. for first; 4 cts. per lb. for second, and 3 cts. per lb. for third, for actual number of pounds shown. Maximum amount of premiums, $7.50, $6.00, $4.50 respectively.

1208 Most attractive display of beeswax—quality and quantity (up to the amount of 150 lbs.) to be considered. Premiums are to be paid on a basis of 5 cts. per lb. for first; 4 cts. per lb. for second, and 3 cts. per lb. for third, for actual number of pounds shown. Maximum amount of premiums, $7.50, $6.00, $4.50 respectively.

1209 Most attractive display of best honey-producing plants, pressed, mounted, and named, not to exceed 25 varieties—$5.00, $3.00, $2.00.

1210 Italian bees and queen, single-frame nucleus, in observatory hive—$3.00, $2.00, $1.00.

1211 Black bees and queen, single-frame nucleus, in observatory hive—$3.00, $2.00, $1.00.

1212 Carniolan bees and queen, single-frame nucleus, in observatory hive—$3.00, $2.00, $1.00.

1213 Caucasian bees and queens, single-comb nucleus, in observatory hive—$3.00, $2.00, $1.00.

1214 Queen-rearing nucleus showing frame of queen-cells, in observatory hive—$5.00, $3.00, $2.00.

1215 Full colony in full-size observatory hive, showing different parts and appliances of hive, most instructive—$3.00, $2.00, $1.00.

1216 Largest, best, and most instructive display of nuclei of different races of bees in single-comb observatory hive—$5.00, $3.00, $2.00.

1217 Largest, best, most interesting, attractive, and instructive exhibition in this department, all things to be considered—$15.00, $10.00, $5.00.

FLOWING WITH MILK AND HONEY

By the Bee Crank.

The official forecast for the year 1908, from all sections of the country, remind one of the figurative language of the Israelites who were sent to spy out the land of Canaan—it is a land flowing with milk and honey. Not in many years has there been the promise of such an abundant crop, and the bee-men are coming in for their share of the good things. There will be plenty of honey of a very high grade.

How will you profit by it, Mr. Beeman? Most surely by securing the supplies needed to enable you to harvest and to handle the yield that is yours for the taking, and by securing these supplies where you can get them promptly.

I can help you. There are no delays at the critical moment when you order standard goods from me. The goods are here waiting for you, and they go forward the day your order reaches me. My specialty of prompt shipments brings me many orders from far and near. If you have never ordered from here, put me to the test with a trial order.

I have a full supply of all seasonable goods; shipping-cases, honey-jars, sections, the latest in hives and honey-extractors. I should like to send you my illustrated catalog, which explains the details.

Hoosier-Italian queen by return mail. Select untested, $1.00; untested, 75 cts.

I pay 28 cts. cash or 30 cts. in trade for good average beeswax, and shall be glad if you will favor me by sending your wax here.

GLEANINGS IN BEE CULTURE

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

H. H. ROOT, Assistant Editor
A. I. ROOT, Editor Home Department

E. R. ROOT, Editor

A. L. BOYDEN, Advertising Manager
J. T. CALVERT, Business Manager

VOL. XXXVI JULY 15, 1908 NO. 14

STRAY STRAWS

DR. C. C. MILLER

WHITE CLOVER showed its first blossom May 25; yellow sweet clover, June 1; white sweet clover, June 24. That 23 days of yellow in advance of white sweet clover would be quite an item in a year of failure of white clover.

A FRAME of young brood helps to decide whether a virgin is present in a nucleus. If no cells are started it is reasonably certain that she is there all right. But two or three cells are sometimes started, even with a virgin present. If a whole lot are started you may count your virgin is gone. [Right you are, on both propositions.—ED.]

M. M. BALDRIDGE, instead of putting a weak colony over a strong one in spring, reverses the Alexander plan, putting the strong colony over the weak one on the stand of the strong one, an excluder between. This, when dandelions or other flow is on, at sundown, not smoking the weak colony, and smoking the strong one just enough to make the bees leave the bottom-board. Three years' trial of both plans has shown that the weak colony builds up more rapidly by the Baldridge plan.

WHETHER because of the yellow bees I have been getting in, or because of the season, swarming is very bad this year. One colony that swarmed, not only had no advanced cells but not even an egg could be found in a queen-cell in the hive! [By "yellow bees" we suppose you mean Italians. Do we infer that the latter swarm more than your hybrids and blacks? If all of them swarm, then we should attribute this swarming to the peculiarity of the season rather than to the yellow blood.—ED.]

J. E. HAND, referring to your remarks, p. 819, I will say that I know of no reason for thinking that my colonies that stored under the brood-nest were in an abnormal condition. The large number of colonies engaged in it rather precludes the idea of played-out queens; and, although I can not say positively, my impression is that among the number were some that made the very best records at storing. I think, friend Hand, if you could have seen the white combs of honey built in those spaces in bottom-boards, with the vigorous colonies above, you would have shaken your head and said, "Well, every now and then we must give up some of our preconceived notions; there goes another."

I DON'T KNOW why Hervey B. Jones should have had his failure with foundation splints. You are right, Mr. Editor, that splinted foundation should be given only when honey is coming in; but even if given in a dearth I've never known the bees to do much at cutting out the splints. The trouble is that, in a dearth, they dig away a passage between foundation and bottom-bar. The only thing I can think of is that the splints were not properly coated with wax. They should be boiled in wax till all the moisture fries out, and, when taken from the wax to be fastened on the foundation, the wax should be merely hot enough to be liquid, but not hot enough to run entirely off the splints. With the splint well coated with wax, why should the bees tear at it any more than at the foundation itself?

WHITE CLOVER is more abundant than ever before. I think I've said that before. It was true then; it's more emphatically true now. Fields are far and away whiter with the bloom than ever before. There's nectar in it too. Not only do the bees drop at the entrance as they come in heavily laden, but they drop on the hives and surrounding grass. I suspect there is five times as much nectar as the bees can take care of. [This is the kind of report that we are getting from many sections of the clover belt. It is very remarkable the way reports have come in. One locality will show a most tremendous honey-flow, while another one, only a few miles away, and in the same State, will show "almost nothing doing." It is peculiar this year that large areas will produce a large amount of honey; but in those areas there are pockets where there is little or no nectar.—ED.]

I THINK I've heard it said that, under some conditions, as much comb as extracted honey can be produced. I don't see how that can be if the bees have no comb to build for the extracted. Say that it takes a pound of comb to contain 20 lbs. of honey, or 5 lbs. of comb for 100 lbs. of honey. If it takes 10 lbs. of honey to make one of wax it takes 50 of honey to make that 5 lbs. of wax. So 150 lbs. of honey must be gathered for 100 lbs. of comb honey. If these figures be correct, there can in no case be less than 50 per cent more extracted than comb. To be sure, it may take less than 10 lbs of honey to make a pound of wax; but even if it takes only 5 lbs. of honey for one of wax, that still makes 25 per cent more of extracted than comb. Then it must not be forgotten that it takes bees to secrete the wax and to build the comb. If bees are released from this duty in the extracting-super it means a greater number of bees in the field. Don't tell me that bees won't go afield before 16 days old. I've *seen* them do it under stress when only 5 days old, and I don't believe a bee will loaf around doing nothing until 16 days old if there is no housework for her to do, and she can find work in the field. [We should like to see this question discussed by those who are in position to give us

some data and facts, as it has a very direct bearing on the question of whether one should produce comb or extracted honey.—ED.]

WALTZING bees, are they carrying on that way to shake off wax scales or to show they've found some new honey or pollen? p. 830. If it were throwing off wax scales, there would be a lot of them at it all the time when wax is being secreted, and generally it's only a single bee at a time. I'm skeptical about the heralding a new find of honey or pollen. If Prof. Gaston Bonnier is correct about the explorers who make the finds, waltzing should be seen only in the morning. Is it thus limited? Besides, explorers are supposed to have attained considerable maturity; and did you ever see any but a rather youthful bee engaged in the dizzy waltz? There's one good reason I can see for it: Whenever a man thinks he knows all about bees, you can settle him by asking, "What is the meaning of bees waltzing and raking?" [The one who thinks he "knows it all" will often answer your last question with a degree of assurance that makes one feel like putting him down as an ignoramus. However this may be, it is generally believed that the waltzers are young bees, and that their act is a sign of joy that they have found pollen, and that they take this means to communicate the knowledge to their fellows.—ED.]

"FIGURES printed on heavy tagboard manila, boiled in paraffine," are commended, p. 799, for hive-numbering. A few years ago I got a set of 100, and within two years I had to replace them with a hand-painted set. They don't fill the bill at all. I think, Mr. Editor, there are thousands of bee-keepers who would not object to ¾ cent for each aluminum figure. That would make it cost $1.44 to number the first 100 hives (a great many would need no more), and $2.25 for each succeeding 100. For one, I'm ready to put in an order for a set with duty added to the price. But can't they be made as cheaply here as in Germany? [When you say you have tried figures printed on heavy cardboard manila boiled in paraffine we suspect you refer to number-tags we sent you two or three years ago. Those were soaked in *linseed oil, not* boiled in *paraffine*, as you apparently infer. One who says he has tried both the paraffine boiled, and the tag soaked in linseed, says there is a very great difference between the two. The former will hold its color and shape, while the latter will turn black as you describe.

No, we can not make the metal tags as cheap as they can be made in Germany. Labor is cheaper there, especially skilled labor, and that is what is required to make dies. If the bee-keepers of this country will put up a strong enough demand we will see that that demand is supplied. —ED.]

THE Corn Products Co., according to newspaper reports, have placed an order in Argentina for 100,000 bushels of corn to keep their factories running. They claim to be losing money at present prices, and that is probably true. They require corn at low prices. Hitherto they have made much of the fact that they were heavy buyers of American corn. Continued high prices would force them out of business.

W. K. M.

EDITORIAL

By E. R. ROOT.

HONEY will be of exceptionally fine quality this season, for it will be mainly clover. If it is clover, it is good enough for anybody.

ARE you going to the National convention that is to be held in Detroit Oct. 13, 14, and 15? This convention promises to be very interesting as well as a big one. Don't miss the chance to attend.

WHITE clover is still hanging on in our locality; and, what is more, reports from a large number of localities, north and south of the Ohio River, and as far east as the Atlantic coast, show the same thing. Strangely enough, there are pockets where there is drouth and no honey, surrounded by moisture and honey.

GEO. F. HILTON WINS A MEDAL AT JAMESTOWN.

AT the Jamestown exposition there were not many honey exhibits. The one made by Ohio called forth considerable comment. But there was one exhibit by Mr. Geo. E. Hilton, President of the National Bee-keepers' Association, that won the gold medal. Unlike some of these so-called medals it was of solid gold, with an intrinsic value of $175.

A HIVE-CAGE.

A SPLENDID thing to stop robbing and to catch swarms is a little wire cage, just large enough to be set down over the largest hive, and leave six or eight inches clearance around the hive and on top. If one discovers a swarm just coming out, he can clap this right over the hive and catch nearly the entire swarm. The whole cage may then be picked up and the bees dumped in front of the hive that has been prepared for it. During the robbing season such a cage is invaluable.

BEE-KEEPERS, ATTENTION!

THE following has just been received:

The most dreaded of all diseases, foul brood, exists in various parts of Massachusetts. This disease can be easily eradicated. It is of great importance that all bee-keepers satisfy themselves at once whether they have the disease. To enable them to determine this point, and in order to teach them how to get rid of the disease, the State Board of Agriculture and the Massachusetts Experiment Station will unite in holding an institute to demonstrate the treatment necessary to cure it.

Mr. Charles Stewart, one of the foul-brood inspectors of New York, has been engaged to make a demonstration. This will take place in Ludlow, at the farm of Mr. E. N. Fisher, on July 21. Mr. Stewart will show the proper methods of treatment, and no bee-keeper in the State should fail to be present at the demonstration. WM. P. BROOKS, *Director*.

GREASY WASTE AS A SMOKER FUEL.

WE have several times spoken of the excellence of greasy waste, such as can be obtained at a machine-shop or printing-office, as a smoker fuel. It gives a pure lasting smoke with almost no sparks; and, what is more, it does not gum up the smoker as does ordinary fuel. In our opinion, it leaves every thing else clear in the shade. The waste should not be too greasy, but just such as an ordinary machine-shop is glad to get rid of for the asking. Two or three bushels of it will

last one almost an entire season, as it goes a long way.

VERY LITTLE HONEY IN SOUTHERN CALIFORNIA.

In answer to our request for reports from California, page 741, there has been a flood of responses, all denying that there has been a heavy honey-flow in Southern California as reported in the newspaper clipping. They all assert that the crop has been light, and that there will be very little, if any, sage honey shipped eastward. In the orange district there have been some fair flows; but orange honey has never been any great factor in the eastern markets. As it is a very fine article, having a strong demand at home, it will probably be a scarce article away from California.

HIVE-LIFTING DEVICE.

We are experimenting with a hive-lifting device. We feel that there has been a long-felt want, as yet unsupplied by the dealer and manufacturer, for some simple effective device that will relieve the strain of lifting heavy supers, either for the purpose of putting empties under or for taking them off the hive. There are many ladies who would like to keep bees if they could avoid the lifting; and there are many men, either from age or ill health, who find it inadvisable to put any hard strain on the back. Your humble servant, E. R. R., strained his back years ago, and ever since has been unable to do any lifting of heavy weights. He has been testing some hive-lifting devices, and is now of the opinion that some one of them may be made very useful to those who have not the muscle and sinew of a strong vigorous man. We shall have more to say about these at another time.

TRAGIC DEATH OF AN OLD GLEANINGS CORRESPONDENT.

Our older readers will remember Mr. C. Davenport, of "Southern Minnesota," who used to write such racy, practical articles. He was not a prolific writer, but when he did write he commanded attention. He was one of the few whose communications are passed directly to the printers without reading the manuscript, as we had absolute confidence in the availability of his matter. Within a year or so we have not been favored with any thing from him, for he was a very busy man.

Mr. Davenport, or, rather, C. Davenport Monette, of Chatfield, Minn., for that was his real name and address, preferred to use a *nom de plume*, as he said his business was such that he would not be able to answer any correspondence except through the printed page.

We are now pained to observe through the papers of his tragic death, which occurred recently. He was burned to death in his own home, where he lived alone, and had the reputation of being a very successful and practical bee-keeper. No particulars are known of the manner or cause of the fire; but his charred bones were found just in front of what was the doorway, indicating that he had made an effort to escape. He was only 42 years old, and was one of the brightest bee-keepers that we had in our ranks. Our sympathies are extended to his parents, who lived but a short distance away.

"BEE DISEASES IN MASSACHUSETTS."

There has just been issued from the United States Department of Agriculture, Bureau of Entomology, Bulletin No. 75, Part 111, entitled "Bee Diseases in Massachusetts," by Burton N. Gates, Expert in Apiculture. As its title indicates, it has to do particularly with bee diseases, European (black), and old-fashioned or American foul brood.

A very interesting and instructive map is made a part of this bulletin, showing the distribution of both these diseases, not only in Massachusetts but in Connecticut, Vermont, and New Hampshire. European foul brood seems by all odds the most prevalent in both Massachusetts and Connecticut. The author thinks it was imported from York State, where it has been raging for years back.

The old-fashioned or American foul brood has been prevalent in both States for a considerable length of time, but is not of recent origin, Mr. Gates thinks.

In this connection it appears that the ravages of bee-moth have had something to do with the spread of disease, not because the moth is the primal source, but because a colony, when it is once reduced in strength by it, is made an easy victim of contagious diseases.

The spread of foul brood has also been brought about in part, says Mr. Gates, by bees kept in cucumber-greenhouses to fertilize the fruit-blossoms, for there are many of these establishments in Massachusetts. The bees, under these conditions, die in great numbers, with the result that the colony is weakened, and finally succumbs altogether. The hives with their combs are then thrown out where they are exposed, when another hive is put in its place to repeat the process. Of course, if there is any disease it is spread broadcast by the means. These greenhouse men do not, of course, know much about bee diseases, and are thus innocently one of the causes of spreading them over the State.

This whole bulletin is highly interesting, instructive, and valuable, and somehow we have the impression that it is the purpose of the Bureau to investigate other sections of the country in the same careful, painstaking way. If so, it will be the means of doing a great deal more good.

The map affords a very interesting study, and we hope to present a half-tone of it in these columns at an early date, if there are no objections.

Mr. Gates, under the direction of Dr. Phillips, is doing good work, and we hope the Bureau will see its way clear to make an investigation of other sections of the country. There is a very great need of it, for almost daily we are receiving samples of diseased brood from all parts of the country, with the request that we furnish information.

CAUCASIANS AT OUR SOUTH YARD; SOME OF THEIR UNDESIRABLE TRAITS; THEIR PROPENSITY TO SWARM, RAISE DRONES, AND TO BUILD QUANTITIES OF BRACE-COMBS.

When we established our south yard last fall, we placed in it all of our Caucasian colonies and their crosses, as we thought it better to have them remote from our main breeding-yard at Medina, where we are rearing exclusively Italians. This

made in all between 35 and 40 colonies of the dark strain. In addition to this we put in this same yard about an equal number of Italians of various strains. It was our purpose to test both Caucasians and Italians side by side to determine their relative merits as to gentleness, honey-gathering qualities, etc.

So far we have refrained from offering any opinion until we could test the Caucasians for honey, any more than to state that we found them excessive breeders of drones (see page 683) — so much so that a few colonies of Caucasians in a yard with a lot of Italians, if not restrained with drone-traps, would breed out the yellow blood in very short order.

But how about their other qualities? We have not found them to be any gentler than the average run of Italians; neither have we found them to be any crosser. They will stand some kinds of banging in cool weather that the average Italians will not. They are slightly more nervous, and at times fly up *en masse* as if they were about to sting, but after all making little more than a big bluff. Colony by colony, season in and season out, with ordinary care one will receive as many stings from Caucasians as from Italians. But before we go further, we ought to state that we have in the yard two strains of Caucasians. We have never had any of the government strain of Caucasians, and therefore can not speak of those bees.

But you may ask how our Caucasians are for honey. Early in the season, and during the fore part of the flow, they ran neck and neck with our best Italians; and, what is more, the cappings of their combs were whiter than those made by the yellow bees; but this slight advantage is more than offset by their habit of daubing every thing with propolis. Brand-new frames they smear all over in three months' time, and make them look as if they were four or five years old.

THEIR SWARMING PROPENSITY.

We went down to look them over yesterday, July 7, and we were chagrined to find that something over 95 per cent of them had swarmed right when they were doing their very best work, while less than 5 per cent of the Italians, under precisely the same management, had swarmed. To say that we were surprised and disgusted is putting it mildly.

As we have previously explained, we have been working this yard alone, except a very little help from the boys. We ran the yard for extracted honey in shallow supers. Having calls for some Caucasian queens, pure and mismated, we went down to the south yard and proceeded to fill our orders. We then looked over hive after hive of Caucasians with the above result—they swarmed. Fortunately we had drone-traps on all but two; and the virgins coming on made way with the old queens, and, of course, their colonies began to sulk. We did not, as perhaps we should have done, make an examination of the brood-nest; but we didn't know the Caucasians.

Year after year we worked hives of Italians on this same tier-up principle, for extracted honey, and we never found it necessary to go into the brood-nest. As we found the combs began to whiten we would add extra supers, putting empties under the partly filled ones up to about the middle of the flow, after that reversing the order. We expected, of course, the same procedure would work with the Caucasians, as it always had worked for us with the Italians, and as it worked this year under precisely the same conditions. Every one of the Caucasians and their crosses, with the exception of two, had swarmed, while we were up town attending to our office work—hives full of cells, some hatched and some not, and the colonies completely demoralized. The 35 colonies of Italians, in the same yard, with two single exceptions, went on taking in honey, and with those exceptions there was not a single colony that had a single cell in it or showed any indication of swarming.

You may say we ought to have known better, and that we ought not to have depended on surface indications at the entrance, at the tops, and under the sides of the combs, with *any* strain of bees. We admit that, had we gone through the brood-nests of the Caucasian colonies, cutting out the cells and the drone brood (and there were quantities of the latter), we might have checked the swarming to some extent. The fact remains, however, that we didn't have to do this with the Italians. No, they not only did not prepare to swarm but kept piling in the honey.

If this showing is a fair sample of Caucasians, and their swarming propensities can not readily be controlled in the production of *extracted* honey, what shall we say when we run them for the production of *comb?* If this yard had been exclusively Caucasian and its crosses, we might have laid the excessive swarming to the locality and season; but when it is understood that the 35 other colonies of Italians (except as mentioned) *in the same locality, in the same yard,* and *under precisely the same management, did not swarm, nor show any indications of it,* then we must perforce conclude that the difference was in the race.

But this is not all. The Caucasians are the worst bees we ever saw to plug in brace-combs. By this we mean spurs of wax between the *combs* and between the top-bars and not on top of them. There is occasionally a colony of Italians that will do this between the wide thick top-bars; but in our locality they are the exception, not the rule.

But even this is not all. The Caucasians stuck in brace-combs down between the frames in the very heart of the colony—so much so that it was very difficult to remove the frames. We will have some photos that will speak for themselves. While, of course, these brace-combs could be removed with the uncapping-knife, the act of drawing the combs out of the hive is very greatly impeded, to say nothing of the broken comb surfaces, and danger of killing queens and bees in the general stir-up.

We wish to make it clear that we are not condemning *all* Caucasians. There may be strains of them that do not show up the bad traits that we have found in ours. Our Caucasians as stated consist of two different strains—some of one and some of another; and we find that the crosses of Caucasians — that is, bees from Caucasian queens fertilized by an Italian drone—show the bad traits about as strongly as the pure bloods of the dark race, with the difference that the Caucasian-Italian is a little more vindictive than either of the pure races.

CONVERSATIONS WITH DOOLITTLE

WORKING WITH VICIOUS BEES.

A correspondent writes, asking that I tell the readers of GLEANINGS how I master "awfully cross bees." I take it that he has bees which need more than the usual means to subdue them. Where I find a colony (as I do sometimes when others wish me to do some work with certain colonies in their apiaries) that will not yield to a few puffs of smoke blown in at the entrance, and then a little smoke blown over the tops of the frames when opening the hive, I always treat such "awfully" cross colonies as follows:

With the smoker burning nicely, and full of fuel, I step to the entrance of the hive and send into it a few puffs of smoke, blowing as strongly as possible so that the smoke may reach all through the hive as nearly as may be, when the entrance is closed, and the hive strongly jarred by being pounded with the doubled-up fist or a stick of wood. But the doubled-up fist is better, as one will not be likely to pound it hard enough to break down any combs, which may happen when striking with a heavy stick. This jarring, together with the smoke, causes the bees to fill themselves with honey, which can be hastened by opening the entrance in about a minute, puffing in more smoke, and then shutting and pounding again. If many bees from the fields have collected at the entrance it is better to let them run in before smoking the second time, as they will add to the hubbub by being greeted with smoke immediately after entering. In about three minutes from the time of starting, one can open up the worst colony of bees ever seen, when thus treated, without any of the bees offering to sting. But if the bees are of the black or hybrid variety they will run all over, out of the hive, down under the bottom-board, or almost anywhere instead of staying on their combs. For this reason, when treating black or hybrid bees I generally take some old box or cap to a hive, or in absence of these an empty hive, and set this on top of the colony to be treated, after first having removed the cover from over the frames to the colony, using smoke while doing so, and the smoking and pounding will cause the bees, after filling up with honey, to run up into the hive or box provided, in which place they are out of the way, and there is no danger of losing the queen. In this way bees will remain quiet for the time desired, after which they may be shaken down in front of their home, into which they will run like a swarm. Even the worst Cyprians I ever saw can be mastered in this way; but it needs about five minutes to put these into a thoroughly submissive state.

Now having told how the thing is done I wish to say that it is rare that as harsh treatment as this has to be resorted to, for 499 colonies out of 500 will allow of being handled without showing unreasonable temper with a few puffs of smoke at the entrance and a little over the tops of the frames when the hive is first opened. Yes, further, with 99 out of every 100 of my own colonies which I handle, I never think of blowlng any smoke in at the entrance—simply raise the covering over the frames as quietly as possible; and as the cover rises gently, draw the bellows of the smoker together so that a little smoke may float over the tops of the frames, when I do what I wish with the bees without further smoking. Many colonies can be handled without any smoke whatever; but without it the bees will be more or less in the way, so I use smoke very lightly, in this way, on every colony opened, even if I know they do not need it to keep them from being angry at the rudeness from the light being suddenly let in upon them. In all operations with the bees the motto should be, "Use as little smoke as possible, but never be stampeded by any colony."

Another correspondent wishes me to tell why his bees are so cross, but gives me no data to go by. The Italian, Carniolan, and Caucasian bees are not cross without cause; but hybrids and Cyprian bees, as well as the Syrians and very many colonies of the blacks, are easily aroused—in fact, ready for "war" on the least provocation. Then if any hive is being robbed, or honey has been left out till robbing of the same has gotten well under way, the whole apiary, during a time of scarcity, may be suddenly turned "from lambs into tigers." The remedy here is very obvious. Tearing off the covers hastily, or bumping the hives while opening, before using any smoke, often exasperates the bees so that ten times the amount of smoke is needed before we can go on with our work which would not have been needed had we worked quietly and given a little smoke gently, just as the cover began to be raised from over the frames. Such a mode of treating the bees is much like the bad parent who gives the word and a blow, generally giving the blow first. Always treat the bees humanely, and give smoke first. Where ants have formed their homes about the top of the hives, so that they are ready to run in among the bees at the first crack being made between the hive and the cover as it is lifted, it often irritates the most peaceable colony, so that a severe smoking has to be given them before they will yield to the apiarist. Remedy—don't open the hive until you have stampeded the ants by killing or otherwise. I do not suppose many have trouble with snakes; but at our out-apiary there are quite a few small snakes—small enough to run in at the entrance of the hives. The bees do not seem to be able to sting the snakes, but they lay hold on them, when the snake will "thrash around," hitting the frames and causing an uproar sufficient to drive every thing away from the apiary for some hours unless the bees are subdued by a vigorous smoking and pounding. When working one day, a snake about fifteen inches long wiggled itself out from the hive with two or three hundred bees hanging to it hissing and trying to sting. I marked where it stopped, and, after subduing the bees (I came near being driven from the yard), I went and killed it; but an examination did not show a single sting about it anywhere. It got off much better than I did (save the killing), for I received forty or fifty stings, although I did the best I could short of running away. Then on cold days, or at times when honey is not coming in from the flowers, the old bees do not like to be disturbed, and occasionally will sting with a vengeance. I have worked at the bees during a pleasant forenoon, when the bees were busy, without

a single cross bee hovering about my head, only to be greeted with hundreds of them hanging to the veil on my hat, and singing that very interesting song they can sing when maddened, four hours later, after an unexpected three hours of rain. All of these things should be taken into consideration, and the bee-keeper be governed accordingly. When, from former experience, you know that the bees are likely to feel ugly, or are easily disturbed, use smoke till you see them "doff their hats;" and at times which point toward good nature a little smoke over the tops of the combs is all that is needed.

Borodino, N. Y.

BEE-KEEPING IN THE SOUTHWEST

By Louis Scholl

Texas prospects have turned brighter than was expected a month ago. The mesquite-trees are loaded with bloom this month of June, and the bees are rolling in the honey in the good old-fashioned way — the way so many would like to see their bees do. Yes, and we are sure now that Texas will keep up its record as the leading honey-producing State.

❁

A NEW BULLETIN.

Bulletin No. 102, of the Department of Entomology, Texas Agricultural Experiment Stations, entitled "Texas Honey-plants," has recently been published. It is a preliminary bulletin on the honey-plants of Texas, containing a list of honey and pollen yielding plants so far collected by the writer, with data showing the distribution and the relative importance of each. Both the botanical and common names are given except in a few cases where the latter could not be obtained.

Although this bulletin is of a technical nature and the descriptions are brief, it is hoped that it will be a great help in many respects, especially in that it furnishes the bee-keeper with a list of the Texas honey-plants by which it may be possible to select locations, or it may help in selecting certain plants for planting that might prove of value. All who are interested may address the above department at College Station, Texas.

❁

THOSE BOTTOM-BARS, AGAIN.

Those wide-bottom-bars, Dr. Miller, are, nevertheless, a nuisance here, with most of us, even though they may not be with you, p. 682. Conditions differ in different localities; so do different strains of bees, as is also mentioned by our editor. This latter could be gotten rid of if a vigorous fight were made against all strains that have a tendency toward blocking great chunks of propolis between frames with such narrow spaces as yours. Where propolis is very plentiful, so that all colonies stick glue between the frames, it is quite another question — the propolis can't be so easily gotten rid of without sacrificing the whole locality. Where the locality is good, or even if the above-mentioned strains of bees are good ones, I'd favor narrower bottom-bars. I do not use dummies, first, because I can't use them in ten-frame hives with a full set of ten frames; and, second, because even in some eight-frame hives I have, the bees glue them in so they are a worse nuisance than the wide bottom-bar frames. Your nail-spacers would soon be transformed into great wads of propolis, and help the bees to fasten even the end-bars to each other. It's better not to have this much of a starting-place for the bees to stick their propolis. Just a plain, narrow, smooth frame, without any obstructions on it — and a narrow bottom-bar, of course — is the frame for me.

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"WITH ABUNDANCE OF STORES IN SIGHT."

This question has been harped on for some time without a definite conclusion being arrived at. If the apiarist will go into any average apiary he will find generally that the strongest and best working colonies are those with a lot of stores on hand. The "stores in sight" have something to do with the strength of the colony. It has a stimulating effect upon it; there is no doubt about that. It would be foolish, in my mind, to suppose, however, that simply because the "stores are in sight"—that is, that the bees are able to see the amount of honey they have ahead of them—is the true cause of their progressiveness. An abundance of stores stimulates brood-rearing, not because the bees see their way clear, but because it is drawn upon heavily, which incites the colony. A colony without this abundance of stores generally begins brood-rearing at the same rate as those with their hives full of honey, but soon has to give up the race, and fall behind. It is then they begin to restrict brood-rearing operations within the limitations of the food supply. This, however, is often not done until the entire stores have been used up, and the bees are required to gather the necessary food supply from the fields, while the colonies with an abundance on hand simply draw from this. The latter saves the workers while the former wears them out; and the result is, the fielders become scarcer as the season advances, in proportion to the brood reared. Under such conditions very few bees will be flying from colonies short of stores. In most cases there is an abundance of brood and adult bees, which might have been fielders, and which are retained as nurses. My remedy for such colonies, in the spring, is simply to set a shallow extracting-super, partly filled with honey, from some of the stronger ones, on top of each. This should be done before the above-mentioned condition has been reached, to prevent the setback that it gives all colonies that have been neglected too long. If done early, these colonies will keep pace with the stronger ones that have had an abundance of stores; and, even if it is done later, the colonies will soon recover.

In giving these stores the colonies are stimulated in the first place, and then the adult bees are saved from wearing themselves out in their efforts in obtaining the necessary food supply from outside sources. "One ounce of prevention is worth several pounds of cure" in this matter, and it can be accomplished by simply leaving enough honey in the hives in the fall so that all colonies will be saved the danger of running short in the critical moment when bee-life is worth a great deal in the spring.

This question has come to me: "If there is

such a thing as a colony of bees looking ahead, and taking inventory of the stores in sight, then arranging brood-rearing operations according to the food supply, why is it that so many colonies rear an abundance of brood with so little ahead that they are caught later with the hive full of brood and not a drop of honey?"

❁

THE KINDS OF HONEY PRODUCED IN TEXAS.

Comb honey in sections was one of the main products of the up-to-date bee-keepers, but the great risk of shipping it safely in a hot climate, on account of the frailness of the article, resulted in frequent "smash-ups," and often in melting down when left in the hot sun. Besides, section honey is expensive to produce. To obviate these objections, comb honey is now produced in the regular frames, cut out, and packed in cans, liquid extracted honey being poured over the whole to fill the crevices, so that the combs are kept buoyin it, and kept from mashing. This kind of honey brings more dollars into the bee-keeper's pockets than section honey. It is easier produced, and more will be made by the bees in the frames. The demand for it is better, also, as the consumer gets more for his money; hence its production has replaced the section honey almost entirely.

Extracted honey is produced on a large scale here, and is still the old standby. More honey can be obtained with the honey-extractor, and the real profits are greater than comb-honey production. The only obstacle in the way heretofore has been the idea generally prevailing that such honey might be adulterated. Since the pure-food laws have been in effect this has been removed to a great extent, and now there is a tendency to resort more and more to producing extracted honey. In time this will largely replace comb-honey production here. Granulation of the honey has been a great drawback toward successfully marketing a crop later in the season when prices were stiffening; and to prevent the trouble of having the comb-honey granulate in the cans, making it unsalable, it was moved off rapidly by many bee-keepers, to their detriment, regarding the market price received. With extracted honey, educating the public how to reliquefy the granulated honey, and that it is the best proof of its purity, is all that is needed. Then such honey can be kept over the winter for better prices if need be.

Texas has its own standard-size packages for honey, both comb and extracted. These are all figured on a basis of 120 pounds to the case, or 60 pounds to a half-case. For extracted honey the regular 60-lb. square five-gallon cans, two in a case, prevail. These have a small opening of 1½ inches, with a screw cap. For comb honey the same size of cans, two in a case, have large eight-inch screw caps to admit the comb honey to be placed in it. Twelve-pound friction-top pails, 10 in a case, making 120 pounds; six-pound friction-top pails, 10 in a case, making 60 pounds, and 3-lb. friction-top cans, 20 in a case, also making 60 pounds, are used for both comb and extracted honey in smaller-sized packages for retailing in the original package. This standard is so well known now that orders are always made in accordance with the price list, which appears as follows:

PRICES OF HONEY.

	Comb	Extracted
60-lb. cans, 2 in a case, per lb.		
12 " " 10 " "		
6 " " 10 " "		
3 " " 20 " "		

Terms.—Sight draft, bill of lading attached, subject to examination.

The freight rates on honey put up in this way are very low, as it goes at the fourth-class rate, while section comb honey must go in glass shipping-cases properly crated at double first-class freight rate, and at owner's risk; besides, the can packages are much safer.

New Braunfels, Texas.

FANCIES AND FALLACIES

By J. E. Crane

Liquefying candied comb honey seems to me a very decided step forward in our industry, and of great commercial value. I don't remember where the idea originated, but it seems to me it was not far from Medina.

❁

That editorial, pages 413, 414, as to the value of sugar as a producer of muscular energy, almost takes one's breath away. "One pound of honey equal to five pounds of pork in dietetic value." I don't believe we bee-keepers have half appreciated our calling.

❁

Dr. Miller, page 485, April 15, with a Stray Straw, would seem to knock over Mr. Doolittle's theory of the value of a number of dummies in a hive. But I fancy Mr. Doolittle uses section-frames for surplus instead of a regular-sized clamp or super, so he need not cover the top of a hive any further than combs of brood extend, and four dummies at the side of his brood-chamber will do no harm.

❁

Dr. Miller says (page 411), "I don't know how bees know so much, but I think it is the general understanding that they are far-sighted enough to be more lavish in starting brood in spring with a big lot of honey in sight than with only enough to run them from day to day." That is a good thought, doctor, and I tell you it is hard building up a colony without some honey in the hive. I have had some experience along these lines this spring.

❁

On the same page he says, "James C. White is wisely advised to tier up to prevent swarming. Let me add an item. Shove the second story either back or forward so as to make a ¼-inch crack for ventilation. Do this with each added story. This will double the security against swarming." The editor thinks him probably right, but fears so much ventilation will keep a large portion of the fielders at home to keep up the necessary temperature. Doubtless the weather would make some difference; but it seems to me that, during July and August, quite as many

fielders would be required to ventilate a hive two or three stories with only one entrance at the bottom as to keep up the temperature with more openings for ventilation.

❁

On page 415 we are told that alsike-clover hay is beginning to have a special market value. "For race horses it is considered the best hay obtainable." An extensive dairyman who supplies our village with a large portion of its milk told me not long ago that the best hay he could produce as feed for milk was alsike-clover hay. The county in which I live has done a large business in producing American Merino sheep and shipping them as far as Australia and South Africa, and alsike-clover hay is preferred in transit to any other. Let's push its cultivation.

❁

On page 433, April 1, C. F. Bender tells us some important facts in regard to the breeding of bees. It is especially interesting as showing how much more thought is given to this subject now than formerly. I do not remember that any thing was said or thought upon the improvement of bees, further than to introduce new races or breeds; yet I believe few persons who have handled bees extensively have failed to notice the great variation in different colonies of the same race or breed, often amounting to more than the difference between different breeds, and quite as great as among domestic animals. Experience has proved that bees are quite as responsive to careful breeding as any other stock.

❁

Mr. Doolittle tells us, page 417, that the best results in production of comb honey are secured by having every comb in the brood-chamber full of brood. If not full of brood, take out combs of honey and fill with dummies of wood. Presumably a colony will store honey better over combs of brood than over combs of honey; but why will they store better over a wooden dummy than a comb of honey? I have failed to see any difference in favor of wooden combs or dummies over one of honey. But wouldn't it be better to fill out such hives, as the queen fails to fill with brood, with combs of brood from hives that are preparing to swarm, or that we have taken away to prevent their making such preparation? I prefer this to using wooden dummies.

❁

I want personally to thank Dr. C. C. Miller for his interesting and practical article on the use of wooden splints in place of wiring frames to prevent sagging, page 423, April 1. I believe it the most practical method yet devised to prevent sagging, and propose to put it to the test at once. But really I found it quite a task to saw out those little sticks $\frac{1}{16}$ square. The method described by J. A. Green in GLEANINGS for May 1 seems like a great improvement.

Later I took a stick of black ash, eight inches long, and split it up into pieces one-half or three-fourths inch square, and by vigorous pounding I was able to split it into splints about $\frac{1}{32}$ inch in thickness, which in turn were again cut into very narrow strips. One of these, $\frac{1}{32}$ inch square, I found would hold up over ten pounds. But not every bee-keeper has a circular saw or black-ash timber. Perhaps the supply houses who furnish foundation can with it furnish splints. Another thing I have been thinking of, I wonder if the stems or stalks of certain grasses would not answer every purpose. Take, for instance, timothy or redtop, and cut off just below the head, and again eight inches below; soak when dry in wax, and press into the foundation the same as splints.

❁

That statement by R. A. Burnett, page 422, April 1, to the effect that "if bee-keepers would allow their honey to ripen upon their hives it would do more toward creating a demand for it than any law against adulteration," seems like a pretty strong statement. We have bought some honey not perfectly ripened. I believe where such is the case it is through the ignorance of the producer, or perhaps I should say inexperience. We purchased last year from the bee-keepers of Northern and Eastern Michigan many thousands of pounds of extracted honey, and have failed to find a single pound that was not well ripened; but the bee-keepers of Michigan are a splendid lot of men, and seem as much interested in having it well ripened as in producing it.

❁

We have got to look out for that Jay, p. 494, April 15, or he will upset all our previous notions and send us off on new lines before we know it. And now he would have us believe that if we keep 500 colonies in one place where only 50 are now kept there would not be more than two per cent less honey gathered per colony than now. The worst of it is, we can not deny that his guesses are about right during a good flow of honey. But, hold a minute. We do not always have good flows of honey; and when we do not we have to resort to the sugar-barrel and bank account. During a good flow of honey with abundant clover bloom I am satisfied 500 colonies could be kept in one place with satisfactory results; but when there are less flowers in spring and fall we should have to feed very heavily to keep all thriving. Mr. Alexander, who is the best authority in this country on very large apiaries, commences his article on page 504 by saying, "Feeding is becoming a very important part of our business." Just so; and the more the colonies are massed together the more important the feeding become. Where there is a good flow for four or five weeks, nine years out of ten, it will doubtless pay the careful, painstaking apiarist to keep large apiaries; but where other conditions prevail it seems doubtful.

❁

I notice a typographical error in that most excellent review of Bulletin 110 of the United States Department of Agriculture, commencing on page 549. Near the top of page 450, in giving the United States standard for honey it says it "contains not more than 25 per cent of water, not more than 25 per cent of ash." It should have been $\frac{25}{100}$ per cent of ash—quite a difference.

I have been especially interested in the analysis of No. 23. A sample from the same lot of honey was pronounced by the New Hampshire State Board of Health as adulterated, and so published in one of their bulletins. The honey was produced in one of our own yards, and we knew of its

absolute purity. A considerable correspondence followed in which neither party was willing to admit he was in error. But better methods of analysis adopted by Dr. Browne show very conclusively where the trouble came from.

In the next bulletin issued by the New Hampshire Board of Health they state in a note on the last page, "*Concerning the Cane-sugar Content of Honey*," "In the last issue of the Bulletin a sample of honey bottled by J. E. Crane & Son, Middlebury, Vt., was reported as adulterated with cane sugar. It is, perhaps, due the firm to state that the adulteration was technical rather than of a fraudulent character, the quantity of cane sugar found being not greatly in excess of the recognized limit of that constituent. . . The maximum content of cane sugar recognized in pure honey by the United States Department of Agriculture is $\frac{8}{100}$, and this standard has also been specifically adopted by the legislatures of several States. When, therefore, this figure is materially exceeded it has been the custom to infer that such is due to the feeding of sucrose to the bees, either with fraudulent intent or carelessly. However, in the case under consideration Messrs. J. E. Crane & Son strenuously urge that they have been duly careful to feed no more than the least possible quantity of sugar required at the period when artificial feeding is necessary; and in view of the business reputation of the firm, and its standing in the industry, it is believed that this claim is conscientiously made."

Thus in a few sentences is saved the face of the New Hampshire Board of Health and the producers of this honey or seeming to. But it seems never to have occurred to them that their methods of analysis might be wrong.

If one gives careful attention to the tables of the United States bulletin referred to, it will be noticed that the samples of clover honey given contained from over $\frac{1}{100}$ per cent to no sucrose. Why this variation? It is caused by differences of soil or climate, or the time that has elapsed between the gathering or storing to the time the analysis was made. In regard to this the New Hampshire Board of Health, in the note above referred to, says: "There would seem to be opportunity for investigation relative to the possible bearing upon the sucrose content of modern methods of ripening and packing honey. As yet the exact nature of the agency causing the inversion of cane sugar in honey does not seem to have been determined; but it is certain that at least up to a certain point this inversion steadily proceeds after packing. The firm alluded to recently adopted the practice of pasteurization of their goods during their packing process. Comparative determinations made by us on several jars of the same output originally submitted to different treatments showed unexpectedly a higher sucrose content in the jars subjected to a temperature of 160 to 175 degrees Fahrenheit. Provided this phenomenon should be demonstrated to be a constant one, the only apparent explanation would be that the inversion is due mainly to a digestive ferment that is destroyed by the pasteurization process. In other words, does heating honey soon after being stored by the bees prevent those chemical changes taking place that would occur if left for a longer time without heating."

Middlebury, Vt.

GLEANINGS FROM OUR FOREIGN EXCHANGES

By W. K. Morrison

The government of Denmark has voted a sum of money, and has also appointed a commission, to deal with the disease known as the foul brood of bees.

A writer in one of the European bee journals maintains that it is only from the second crop of red clover that bees extract any nectar. Is this so? The present writer imagines that *mammoth* clover produces all the so-called red-clover honey, or at least nearly all.

Monsieur Jacquemart, President of the local bee-keepers' society at Thimister, Belgium, has engaged a solid train for some date in July to convey the bees of the members of the society to the heather bloom. Evidently the presidency of a Belgian bee-keepers' society is no sinecure.

According to *L'Apiculture Nouvelle* the recent prices of foreign honey and beeswax in Hamburg are as follows: California honey, 8½ cts.; Chili, 5; Cuba, 4½; San Domingo, 4½; Mexico, 4½. Beeswax from Benguella, 30 cts.; Brazil, 31½; Chili, 31½; Cuba, 31; Madagascar, 29; Morocco, 30.

A writer in *Le Rucher Belge* states that only two authors, Reaumur and Della Rocca, have stated that the young queen leads the first swarm. On the other hand, Bevan, Quinby, Hamet, Drory, Bastian, Dubini, Dzierzon, Berlepsch, Vignole, Colin, Debeauvoys, De Layens, Cowan, Alley, Cheshire, Girard, Newman, Cook, Rauschenfels, Digges, and Root, affirm it is only the old queens that leave the hive at the head of the swarm. This is by way of reply to a Mr. Keller, who thinks the young queens frequently head the new swarm because he discovered one that did.

Biene und ihre Zucht is responsible for the statement that in Hannover alone 38 special trains are required to transport colonies of bees to the heather moors in autumn. That means 19 train loads of bees each way. This, it should be understood, does not represent American train loads. The cars are small, not more than five tons, and the locomotives are in the same proportion. Probably two American trains would accommodate the whole lot; but still this shows a very commendable and enterprising spirit on the part of German bee-keepers. Other states in Germany do equally well.

I note that the bee-keepers of the Nederlands, Denmark, Norway, Sweden, and Russia are very much inclined to follow the lead of America in bee culture. The bee-keeping journals quote Miller, Alexander, and Doolittle right along, and articles by noted Yankee bee-keepers are freely translated, and presented to their readers. This is the more remarkable because they are situated near Germany, a great bee country; and one would naturally suppose they would borrow

ideas from the Fatherland, but they do not. The Latin nations have already adopted the Langstroth system.

The *Revue Eclectique d'Apiculture* in its April and May issues has a long poem relating to the work of the bee-keeper. The authoress is Adele Vaillant, who evidently wields a facile pen as well as a smoker. This reminds me that we are far behind other nations when it comes to bee poetry. France, England, and Germany are well provided with bee poetry while we have but very little. The English have three classics on the subject by Virgil (translation); Murphy (tr.), and Evans. They also have "Buz a Buz," a translation from the German. The *Revue Eclectique* not long ago published a long bee poem going through a number of issues; and, besides, France is otherwise well provided.

The Algerian bee journal *Nahhla* (the Arabic word for *bee*) has been restarted. It is published by the Algerian Bee-keepers' Society, which is quite a lively affair. Professor Trabut, M. D., in the School of Medicine at Algiers, is honorary president, and other prominent public officials hold the various positions in the society. It gets a grant of money from the government, and in other ways has its co-operation. The chief object is to substitute the modern system of bee-keeping for that pursued by the Arabs and Kabyles. Algeria is naturally a fine bee country, resembling California, or, rather, Arizona. Bee-keeping there is more reliable than it is in California, however, as the apiarists seem to do pretty well every year.

European bee-keepers set much store by the locust-tree for bees. They term it *acacia*, which is a better name, but it is the same old black or yellow locust of the Northern States. Though strictly an American tree it is more highly valued in European countries than in its own land. The tree-planters of the old countries have planted great quantities of it until it is much more common there than it is in Ohio. A recent writer in *Le Rucher Belge* compares basswood and locust to the advantage of the latter, and it seems to me he is right. Most people would prefer locust to basswood honey, and it is a more reliable yielder; but in most localities there is not enough of it to count as an asset. In Berlin, acacia honey is a leader. Perhaps the day will come when locust honey will become as common in Cleveland, Cincinnati, and Chicago.

M. Alin Caillas, a prominent authority in France on the subject of honey analysis, has discovered that honey shows radio-activity. Some kinds of honey show the presence of radium more than others — notably so, honey from the department of Tarn and from Tunis. In *L'Apiculteur* he indicates by an illustration its effect on the photographic plate, showing a white striation not unlike the Milky Way on the sky. He says this is extraordinary, as honey is a vegetable production, and radium has been supposed to be purely mineral in its origin. At present it is extracted from pitchblende. He thinks this may account in part for the extraordinary value of honey as a food and medicine. He attributes high values to various constituents of honey usually present in small amounts, but enough for the purpose. In this list are included potassium, formic acid, chlorides, azotates, and carbonates.

A congress of bee-keepers was held June 25, in connection with the Franco-British exhibition now being held in London. The meeting was presided over by Lord Avebury (Sir John Lubbock), who delivered the address of welcome. Here is the program: "The Development of Bee-keeping as an Industry," by T. W. Cowan, author of "The Honey-bee" and other works—also editor of *The British Bee Journal;* "The Influence of more than one Queen in a Hive," by a French Bee-keeper; "On the Choice of a Hive," by Walter F. Reid, Esq., F. I. C., F. C. S.; "Does the Size of the Hive Influence the Yield of Honey?" by a French bee-keeper; "The Cure of Foul Brood," by M. E. Sevalle, Secretary of the French Society of Apiculturists, and editor of *L'Apiculteur*, of Paris. That is a very fine program. It could hardly be better.

NOTES FROM CANADA

By R. F. HOLTERMANN

INSPECTORS FOR ONTARIO.

The following foul-brood Inspectors have been appointed for the Province of Ontario:

I. Essex, Kent, Lambton—W. A. Chrysler, Chatham, Ont.

II. Elgin, Middlesex, Perth, Huron—Jacob Alpaugh, Eden, Ont.

III. North Norfolk, South Norfolk, North Oxford, South Oxford, Waterloo, South Wellington, North Wellington—James Armstrong, Cheapside, Ont.

IV. Haldemand, Brant, Halton, Welland, Lincoln, Wentworth—Wm. McEvoy, Woodburn, Ont.

V. Peel, Dufferin, North Grey, South Grey, Simcoe, North Bruce, South Bruce—H. G. Sibbald, Claude, Ont.

VI. North York, East York, Ontario, Durham, Victoria—J. L. Byer, Mt. Joy, Ont.

In the remaining districts, owing to the difficulty of getting a thoroughly experienced man on the ground, an expert will be sent to inspect the district and find out what conditions are as to foul brood. Conflicting reports as to foul brood have appeared.

THE SEASON.

In Canada, particularly Ontario and Quebec, quite a number of colonies have perished during the past winter and spring. The spring was, for bees, not as bad as a year previous, but the weather has been any thing but ideal. Colonies in shape are in many sections reaping a rich harvest at this date, June 26; basswood in this section promises well: conditions are favorable, but, as we all know, *something may happen.* The price of honey should not be low, but can not be as high as last year, as our imports of honey have, during the past ten years, increased thirty fold.

GENERAL CORRESPONDENCE

LEARNED BY EXPERIENCE.

Some Valuable Points Brought Out by a Study of the Results During the Past Year or Two; a Convert to the Use of Bee-escapes.

BY E. F. ATWATER.

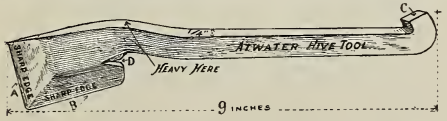
I wish to confess that, after years of non-use of bee-escapes in comb-honey yards, I am now a convert to the merits of that most excellent little appliance. I am using more of them every year. I may even begin to use them to take off extracting-supers. But for either kind of honey they are surely grand at the end of the season or when bees are inclined to rob.

You, Mr. Editor, have sometimes admitted that Dr. Miller's scheme of a tent escape on a pile of supers might be better for some, as it would save an extra trip to the yard to put on the Porter escape. Barring the likelihood of thieves, please don't admit it again. You do not need to make an extra trip. When you make your regular visit to the yard, put escapes under the finished supers. Then at the next regular trip take off the supers above escapes and repeat the process. In the interval the bees are sure to leave the super above the escape (unless it becomes clogged), as they have 7 to 10 times as long as usual in which to pass through the escape. This plan is successful. I never heard of such a method of using escapes, but no doubt others have practiced the same plan. In localities where foul brood exists, each colony should have an escape. Where no disease exists, two or three supers may be put above each escape, making quite a saving; but it may somewhat disturb the "balance" of your colonies

In foul-brood districts all honey should be taken off with escapes. All daub is cleaned up inside the super before it comes off the hive, so there is less likelihood of robbers getting a taste, or of honey, possibly diseased, getting daubed around. *Use escapes.*

HIVE-TOOLS.

There are hive-tools and hive-tools; but the best single tool for universal use is made as shown in the cut. It is made of good spring or tool steel. This is the handiest thing to use in lifting frames or division-boards; saves putting one



hand among the bees. The hook was also designed to pull out springs and wedges from supers. At D a slot is used to pull nails of various sizes. The edges are ideal for scraping and prying, and easily inserted in joints between hives and supers.

ARE LARGE ENTRANCES SO IMPORTANT?

Friend E. R., I want to give you a friendly dig on "The importance of a large entrance in summer." While I prefer quite a large entrance, say 12 or 14×⅜, yet I have seen so much evidence on the other side that I no longer believe that there is any great advantage in such entrances. I want a deep space (⅝ or more) under the frames to facilitate manipulation and avoid having frames attached to the floor when a hive shrinks excessively. Of course, the advantage of a deep space beneath the frames may be easily had without necessarily using large entrances.

If I used a space of *more* than ⅝ inch under frames I should want the space to be much more, then fill with a loose frame of some kind, coming to within about ⅝ inch of the frame—bottom-bars to prevent comb-building in the space, as the bees, if a little crowded, are very apt to fill a space much greater than ⅝ inch. Mr. Yoder uses very small entrances and gets fine crops, and probably no larger a per cent of his bees attempt to swarm than among ours with their large entrances.

The same is true of the Dudleys, who, year after year, have taken some of the largest crops of comb honey in this valley. Mr. C. W. Dayton is another extensive producer who prefers small entrances. He thinks he gets better crops by using such entrances.

I must admit that the large entrance has but little influence on swarm prevention, and is often harmful in the spring when brood near the entrance is often chilled if the entrance is not properly contracted.

The large entrance may not be best where there is any disease, as robbers have too good a chance to steal treasures that may prove the undoing of the colony, and in outyards we can not at all times keep the entrances adjusted to fit the flow of nectar.

A WHEELBARROW FOR CARRYING SUPERS.

Really it pains me to see bee-keepers *carry* supers of honey from the yard to the shop. The cart will do on smooth ground; but on the average we prefer the wheelbarrow, and we send many hundreds of miles to get the *Daisy* spring wheelbarrow, as we know there is none other anywhere near so good, and we want the best. The Daisy is easy on the combs and easy on the man. At least one must be in each apiary. Better yet, have two so each man can use one. Their usefulness is not confined to taking off honey, as a large light box can be put on one; then when cleaning and scraping in the spring you have a good place at which to work and a good place to hold the cappings.

About the hive-carrier (page 557, 1907), you say, "Granted that his colonies are heavy and strong, two men can carry three as easily as they can carry one in his (Dr. Miller's) way." Please amend that to read, "Granted that *the two men* are heavy and strong," etc.

"An improved strain of bees," page 831, 1907. "Mate daughters of pure Cyprian mothers to pure Carniolan drones. Then daughters from these queens are mated to pure Italian drones." I know that this bee-hash results in good workers, and some of them are easily handled like any good Italian stock; but a few that are cross will be wonderfully cross, and will sicken ninety-nine out of one hundred who try them, from any further experiments along that line. By breeding again from the gentle colonies of this Cyprio-

Carniolan-Italian stock, possibly something may be done, as the Cyprian disposition is not so likely to recur. So far as color is concerned, I've had colonies of that cross, showing no trace of the Carniolan blood, but they are exceedingly prolific, and mostly white cappers of comb honey. Any cross containing much Cyprian blood will likely result in at least a few colonies that are perfect fiends to fight, and they will remember their encounter, and scour the neighborhood for days in search of innocent victims of their wrath. The best advice on Cyprian blood for the average bee-keeper is, "Let Cyprians alone."

ENTRANCES ABOVE EXCLUDERS.

Page 839, 1907, Mr. C. W. Dayton says, "Of course, it certainly is easier for the bees not to have the excluders on." Not so very much easier for my bees. I have an entrance above the excluder, which is utilized often by a large per cent of the field force. This entrance consists of a 1½-inch auger-hole with galvanized slide. I got the idea from friend Hansen, whose San Diego Co. "Sweetwater Apiary" was illustrated in GLEANINGS and the A B C book some years ago. Mr. Hansen values them highly. So do I.

DANDELIONS.

Page 840, 1907, that fine field of dandelions is much like some of this country. Some of my yards have thousands of acres of such bloom within easy range. During the past two springs the bees did well on them, though some years they yield little nectar. In 1906 and 1907 they put the bees in wonderful condition for the alfalfa flow, where they were plentiful.

DIVISIBLE HIVES.

The shallow-divisible-hive men (of whom I was once one of the most enthusiastic) sometimes say that the scarcity of lumber will be another point in favor of the shallow hive, as narrow lumber is cheaper than wide lumber. This might be a valid argument in a land where a tongued-and-grooved joint is unknown, or where no man ever thought of "butting" two narrow boards together to take the place of a wider one. I've used such hives, and they are fully as serviceable as any, and the joints are not even tongued and grooved. Boxes of some kinds are now made entirely of narrow boards, tongued and grooved, or fastened with metallic stays forced into the wood.

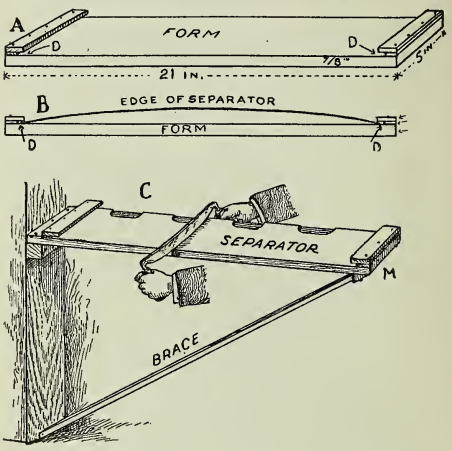
The really few (compared to others) who prefer the divisible brood-chamber are periodically possessed of the spirit of propaganda; but the vast majority who try such hives later abandon them, if all that I have seen and read is any criterion.

In many localities the man who puts a swarm or a colony in a single shallow brood-nest with supers above courts great loss, as the sections will be ruined with pollen *and no preventive is known*.

It would at least be charitable for the divisible-brood-chamber advocates to caution beginners with that hive against disaster from pollen in sections, as to many beginners it is a serious matter to lose the sale of a few supers of honey.

A QUICK METHOD OF CLEANING SEPARATORS.

One of the most monotonous, tiresome, and unpleasant jobs connected with large-scale comb-honey production is the annual cleaning of a vast number of bee-gummed separators. In many localities the separators must be thoroughly cleaned every year or else the necessary fixtures can not be crowded into a super. Another result, but not at all a bad one, is that the sections will hold more honey, as the propolis acts much like



ATWATER'S METHOD OF CLEANING SEPARATORS.

cleats on the separator. For this reason some bee-keepers seldom clean their separators; but when they *do*, *then* they have a job of no small proportions. As no rapid and satisfactory method of cleaning separators has ever been given to the bee-keeping public I will describe a method of my own invention—a method far more rapid than any that has been used in the past, and it results in separators just as good as new, if you wish them so. One hand is not almost worn out from holding a knife, as in the old plan.

The drawing shows the plan fully. Just 18¼ inches apart we nail on it, at the ends, pieces of section stuff ⅞×1⅜×5 inches. On these, and projecting ¼ inch inward, nail cleats ¼×1⅜×5 inches. This gives the cleated board complete, as at A. The cleats provide recesses at D D to engage the ends of the separators.

This cleated board is mounted as at C, with one end fast to a joist, the other supported by a diagonal brace.

B shows how the separator is to be put in place by springing it so the ends just go under the recesses at D D. It then lies flat, as shown in C. Now stand at M and take the drawing-knife by the handles. Keep the blade nearly at a right angle to the separator. With very thin separators you will find it necessary to do most of the cleaning from the middle *toward* you, and from the middle *away* from you, or the separator may spring out of place.

With thicker separators you may go at them rough-shod. When one side is clean, turn the separator over and repeat the process. Keep the recesses clean, and brush the loose propolis off the board occasionally.

After a little you will acquire the knack, and you will then find this the easiest and most rapid method of cleaning separators—a method that any hired help can easily master.

Meridian, Ida.

PRESIDENT ULRICH KRAMER.

A Brief History of Bee-keeping in Switzerland, Showing the Important Part that Kramer Plays.

BY DR. K. BRUENNICH.

[No American bee-keeper will object to the space occupied in this issue of GLEANINGS with a lucid account of what our brother bee-keepers in Switzerland are doing in promoting bee-keeping on scientific lines. We all admit that we owe much to the Swiss. Huber rendered us indebted for all time, and the little republic is always in the van of progress, be it bee-keeping or any other industry or science. Their love of liberty and independence enables them to carve out a path for themselves, and they never seem to lack leaders for any great work. From what Dr. Bruennich says, it is evident they possess in President Kramer, of the Swiss Bee-keepers' Association, a great man — one who is leading them onward and upward in apiculture. We are all glad to hear from our Swiss friends, and it is a pity we do not hear from them oftener.—W. K. M.]

The readers of GLEANINGS have seen from time to time the name of Ulrich Kramer, who, since 1896, has been President of our Swiss Bee-keepers' Association. To write the life of Kramer is to write the history of the successes of the Swiss bee-keepers, for the history of the S. B. K. A. during the last thirty years is closely connected with the name of Kramer. He is now 63. It was two years ago that I conversed with him about queen-rearing when he said to me, shaking my hand, "Still, it is a delight to live."

It is thirty years, perhaps, since Kramer the schoolmaster began bee-keeping. At that time the S. B. K. A. was very small, having possibly 200 members; but it was at a time when all the European bee-keepers had received a strong impulse from the bee-masters Dzierzon and Berlepsch, and quite a new life bloomed in the bee-yards.

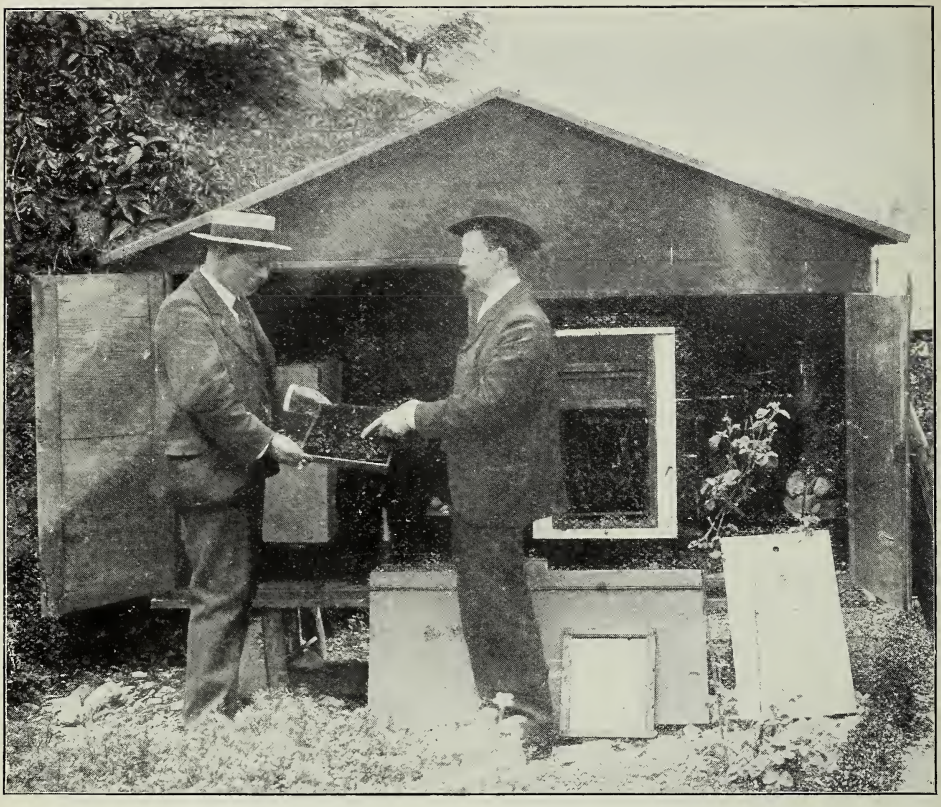
ULRICH KRAMER, PRESIDENT OF THE SWISS BEE-KEEPERS' ASSOCIATION.

A SWISS TENEMENT HIVE.

In 1887 we find Mr. Kramer elected actuary of the S. B. K. A., which had then 270 members. In 1880 he was the first "wander teacher" to instruct novices in apiculture. Since 1884 the S. B. K. A. has consisted of a number of affiliated associations (to-day there are 103), with the following number of members: 1885, 504; 1895, 6370. Some years previous, Kramer had had a colony on the scales, and in 1884 he introduced apicultural stations, where the managers have to make exact observations on temperature, weather, increase and decrease on the scales (during the season, every evening and morning), etc. Until 1906 he was chief of all those stations (to-day there are 33), in which the results of the observations were summed up and compiled. The reports of the apicultural stations are printed every year in a book about the size of this journal.

In these reports we get a general view of the weather during the year; then follow the conditions of the year; a table of temperature; winter losses; dysentery; the first brood-nests; preliminary honey-flow; development of the colonies; size of the brood-nest; May disease (paralysis); the swarming impulse; the period of swarming; consequences of swarming; the spring harvest; queen-rearing; the summer harvest; improvement of bee-pasture; autumn, wintering. Every report has a colored harvest-picture of a number of stations where we find the daily and nightly changes of the scales recorded in a clear manner.

In Switzerland, as elsewhere, honey has often been adulterated, or inferior grades of foreign honey have been sold as the finest Swiss honey. Kramer obtained in the town of Zurich a place



BECHSEL AND PRESIDENT KRAMER LOOKING AT A FINE QUEEN.

for testing honey, in 1891. Here honey is examined chemically and by taste. For the latter, Kramer has hitherto been the expert. He can decide, by taste only, if you give him Swiss honey, from which part of the country the honey came from, and from which flowers it was secured. It is astonishing to see how reliable his tongue is — a fact which I have often had occasion to prove.

In 1897 Kramer introduced a feature which has been a great benefit to our honey-producers, namely, the control of the honey of the S. B. K. A. Every affiliated association has from five to seven men, composing a jury. These are to judge the honey as to its purity, ripeness, and taste. A sample of any dubious honey has to be sent to the central jury, of which Kramer was chief till 1906; and only that honey which answers to all claims can obtain the marking, "Controlled by the Swiss Bee-keepers' Association." In consequence of this our honey has much improved in purity and ripeness, and its reputation has been greatly enhanced.

In 1897, 105 bee-keepers with 2843 hives obtained 11,900 kilograms of honey.

In 1898, 17 bee-keepers with 483 hives obtained 1565 kilograms.

In 1899, 431 bee-keepers with 13,408 hives obtained 143,849 kilograms.

In 1905, 1505 bee-keepers with 35,717 hives obtained 384,076 kilograms.

In 1889 was published the first edition of *Bienvater*, by Kramer, Jeker, and Theiler—a book of which the chief part was written by Kramer. Since that time, six editions have been printed.

Kramer, having recognized the superiority of our native bees, in 1898 brought the aid of the S. B. K. A. to the breeding of the black race. He established mating-stations, remote places for the fertilization of queens with pure-bred drones. In the spring of 1899 he called together the "Rosenberg" in Zug, where we have our apicultural museum, a number of able queen-breeders for the first conference on "race breeding." He then chose a number of the finest colonies (there were but a few), and began the use of eggs from those colonies for the breeding of queens.

In 1898, three breeders sent 41 pieces of brood-comb; result, 106 fertile queens.

In 1899, three breeders sent 84 pieces of brood-comb; result, 1158 fertile queens.

In 1905, eleven breeders sent 149 pieces of brood-comb; result, unknown.

As chief of the race-breeding department, Kramer also watched over the sale of race queens.

In 1898, three breeders sold 55 fertile queens mated at five mating-stations.

In 1903, three breeders sold 104 fertile queens mated at eight mating-stations.

In 1904, twenty-three breeders sold 525 queens mated at eight mating-stations.

In 1905, nine breeders sold 457 fertile queens, mated at ten mating-stations.

A queen of a controlled race, mated at a mating-station, costs 8 francs, or about $1.50; mated in the bee-yard, 6 francs; a little piece of brood-comb costs 2 francs.

Since 1902 we have had an insurance of 5 cents per colony; and last year we instituted our foul-brood insurance—5 cts. per colony—which will, as we hope, remove that bee-pest from our land.

Since 1896 Kramer has been president and cashier of the Swiss Bee-keepers' Association. In 1906 he was obliged to unburden himself of some of his duties, his health beginning to fail from neurasthenia. He trusted to younger ones his duties as cashier, as chief inspector of honey, and of the management of apicultural stations; but he kept his office as president of the S. B. K. A. and as chief of the race-breeding department—his favorite work.

Kramer has written, besides the *Bienenvater*, a great number of articles, especially in the *Schweizerische Bienenzeitung*, but also in German bee-papers. He is an unflagging investigator, and a very fine orator. As a president he excels, understanding exceedingly well how to reconcile opposite sides and confine discussions in the right line.

Ottenbach, Zurich, Switzerland.

SUPERSEDING QUEENS.

A Further Discussion on How Long a Queen May be Kept Profitably; Nature's Method of Superseding Produces Five-cent Queens.

BY J. E. HAND.

Notwithstanding the amount of space that has been devoted to the subject of requeening, there still seems to be a diversity of opinion upon the subject. It is safe to assume that no up-to-date bee-keeper would choose a played-out, run-down, and weakened queen from which to rear queens to stock his apiary, and yet that is just what is advocated by those who oppose the system of requeening. It is true that an all-wise Providence has planted deep down in the nature of the honey-bee the instinct to supersede a failing queen as a means of preventing the colony from becoming hopelessly queenless. In this as in all things else we recognize the wisdom of the Almighty; and yet is there any good reason why man should not step in and improve upon nature's methods of supersedure as well as upon a thousand other things that nature has given us? It is true that some colonies will supersede their queens, even before the apiarist can detect any failure of the queen. If all colonies were alike in this respect there would be less cause for man's interference; but, unfortunately, some colonies will make no attempt to supersede a worthless queen until the

Theilor. Kramer. Goldi. Frey.

NOTED SWISS BEE-KEEPERS.

SWISS BEE-KEEPERS' CONFERENCE AT ZUG.

colony becomes too weak to amount to any thing in the way of storing honey.

The loss from this cause is far greater than is generally supposed. One whole column in a recent number of the *American Bee Journal* was devoted to quotations from eminent authors to prove that a queen lives from three to five years.

The writer of the article to which I allude seems to lose sight of the fact that the question is *not* how long does a queen *live?* but *how long is it profitable to keep a queen?* This whole subject is a matter of profit and loss in which dollars and cents are involved. A hen will live from ten to twelve years, and yet the profits from the first year's egg production have been found to be so much greater than any year after, that the up-to-date poultrymen are replacing their hens each year with pullets reared from their best laying strains. A Leghorn pullet, if properly developed and rightly handled, will lay almost constantly during the first year without becoming broody.

A queen is like a hen in that, after laying a certain number of eggs (the number varying with different queens), will become broody. In other words, she will begin to dwindle down in laying until her abdomen becomes quite slim. Right at this stage instinct asserts her power for the preservation of the colony, and queen-cells are built, with the result of either a swarm or a case of supersedure, according to the condition of the queen. If it so happens that her powers of egg production are not exhausted, another batch of eggs will quickly develop, and the colony thus thrown into an abnormal condition by having a vigorous queen and queen-cells at the same time will cast a swarm. On the other hand, if the queen still continues to dwindle, and is exhausted, supersedure is the result.

A queen seldom arrives at this condition during the first year of her reign, therefore a colony having a queen of the present season's rearing will seldom cast a swarm. If the above deductions are correct, the idea of requeening each year is not so preposterous as some would have us believe.

In summing up the advantages of requeening each year we find, first, an improvement in our bees as the result of stocking each colony with a young queen reared by scientific methods from our choicest breeder. Second, young and vigorous queens will keep up brood-rearing later in the fall, and begin earlier in the spring, which means a strong force of bees for winter and a strong colony of workers for the coming harvest. Third, the queens being bred from one mother will be uniform, and will be likely to give uniform results in honey production. Fourth, there will be no weak or queenless colonies, and every colony will be able to give a good account of itself. Fifth, there will be no swarming—at least, none to speak of. Sixth, those who advocate requeening the second or third year will have swarming and more weak colonies in the spring. There is a class of bee-keepers who recognize the importance of requeening, but don't like to do the work that is necessary in order to rear the choicest queens, preferring to rear five-cent queens by simply removing the old queen and trusting to luck for the rest, and are laboring under the de-

lusion that they are improving their stock. It does not require an expert to decide that such a method is open to serious objection.

My bee-keeping friend who may read these lines, it is for you to decide whether you will allow your apiary to deteriorate as a result of natural supersedure or whether you will keep your queens until they begin to fail, meanwhile overhauling every one of your colonies four or five times every season to see if the queens are beginning to fail, and finally have the most of them do their own requeening in spite of your misdirected efforts to help them, or whether you will make a sure thing of it once and for all by requeening your apiary each year at a trifling cost, and greatly increase your profits by bringing your entire apiary to a higher state of permanent productiveness. I say *trifling* cost, because with the right system and a very simple equipment any bee-keeper can rear his own queens and have them fertilized without having any nuclei; and no colony need be queenless for a single day except the ones that start the queen-cells, and these not over 48 hours. This simple method is fully explained in GLEANINGS, Dec. 15, page 1586.

THE QUEEN'S RELATION TO THE SWARM PROBLEM.

It should be understood that there are other forces that govern the real act of swarming, in a far greater degree than the mere presence of queen-cells; and unless these conditions are present there will be no swarming; and the queen, quickly passing the broody stage in which the mother instinct predominates, will quickly destroy every queen-cell that lies in her path, and she will find them all. I confess the above is not orthodox as compared with the text-books; however, I submit it as the most reasonable theory that has yet been advanced as to why queen-cells are constructed, and why a queen will allow queen-cells to remain in the hive at certain times and not at others.

In conclusion, Doolittle is certainly right when he says that natural supersedure is one of nature's plans. The question is, do we want nature's methods in their crude form, or do we want nature's plans modified and improved by man's reason and ingenuity until the objections are all eliminated like a rose without thorns?

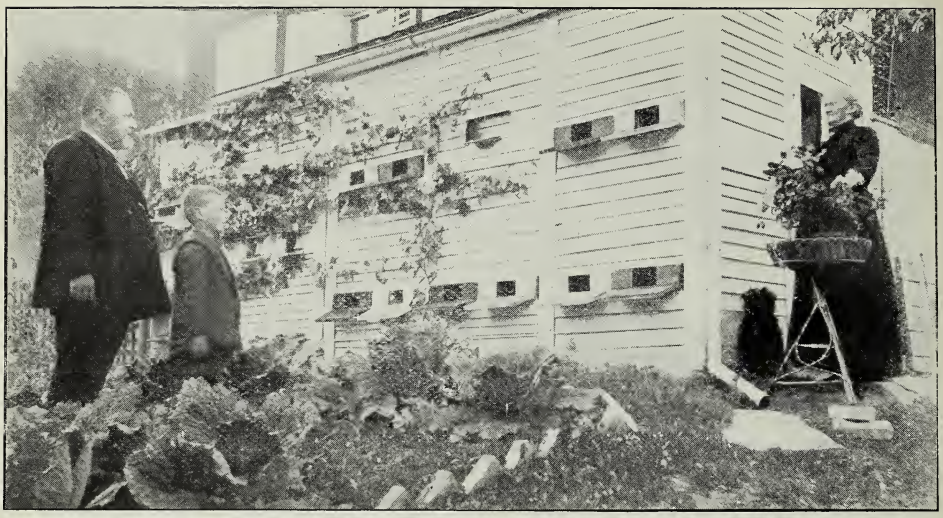
Birmingham, Ohio.

THE WHITNEY V. THE MILLER BEE-ESCAPE.

BY WM. M. WHITNEY.

I note what is said in Stray Straws, Jan. 15 and Feb. 1, about the Miller and Whitney bee-escapes for outside use, and would like to make an explanation of the working of the one bearing my name, illustrated on page 1150, 1907. The escape, of course, can be made to suit the needs of the apiarist. My business being comparatively small, and the matter an experiment, the escape-box was made of thin stuff large enough to cover six supers of sections resting on their sides crosswise on a table and about ¾ inch apart. The box, or cover, telescopes over the supers and rests on the table so that the line of escapes is at right angles to the line of supers—whether the supers should rest on the side or end depending, of

SWISS BEE-STATION AT SIGGENTHAL.



SWISS BEE-STATION AT ZELL.

course, upon the way sections are put in supers. The reason of this will be evident to all.

The escape-cones being in a row lengthwise through the center of the cover, and about ½ inch above the top of supers, afford the only light into the box, thus attracting bees to the exit. It is amusing to see the bees rushing out faster than is possible to count them. I tried the mosquito-netting with escape; also cloth, but there seemed so much light where not needed that it did not work well; but when the above method was tried, it worked like a charm. In mid-summer the bees are not disturbed in their exit by outside bees; but late in the season, when the honey-flow is slight, they are likely to be. To prevent this I constructed a hood, or cover of thin stuff with wire-screen top, long enough to cover all the cones, 4 inches high and 4 inches wide. It is very light, easily handled, and when put over the cones it will be filled with bees from the box below every 10 to 15 minutes. When it is lifted, and turned upside down, it is amusing to see the bees leave for home.

Now about your comments as to the loss of young bees. Did you ever notice nurse bees not old enough to mark their location occupying supers of sections? It is possible that a few might be found there; but I think it a rare case, as their work is among the larvæ in the brood-chamber. It was seldom that a dozen bees could be found after emptying half a dozen cases. In any event they should be shaken in front of any hive desired without fear of their being molested.

I think if Dr. Miller would try the above-described escape he would be pleased with it for outside work. It is not expensive. As he suggests, any bee-keeper can make it, or, possibly, find a box at some store, the right size; that is what mine was. The cone-escapes he can make himself at less than 10 cents a dozen, which can be tacked to the top of the box, or can be made in the form of a loose escape, as mine was, to slide into a space provided for it, in which case it could be removed when not needed to protect it from the weather, while the box could be left outside. I regard such an appliance as essential as the solar wax-extractor.

Evanston, Ill., Feb. 20.

SWISS BEE-STATION AT BERN.

CURING ALFALFA UNDER HAY-CAPS.

[The article which follows is copied from *Hoard's Dairyman*, of Ft. Atkinson, Wis., one of the best agricultural papers of this country, and the standard authority on dairying. The editor has had much experience with alfalfa, and knows the value of hay-caps. With hay-caps it is unnecessary to cut the hay before it is ripe.—W. K. M.]

The first crop of alfalfa is very difficult to cure. The time of year when the first crop of hay is made is usually moist, and the hay is invariably sappy and heavy, all of which hinder the rapid and proper curing of the hay. By the use of the hay-cap, alfalfa can be cured better, even if the weather be dry; and if it rains considerably the crop can be saved, which is very apt to spoil unless protected by the hay-cap.

We cut our alfalfa in the afternoon, and it is cocked up the next day. The first night's dew does not hurt it, and we want the leaves to wilt before cocking. They should not be permitted to become dry, for if they do the hay cures much slower, for a large part of the moisture of the stems passes out through the leaves if not permitted to dry.

The cocks should contain from 75 to 100 lbs. of hay, and, on the average, it requires four days to cure it after it is put in the cock. When cocked the hay-cap is put on. Of course, much depends upon the weather conditions. The hay, while in the cock, should go through a sweat, which helps to cure it and prevents it from going through the sweat again in the mow. Just before the hay is to be put into the mow the cock should be spread out for a few hours to the sun and wind. It should not be left so long that the leaves will become dry and break off in handling. The cloth in the cap is made from A sheeting torn into pieces 40 inches square, and to each corner a large washer, weighing about half a pound, is tied. These washers may be obtained at any hardware store.

The weights that are attached to the corners of the cap tend to keep the cloth tight over the hay; for as the hay settles, the weights drop closer to the ground. To shed the water well the cloth must be kept smooth and free from wrinkles, and to accomplish this the weights, when the caps are put over the cocks, should be several inches from the ground. This method gives the weights an opportunity to pull down constantly on the four corners of the cap.

Some have recommended that pegs be attached to the corners of the cap, and hook them into the hay to hold the cap over the cock. This system would be all right if the cock of hay did not settle; but since the hay through settling would soon pull away from the cap, enough to loosen it materially and cause more or less pockets and folds in the covering, we do not recommend this method.

It might be added that the hay-cap serves equally well in the curing of clover hay. The advantage of the hay-cap is not only valuable in protecting the hay from rain but from the sun as well. The hay can be put up into cocks when it is green, and cured in the shade, which is better than drying it out in the sun. Hay cured this way is more palatable, and retains more of the leaves, because they do not become brittle and break off. The leaves of the hay are the most valuable part of it, and any system that tends to cure them properly, and prevent losing them in the field, is, in our estimation, worth practicing.

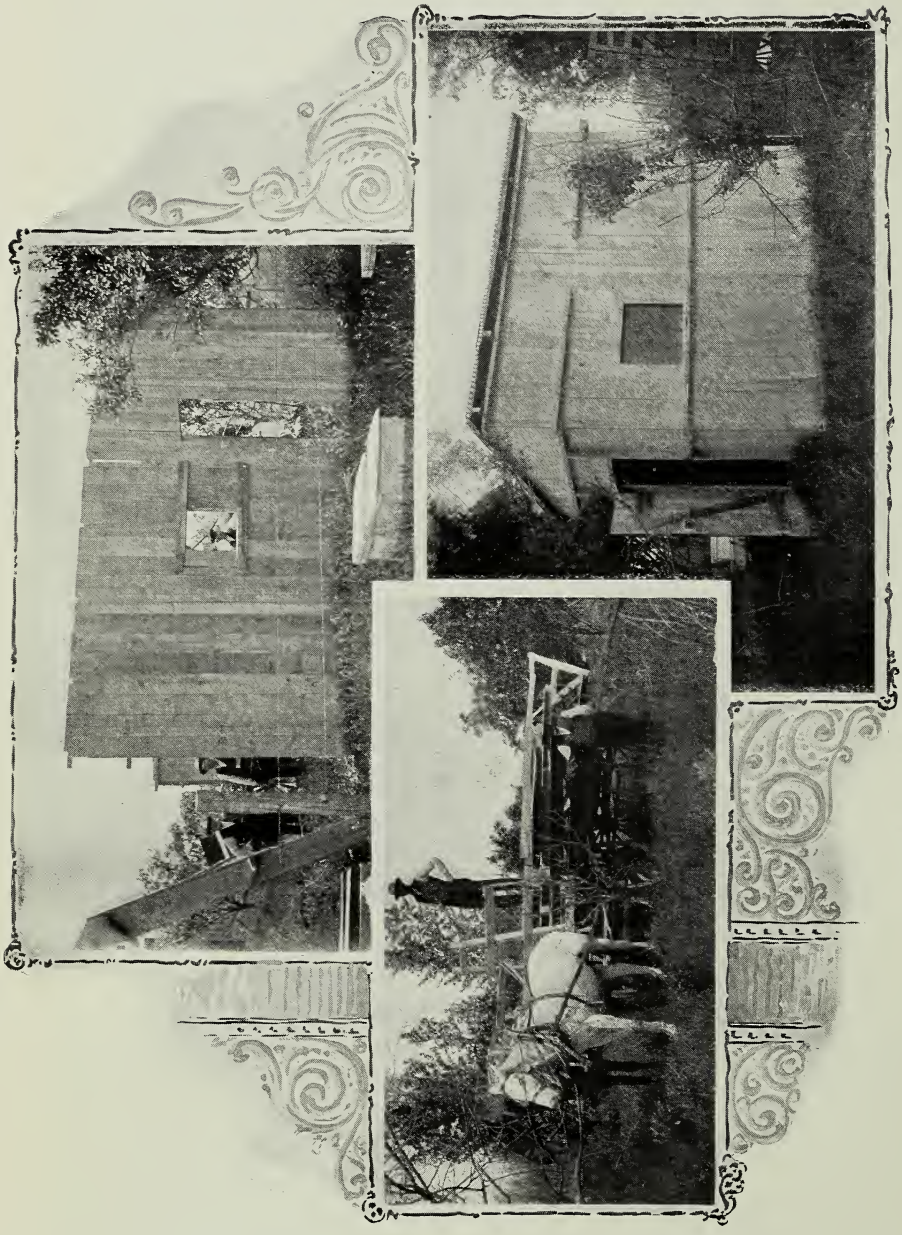
CLOVER IN COCKS AND COVERED WITH HAY-CAPS, ON THE FARM OF M. T. WRIGHT, WISCONSIN.

A SIMPLE, PORTABLE TAKE-DOWN BEE-HOUSE OR SHOP.

BY E. F. ATWATER.

We have had too much experience with the system, if such it may be called, of hauling a tent and outfit to the out-apiaries. We have gradually abandoned that plan, as we are fully convinced that it is much more economical, and pleasant for all concerned, to have a building and the few necessary tools at each yard. When we began building shops for the out-yards we adopted the plan of the Townsend take-down houses, as described in GLEANINGS some time ago.

There are a few faults in the plan of the Townsend houses. First, they should be built higher, as more storage room for supers is cheaply added by making the building only two or three feet higher. The second fault is that the sills, etc., project *inward*, so as to interfere with piling supers closely against the wall. After building two Townsend shops we found that we needed



E. F. ATWATER'S TAKE-DOWN HOUSE AND SHOP FOR USE AT OUT-YARDS.

The illustration at the left shows the house in the flat, loaded on a hay-rack ready to be hauled to an out-yard. The view at the top shows a side and end panel set up. The bottom cut shows house when put together. Note that the sills, or 2 x 4's, are nailed on the *outside* to give clear piling room *inside*, and also more room. The panels are held in place by bolts passing through the intersecting ends of the 2 x 4's.

two or three more small buildings for storage at the out-yards; and as the yards at which they are to be used contain only about 100 colonies each, we decided on buildings only 10×12 feet, with the frame on the *outside*.

The cuts will make the construction clear. Each side and end is made in one piece with shiplap running vertically. The roof is in two parts, and covered with rubberoid roofing. The door is 3×6½ feet, while the window is about two feet square. The cost, including a carpenter at $4.00 for one day, is about $30.00 each. Such a shop will hold six or seven hundred comb-honey supers, or half as many full-depth extracting-supers. One illustration shows the house in the flat on the hay-rack, just after arriving at the Linder yard. Another shows the house in the yard, about half set up. The third shows the house complete, with just a glimpse of the apiary at the right, and part of our hive and super-hauling rack at the left.

Meridian, Ida.

[This is one of the best-designed buildings that has been submitted to the bee-keeping public. The plan of putting the 2×4 braces on the outside, and bolting them together at the ends, is good—very good.—ED.]

WAX-RENDERING.

The Hatch-Gemmil Press versus the Hot-water System.

BY J. L. BYER.

During the past few years considerable has been written regarding wax-presses and the different methods of rendering wax; and it may be the opinion of some that these subjects are somewhat threadbare, and lacking of interest at the present time. However, it is a fact that, notwithstanding all that has been said and written, a large number of bee-keepers are still doing without a press, and annually *throwing away* lots of good wax which could, with a very little outlay, be saved; and the work of securing this larger amount of wax would not be nearly so great as is the case in securing a much less amount without a press.

In this connection, thanks of the bee-keepers are due such men as Hershiser, Gemmil, Hatch, and others for calling our attention to the frightful waste of beeswax, unavoidable with the processes of wax-rendering as practiced in past years.

My first experience in trying to get wax from old combs has, no doubt, been duplicated by nearly all bee-keepers, and the results were of such a nature that it is not to be wondered at that we rather dreaded the job and often allowed such combs to be destroyed by the moths, consoling ourselves with the thought that "there was not much loss anyway."

The first press that it was the writer's privilege to use was one built like the Root-German steam press, only considerably smaller. When this press arrived we thought the problem of rendering the old combs was solved; but after a couple of days' trial our enthusiasm waned quite rapidly, as it was found that, for any large quantity of material to be handled, it would take weeks of work to finish the job; and as we came to the conclusion that our patience (to say nothing of our time) was not equal to the occasion, the machine was voted a failure.

We next purchased a press of the Hatch-Gemmil type, and have ever since used the same with pleasure and profit; but before giving any more particulars about this style of press I will give my experience with the Root-German steam press.

It will be remembered that Mr. F. Greiner, some time ago, wrote up his experience with this press in the columns of GLEANINGS, stating that he was almost tempted to give up trying to get the wax out of old combs, as the most wax he could get in a day with the steam press was about 15 pounds. Seeing this, Mr. J. F. Davison, of Unionville, Ont., asked me to try his Root-German press and see how much wax I could get in a day from old combs. In his opinion Mr. Greiner's estimate was about right.

To make a long story short, in the short time we used the press, results were much in accord with Mr. Greiner's experience; *but* before the *day* was up we had caved in the bottom grates of the machine. Quite a few have had this same experience; and, if I remember correctly, the senior editor of GLEANINGS reported something of the same nature. Used as it is supposed to be handled, for any great amount of combs, this machine is not to be recommended as it is too *slow*; but it will get the wax all right if one is not particular as to time. A number having these presses first melt up the combs in a wash-boiler or kettle, and then put the mass through the press; and, while this works fairly satisfactorily, yet there is a likelihood of putting in too much at one pressing for good results, and, as previously pointed out, there is the danger of putting on too much pressure and bursting the machine.

After using the Hatch-Gemmil press for some time, the claims of the Hershiser and other hot-water presses coming into prominence we started to save the slumgum from our press; and during the past four years we have accumulated quite a pile of this article. The treatment of some of this slumgum with one of these hot-water presses has, in connection with the requests of some bee-keepers, led to the writing of this article.

The press I have been using during the last week is constructed on the principle of the one described by Mr. Holtermann in GLEANINGS a short time ago, only the one I have is much stronger than the machine referred to. It is practically the same system that is used by Mr. Hershiser, only Mr. H.'s machine stands right on the stove or furnace, while the one I used has the mass of stuff to be pressed first heated in another vessel, then transferred to the press, all then being surrounded and covered with boiling water. An enormous pressure is applied by the two-inch screw with a four-foot crowbar as a lever; and just here I wish to remark that the screw as ordinarily used in the Hatch-Gemmil press is not, in my opinion, strong enough to do good work in pressing three or four cheeses as it is called to do if said press is worked over into a hot water machine, as is recommended by some. Three hundred and eighty pounds of slumgum was treated; and, by the way, that amount of material, thoroughly dry, makes quite a bulky pile of stuff to

handle. From this amount of slumgum we got 54 pounds of wax, or about 14 per cent.

This seems quite a large percentage, and I admit that I was surprised at the amount of wax obtained. However, those figures do not indicate that 14 per cent of the wax was left, as the 380 pounds of slumgum was the residue of 520 pounds of wax previously extracted. In other words, out of 574 pounds of available wax, 54 pounds, or about 9½ per cent, was left in the mass.

Then, again, some of this slumgum was saved at a time when I was not using the press in a proper manner; and it was noticeable that the slumgum of this winter's saving did not yield as much wax as did that of four years ago.

As nearly as I can figure, the way I use the Hatch-Gemmil press at present I have about 8 per cent of the available wax in the slumgum. I say "available," because I find that, with any process, some wax will be left; and, after repeated pressing for two hours under hot water, minute wax globules would continue to rise to the surface while using the hot-water machine.

In using this type a large amount of reserve hot water is absolutely necessary. We used a large agricultural furnace for heating and dissolving the slumgum, and an oil-stove kept a large boiler of water hot; yet our hot-water supply was not nearly plentiful enough. Four days' time was occupied in getting that 54 pounds of wax; so when fuel for the stoves is counted there is no great margin for handling the stuff. No doubt those who make a specialty of handling large quantities of slumgum have better facilities than we; but 100 pounds, or thereabout, is as much as we could handle in a day. The four days mentioned included the remelting of the wax.

Mention has been made of not using the press properly, and I wish to say that such is quite possible with the hot-water machine too. Before being shipped to me a friend had used this press in rendering quite a quantity of combs into wax. He obtained only a little over one pound of wax to every five Langstroth combs; and I am convinced that he made the cheese too thick, as on an average three Langstroth combs should yield about one pound of wax. Formerly I filled the form *too* full when using the Hatch-Gemmil press, and I now see the mistake of that course. As I use the press now, care is taken that the pressed cheese be not over ¾ in. thick. When pressed it should be quite dry; if over ¾ inch thick, and mushy, you are leaving a lot of wax. You will leave enough anyway.

It is advisable to have leather straps on top of the follower; and, after pressure is all on, reverse the screw, lift out the follower, and saturate the mass with a couple of dipperfuls of water. Replace the follower and press again, and with ordinary care a good job is assured.

A number have asked me what press I would get if buying now; and in answer I can only say that each will have to use his own judgment. Certainly for the bee-keeper with a few colonies I would recommend a press of the Hatch-Gemmil style. With the extensive bee-keeper it may be a different matter; but personally, even if I keep the hot-water machine, I shall certainly not discard my old standby, the Hatch-Gemmil—at least not until I see things differently than I do now.

Just a word as to the quality of the wax obtained from this slumgum. When we consider the nature of the stuff handled—moldy, mussy, and some of it as black as lampblack, believe it is casting no reflection on the hot-water system when we admit that the wax obtained is of very poor quality. Of the 54 pounds, 25 pounds has been melted twice, the rest once since taken from the press. Even the 25 pounds is very dark, and the smell of it is strong, not at all like the aroma of ordinary wax. While I expect to be able to sell it, yet I would not think of sending it to the manufacturers who get my wax at other times. If absolutely necessary I can use sulphuric acid, but I will not do so unless I have no alternative. Be it understood I do not blame the machine for the poor quality of the wax, as I am certain that wax from the same source, no matter how obtained, will necessarily be of inferior quality. As yet I have not tried this hot-water press with combs, so I can give no data along that line; but my experience so far convinces me that not nearly as rapid work can be done as with the unheated press. With any considerable quantity of old combs to melt I first run through the old press, and afterward, if necessary, reheat and put the residue through the heated press—i. e., after quite a quantity of the slumgum has been accumulated.

In conclusion let me urge every bee-keeper, even if he keep only a dozen or more colonies, to get some kind of press. He certainly will have it proved to him, after having used it, that it was a paying investment. If he is one of those who get "all the wax" without a press, of course he doesn't need to pay any attention to the advice given. But candidly I don't believe any such bee-keepers live in America.

Mount Joy, Ont.

[Our experience in using the Hatch-Gemmil press has shown us quite conclusively that the plan of pouring hot water over the cheese, and pressing again, though taking less time, does not give nearly as good results as the plan of throwing out the cheese after all the wax possible is obtained by the first pressing, and melting it up again afterward. The trouble with the first plan is that the cheese remains in the same position relatively, and the wax does not have so good a chance to escape as it would if the particles of the mass were entirely rearranged, so to speak. If the slumgum were gone over the second time in the Hatch-Gemmil machine it would take only a little over half as long as the first treatment, and we feel sure that the final loss could be reduced to 3 per cent.—ED.]

BREEDING DOMESTIC ANIMALS FOR BUSINESS.

Crossing Wild and Tame Species to Strengthen the Stock.

BY W. K. MORRISON.

Some fun has been poked at the Texan bee-keepers on account of their method of producing a new breed of bees. In justice it ought to be pointed out that Luther Burbank works on the same lines in producing new varieties of fruits, namely, by hybridizing distinct species of plants, and also by crossing distinct varieties with quite

different characteristics. Dr. Munson, whose work is equal to Burbank's, and perhaps more important, also works on the same lines, having originated a number of splendid varieties of grapes by crossing distinct *species* of wild and tame grapes. Working along such lines they have effected improvements at one jump which would have taken several generations to effect if done by the ordinary way of seed selection. Such varieties are probably much more permanent than those produced by selection.

It is practically the same in regard to animals. Prof. Cossar Ewart has succeeded at one bound in creating a new breed of horses by crossing the horse and zebra. Such an animal possesses great stamina and courage. It can probably live in Africa, where no horse can live on account of the tetse fly.

In this country a cross between the buffalo and the cow produces a remarkably healthy and hardy animal able to resist blizzards, and beefy enough to compare with a Hereford graded steer.

Our most highly domesticated animals are the weakest, and most subject to disease. This is more particularly true of the race horse, which suffers greatly from diseases of the bone. Our thoroughbred cattle such as Holsteins, Jerseys, and Guernseys are subject to tuberculosis in a remarkable degree. Probably the healthiest horses in all America are the two wild ones belonging to the Zoological Garden, of New York. In size and appearance they resemble Arabian or Morgan horses. This shows that, the further we get from the true type, the greater is the risk of weakness. The high-bred English horses were no match for the half-wild ponies of the Boers. They could not stand the "grief" and hardship of a severe campaign. Texan ponies did far better, and there isn't a deal of difference between the so-called wild horses of Nevada and Oregon and the genuine wild horses of Asia.

Our efforts at improvement by selection are not always satisfactory in an esthetic sense. Our asses are very homely, whereas the wild asses are really beautiful, having short ears and elegant forms; our mules are homely; but a natural mule between the ass and the horse, or between the zebra and the horse, or between the zebra and the ass, are really beautiful animals; moreover, they are wonderfully healthy and hardy.

The cattelo is more noble-looking than the bull, and more robust than the buffalo—superior to either for several purposes. It is nearly the same in regard to domestic fowls. The best turkey is the wild turkey or its crosses, either to look at or to eat. The best goose for table purposes is a direct cross of the wild Canadian goose and the common domestic kind.

Our best table fowls are the game which very much resembles the wild chickens of India. The Dorking fowl closely resembles one of the wild species of chickens, and that, too, is a great table bird. Cross these two breeds and we get the best table fowl of all. In other words, our highly domesticated breeds lack stamina and fine health.

Another point is this: By crossing or hybridizing we secure "sports." In fact, every seed produces a new variety. When Burbank hybridizes two species of walnut, such as the Persian and American, every nut he plants produces a sport, or new variety. In fact, he has had ten thousand new varieties of walnuts by this plan.

The so-called "Darwin" tulips are a case in point. These were produced by hybridizing. There is nothing in nature like them. Burbank produced a new species of flower by crossing nicotiana and petunia, and so on.

It is evident that the Texans are only following the lead of the ablest scientific breeders of our age when they cross the Italian, Cyprian, and Palestine bees. It is the quickest way to secure results.

[The crossing of these three varieties was tried in the early '80's; and while the resultant product showed up well in the supers it was very cross—so much so that many apiarists have been trying to breed it out ever since. There was another bad trait in the cross — namely, that it ran too much to breeding out of season. But this very quality that would not be desirable in the North might be valuable in Texas and other warm States where there are long seasons. Moreover, that very crossness also would be less pronounced, probably, than in the North. The principles that Mr. Morrison has enunciated are correct; but the bee-keeper of the North can not afford to get into his strain of bees some of the undesirable traits of the Cyprian and Holy Land bees. In crossing with other strains we should aim, of course, to weed out the bad and keep the good traits. To do this may require the skill of a Burbank. He who succeeds will have a strong demand for his stock at good prices.—ED.]

THE TROUBLES OF AN AMATEUR BEE-KEEPER.

Spring and Summer Surprises.

BY F. DUNDASS TODD.

In April I became suspicious that my venture with duplicate queens was a complete failure, as I noticed the bees seemed to run from one entrance to another as they desired. It was my intention to leave the hives under their winter cover until well on in May, but it so happened the only possible croquet ground was in front of the hives, and occasionally a ball would run right up to the entrances. The children had played daily all the previous summer without a sting, but I felt the risk was too great to run for another year. If a change of location was necessary it ought to be done before the bees became very strong. So about the middle of April I removed the winter covering, which was as dry as tinder, the top of the box having been covered with tar paper. On opening the hives I found that all the introduced queens were missing, and that the bees were carrying the stores to the other side of the hive. Of course, I removed the division-boards. The hives were changed to the new location; and as they would be exposed to all northerly winds they were wrapped up in tar paper. The usual plan of obstructing the free flight of the bees, by boards in front of the entrance, was adopted, and there were really few bees lost by returns to the old stands.

The spring of 1907 was cold and wet, so that building up was very slow. I expected great

things from No. 1, as it had gone into winter quarters in splendid condition with plenty of bees and "millions of honey in the house." No. 2 had done only moderately, but had laid in lots of stores. No. 3 had plenty of bees—far more than No. 2—but had stored very little sugar.

To my surprise, No. 2, the weakest last summer, began to build up first. The best hive of last year followed slowly behind, while No. 3 seemed to stand absolutely still. On account of the weather I hesitated to examine; but in the middle of May I overhauled and found No. 1 almost solid with stores; No. 2 in fair condition, provided clover bloomed by June 1st as usual, while No. 3 had nothing over a day or two's food on hand. To avoid killing the grass on my lawn I had made stands of inch dowel rods passed through scantling set on edge—good stands by the way and inexpensive, but not suited for the Alexander feeders I had on hand. But something had to be done quickly, so I tilted up the front of the hive until it was about two inches higher than the rear, and shoved in a wedge between the bottom and the stand. Then from an old can I improvised a runway for the feed to start it through the entrance. Each night I poured about a pint of warm feed, consisting of equal parts of sugar and water, on to the bottom of the hive, and in the morning it was all gone.

White clover bloomed June 17, being about three weeks late; but the bees paid but little heed to it. But dandelions had bloomed as never before; and while my neighbors were lamenting and wrestling with the pest on their lawns I was content, for my No. 2 hive was fast gaining ground. The bees were hanging out at night, so I added a second body, put three full frames above, replacing below with empty ones.

July 4 my best hive got busy all of a sudden—there was something doing. No. 1 was gaining strength, and even No. 3 was making headway. I put supers on the first and third, though I expected nothing from the latter; but as I was to move at the end of the month I wanted to see what I could do. I was still running in competition with my friend, and desired to be on top.

Then the swarming fever developed; in fact, in that locality swarming seemed to be a mania. I was busy winding up my business affairs and packing furniture preparatory to a long western journey, and every minute was precious. Two more of my friends had followed my example into the bee-world; and since they were at business all day their wives were naturally upset when a swarm set off for the top of the nearest high tree. I got so I hated to hear the ring of the telephone-bell between the hours of ten and six. My own queen-cells were kept cut out, and my queens' wings were all clipped; but my neighbors were less careful. I have already said I never wanted to see a swarm of bees; but the honor has been thrust upon me. My son enjoyed the first one or two he went after, just for the fun of it; but it soon grew monotonous. Sometimes he would be on one side of the village, sweating over one swarm, and before he got back I would be, perhaps, thirty feet above ground, hanging on the stem of a slim tree that I suspected was never meant to sustain the weight of a man six feet in height. However, I always responded when a woman's nervous voice came over the phone, "O Mr. Todd! our bees are swarming, and are settling right at the top of the tree at the back of the yard, just south of the chicken-house. What shall I do about it?" But there was no joy in the task. I always felt like the man who complained of being bothered with cold feet in bed, but the feet were not his.

Even my best hive cut loose one day. Somewhere I had read, or thought I had read, that queen-cells are always on the edge of the combs, and that it is not necessary to dig out all the frames in order to get at queen-cells with the Danzenbaker and similar hives. So once I just tilted back the hives and cut out the cells in sight; but on this occasion two had been started on the face of a comb, and of course I had missed them. My neighbors' bee troubles got too many for me. However, when the shout went up that my bees were swarming I did not hurry any, but proceeded to the hive, cut out the queen-cells, and waited for the return of the fugitives. Next day hive No. 1 played the same trick and got the same treatment.

What did I do with the queens? Nothing, for the very good reason that I never saw them. Theoretically they ought to have been hopping about on the grass in front of the hive; but, although I searched long and carefully, I never found them. They must have got back all right, because these same hives swarmed later in great shape. July 17 I sold out, and agreed to deliver to my successor, who lived eleven miles away. I was to get all sealed honey above the lower brood-chamber. I took from hive No. 2 45 lbs. of chunk honey; from No. 1, 11 finished sections; from No. 3, only one section.

Medford, Oregon.

AGE OF LARVÆ USED BY BEES IN STARTING QUEEN-CELLS.

Do the Bees Ever Use Larvæ that are Too Old when Younger Larvæ May be Had?

BY DR. C. C. MILLER.

When a colony is made queenless, either by accident or design, the bees proceed to rear a queen, more likely several queens, from material already at hand. If a larva more than three days old is chosen, an inferior queen will be the result. Some have held that the bees, in their eagerness to supply the place of the missing queen, will select larvæ more than three days old.

Dr. E. F. Phillips made measurement of larvæ selected by queenless bees for queen-rearing, and by his courtesy I am permitted to give the results herewith:

SIZE OF LARVÆ CHOSEN FOR QUEEN-REARING.

A colony of Caucasian bees was made queenless at 11 A.M. On the second day at 2 P.M there were eight queen-cells started. Their contents were as follows:

Empty	2
Larva one-half size of worker-cell (2 days +)	4
Larva one-third size of worker-cell (2 days)	1
Larva filled worker-cell (4 days −)	1

All these queen-cells were destroyed, and the colony examined again the following day at 2 P.M.

Empty	3
Larva one-third width of worker-cell (2 days)	2
Larva nearly filled worker-cell (4 days)	2
Larva somewhat extended in cell (5 days)	1

All these cells were destroyed, and, two days later, at 2 P.M., the colony was again examined, with the following results:

Larva nearly filled worker-cell (4 days)	4
Larva becoming extended in cell	1
Sealed cell with larva straightened out	3

The ages of larvæ are merely approximate, and are based on the sizes of worker larvæ. Since queen larvæ probably grow more rapidly on account of extra feeding, it is probable that all these approximate dates are too high.

All larvæ were removed from queen-cells, and fitted into worker-cells to determine the size.

As befitting his position, Dr. Phillips has refrained from drawing conclusions, as if to say: "There's what the bees did; make the best (or the worst) of it." Although it is not the easiest thing to draw conclusions that are positive and exact, it will do no harm to analyze some of the particulars, and at least make some deductions.

Looking at the lot of eight cells mentioned at first trial, I fancy I hear some beginner say, "There's at least one case in which the bees made a bad choice, for the age of the larva is given at four days, plus, which no doubt means something more than 4 days old. If three days is the oldest that will do for a good queen, then certainly the larva in question must have been too old by more than a day." Not so fast, my good friend; don't you see that this larva was not necessarily four days old at the time it was selected by the bees? It was four days old when the examination was made, and that was two days and three hours after the bees were made queenless.

To come to any definite conclusion in this case we need to know just how long after removal of the queen the bees discover their queenlessness and get busy at starting queen-cells. Without looking the matter up, I think my memory is not at fault in saying that not long ago there was some discussion of the matter, both the editor and C. P. Dadant agreeing that it was within a few hours—one of them, if I mistake not, saying it was within the hour, or almost immediately. Let us figure at what time, after unqueening, this larva must have been selected to make it too old. Right here we run against a snag in that "four days, plus." Plus how much? For the sake of some basis to work on, let us assume it means four days plus six hours. Then if it was started when just three days old, it must have been selected one day and six hours previous to the examination. That would be twenty-one hours after the removal of the queen.

But it must not be forgotten that that "plus" might be more than six hours. Suppose we call it 18 hours. Then, if selected at three days old, the selection must have been made nine hours after unqueening.

I am free to confess prejudice in favor of the good judgment of the bees; and, rather than admit any lack in this regard, I would plead the possibilities in the case. It is possible that the bees started the cell within an hour after the removal of the queen, and it is possible that the "plus" may be not more than three hours. That would make the age of the larva at time of selection not more than two days and one hour old.

The majority of the larvæ (four) were less than three days old at the time of examination; so of course they were less than three days old when selected, and may have been less than one day old. The remaining larva was still younger. Of the six larvæ started, then, five were most positively started when less than three days old, and it can not be proven that the sixth was too old, the strong probability being that it was the first one selected, as it was the oldest of the lot. It is very clear that those who say the bees are so lacking in judgment as to select larvæ that are too old do not find the proof of it in this part of the experiment.

The other two experiments are of no practical interest to the man who rears queens only from the first batch started. They are of interest, however, from another point of view, for those who say that the haste of the bees to rear a queen makes them select larvæ too old say also that, if the first lot be destroyed, the bees will have gotten over their haste and will then select younger larvæ. Does comparison of the different parts of the experiment prove this?

The average age of larvæ found at first examination was 2.33 days; at the second, 3.4; at the third, 4.5. Suppose it took the bees twelve hours in each case to discover the need of starting cells; then the average age of larvæ at the time of first selection was 1.83; second, 2.9; third, 4 days. It may be said that, in the first case, the bees would be longer in discovering their need of starting cells than in the other cases. But that can not possibly account for a difference of 2.17 days between the first and the last case. It may also be noted that, while it can not be proven that any larva in the first case was chosen when too old, there is clear proof that in the other two cases larvæ were chosen that, if not too old, were at least older than any in the first lot.

It may be urged that larvæ were older in the second and third cases than in the first. Yet at the beginning of the third period the queen had been removed just three days and three hours, and so abundance of young larvæ must have been present, the youngest being only three hours out of the shell.

I submit that the experiment does not prove that bees when made queenless select larvæ too old; nor that there is any gain by destroying the first lot of cells started and giving the bees a second chance.

Some one may say, "Well, suppose some one does hold mistaken views on the subject, what matter?" It matters for two reasons. One is that I believe it a libel on the intelligence of the bee to accuse it of doing so unwise a thing as to select poor larvæ when better can be had. That is a sentimental reason; the other is practical. It is that erroneous teaching in this regard is likely to frighten the every-day producer of honey away from what is for him the easiest and best way of rearing queens; and that is not only a practical but a very important thing.

I doubt if there's any ground for the error except prejudice. Prejudice, however, takes a powerful grip on one. There's Editor Hutchinson, a man who has sometimes shown himself the personification of unprejudiced fairness, who holds tenaciously to this error, with no inclination to set himself right, and to do justice to the bees. I have coaxed him, I have defied him, to make a very simple experiment that I think would convince him—simply to unqueen a colony, and then look 24 hours later and say how old were the larvæ he found in queen-cells. Then he

could return the queen. The experiment would cost him little; but, no! he falls back upon his old experience, real or supposed, and says he has tried it; and he reared poor queens. Well, I've tried it, and I've reared good queens. But neither of those two things is exactly to the point. Let Mr. Hutchinson give us something in the way of clear proof that bees made queenless are in such haste to rear a successor that they use bad judgment in their selection, or else stop maligning the bees.

Marengo, Ill.

EXTRACTING-TOOLS.

How to Prevent Robbing when the Extracting is Done During a Honey-dearth.

BY E. D. TOWNSEND.

The tools for the yard work in harvesting a crop of extracted honey consist of a Daisy wheelbarrow, two empty hive-bodies, two Coggshall bee-brushes, one of the latest four-inch smokers, and three robber-cloths. The last named are nothing more nor less than cloths two or three inches larger than the top of a hive with sticks, nailed on each long side. One of these cloths is laid over the hive after the cover is removed, to keep out the robbers; and as it is quickly rolled up far enough to take out a frame, and then rolled back, the whole top of the hive is never exposed at one time. The cleats for the two long sides of the cloths are made of pieces of lath 20 inches long. One edge of the cloth is wrapped entirely around one of the pieces, when a second one is laid on top of the wrapped lath, and nailed. The cloth now comes out between the two pieces of lath, and is thus firmly secured. Two more pieces are nailed on the other side of the cloth, which makes it complete. The sticks must, of course, be on the long side of the cloth rather than on the ends, so that they will be parallel with the top-bars. In this way it is very easy to roll the cloth back just far enough to lift out a frame.

In removing the honey from the hives the row furthest from the extracting-house should be begun on first, so that it will not be necessary to work at any time in front of the disturbed colonies; for if the work is done when there is no honey coming in from the field, robbers are always troublesome. Place the wheelbarrow back of the hive and put one of the empty hive-bodies on it lengthwise so the frames may hang parallel with the barrow to prevent unnecessary swinging and shaking. The other hive-body should be placed at one side of the colony, leaving a space between for the operator. When the hive is to be opened, the smoker should be working well; and as soon as the cover is removed the bees should be given a gentle puff of smoke. If too much smoke is given, bees become demoralized, some flying out and others running across the combs, so that the results are not at all satisfactory. There should be no smoke blown down between the combs, therefore, until most of the bees have run off the top-bars of the frames, and started down toward the lower part. When bees are once started properly, there is no trouble in keeping them going, especially if the honey is all capped (as it should be), for the idea is to keep the bees ahead of the smoke as much as possible. When about three-fourths or more of the bees are smoked out of the upper story this should be quickly lifted off and set on the empty body that has been placed near by for the purpose. It is important to be quick about this, so that none of the bees may have time to run back. If there are more stories to be taken off, repeat the whole operation, setting additional stories on top of the one first removed. When the first story is taken off, quickly cover one of the hives with one of the robber-cloths, as the bees will soon "boil over," when there will be trouble in putting on the cover without killing the bees. Having the bees nearly all smoked out, a comb should be lifted with both hands and then held over the entrance of the hive. In that position it may be held with the left hand in the original position while the right hand holds the brush. A slight turn of the wrist exposes either one side of the comb or the other to the brush. This part is clearly illustrated by the engravings, pages 1244, 1245, Oct. 1, 1906. Two sweeps of the brush on either side of the comb are usually sufficient to remove the bees with the exception of a few stragglers next to the bottom-bar, which are allowed to pass out through the bee-escape on the honey-house windows later. As fast as the combs are brushed they are put into the hive-body on a wheelbarrow. If the first three combs are placed at the furthest side of the bodies, the further edge of the robber-cloth can be lifted up to get them in; but it is best to put the five other combs in from the front by lifting the front edge of the cloth. As a full upper story will yield about 50 lbs. of extracted honey, we wheel in only two at a load.

One great secret of success in extracting when there is no honey coming in from the field is to keep *all* honey away from the bees while it is being handled in the yard. Another secret is to avoid giving combs wet with honey back to the bees while the extracting is going on.

If it is desirable to return these combs to the bees for any purpose, they should be given just at night, when they will all be cleaned up by morning so that there will be no commotion.

The honey should be extracted almost immediately, so that it will not have time to get cold. In order to work to the best advantage there should be two operators in the extracting-house, and one to take off the honey and wheel it in. All honey to be extracted should be piled up near the uncapping-tank. While one person does the uncapping, the other turns the extractor and handles the honey, although sometimes the uncapper has time to help a little in some other work.

When uncapping, the end-bar of the comb should be rested on the pivot or point in the cross-piece of the uncapping-tank. It is best to use a long uncapping-knife, commencing at the lower end of the comb, and cutting deep—down even with the wood—with a drawing motion. As the knife reaches the middle of the frame it will be necessary to hold the comb nearly vertical to prevent the cappings from falling back on the comb instead of directly into the capping-

box below from the outer edge of the knife. If the work is done well, the cappings, many times, fall down in one whole sheet.

While it does not take any great skill to operate the extractor, one should be careful, especially when the combs vary greatly in weight, to put them into the baskets in such a way that the reel will be as nearly balanced as possible. Where there are several combs to select from, one can usually pick out the ones that will balance the best, and, after the first two or three turns, the weight will be so equalized that the reel will run almost as evenly as if the combs were of the same weight in the first place.

Remus, Mich.

NATIONAL CONVENTION NOTES.

Diseases of Bees to be Discussed.

One of the most serious disasters thet can visit an apiary is that of foul brood, either American or European. All should be constantly on the watch for it. Every bee-keeper ought to be able to recognize it instantly, and know exactly what course to take when it is found. Not only is foul brood a great misfortune to the owner of the diseased colonies, but it is a serious menace to surrounding apiaries.

For these reasons, one whole session of the National convention is to be devoted to the discussion of diseases of bees. Dr. White, of the Apiarian Department at Washington, has consented to take up the bacteriological feature; show us how cultures are made and the diseases propagated, etc. Some one of the inspectors will tell us how to detect the diseases, another how to treat them, etc.

BEE-KEEPING IN HAWAII.

We bee-keepers of the United States might be surprised if we knew all about the keeping of bees in Hawaii. It seems that Uncle Sam thought it of sufficient importance to send a special agent, our friend Phillips, of the Apiarian Department at Washington, out to these islands to investigate this industry. He spent several months studying the industry, and we have been fortunate enough to secure his promise to tell us, at the coming National convention, all about the bee-keeping of Hawaii, illustrating his talk with stereopticon views taken while at the islands. Those who are fortunate enough to be present may expect a treat.

LIVE-BEE DEMONSTRATIONS.

Few things will attract and hold a crowd better than the handling of bees in a wire-cloth cage. A good demonstrator can do very effective missionary work at such times, or, if at a fair, large quantities of honey may be sold at such demonstrations. Of course, to a bee-keeper, the handling of bees is no novelty, but not every one of us knows how to handle bees in a cage in the most successful and agreeable yet novel manner, hence it will be interesting to know that E. R. Root has consented to bring a cage to the National convention, and give an actual demonstration of how he makes this exhibition.

W. Z. Hutchinson, Sec.

Heads of Grain
From Different Fields

SWEET AND ALFALFA CLOVER IN ALABAMA.

When I first came south I thought that sweet clover would grow anywhere—that all I had to do was to scatter some seed and the work would be accomplished. Accordingly, I got a bushel of seed and scattered it freely in the woods and out of the woods. I cleared a small patch of level land and put it in, feeling confident I should soon have honey from it; but to my great disappointment I got nothing. In a few places it germinated, but soon dwindled and died. Early in the following spring I prepared a small piece of ground near the house, where it was very strong, and it came up nicely, grew most luxuriantly, and I felt sure I had gained my point, thinking what was needed was good rich soil to start in. When it was in full bloom, before it made seed I cut it, thinking the second crop would make the seed. I had seen it cut at all times in Illinois, and it always started again. In fact, no one thought of killing it by mowing; but to my sorrow my crop died just like oats or wheat. I was annoyed and perplexed, and I never tried it again. I have concluded that I should have mowed it above the first branch, or else allowed it to mature its seed.

I also tried alfalfa, but it died out. However, it was sown on very poor soil. Our subsoil is very dense, and I think the tap root of both these clovers finds that too hard to penetrate. Cow peas do remarkably well in this soil. Would the roots of the pea inoculate the soil for the clovers? If any one has succeeded I should be pleased to hear from him. E. B. Ellis.

Hanceville, Ala.

A SAFE PLAN FOR INTRODUCING A VALUABLE QUEEN.

Having made several failures, and losing many valuable queens when following the regular plan sent with cages, I at last stumbled upon a plan like the others, yet enough different to make it worth telling. The plan is as follows:

After preparing and getting the colony in condition for the valuable queen I first put a queen-guard or trap in front of the entrance to make sure no flying virgin can get in. I then catch the queen from this colony, close the hive, and set it on a new location which can be near by for convenience. I set another hive-body, of similar appearance, on the old stand, and put some of the brood (two or three frames if plenty of brood exists) in the hive on this original stand. Quite a lot of bees will return to the old stand. Of course, I do this when robbing will not be bad, and I put weeds, grass, or leaves about the entrance to keep robbing down. One full comb of bees from the first hive after the queen has been caught will keep down the robbing unless it is during a honey-dearth, when it would be hard to prevent it. Two or three days after this is the best time I find to introduce the queen to the original colony moved to the new location. The zinc is very important, as a virgin queen might otherwise take possession of the hive, and the queen would never get out of the cage.

This is a modification of several plans, and only a slight modification of Dr. E. Gallup's plan given in GLEANINGS in 1881.

I came across this a few days ago when hunting something on safe introduction of a valuable queen.

This plan is intended merely for breeders of very valuable queens that one wishes to introduce without fail. It is too much work, as a general thing; but one can afford to take extra precaution with a very fine queen.

Lewisburg, Miss. W. T. LEWIS.

HERMAPHRODITE BEES; THE PUPA OF A DRONE THE WRONG END TO IN THE CELL.

Yesterday evening I opened a hive to see the progeny of a queen recently purchased. The young bees have been maturing for fully a week now, and I saw something which rather knocks me out. It was a bee with a worker head and body, and the back part drone. On further examination I found another with the back part seemingly half drone and half worker; then further on I found another the same as the first, with worker head and body and the back part drone. In those cases where the two were alike, the back or drone part is all yellow; whereas the one half-and-half was yellow down the one side, and marked like an Italian worker on the other. The worker prog eny are all nicely marked, three-banded, and light.

Another strange thing I saw this spring (but it was only a freak) was a drone which, when turning endwise when in a larval state, had turned his head toward the center of the comb. It was in worker comb, and, after maturing he died. I happened to notice that the workers had the mouth of the cell open and eaten away for some distance down the side of the drone. I took him by the wings and pulled him out, but it took quite a tug. You will understand that his shoulders, being too large for a worker-cell, caused this. D. CHALMERS.

Poole, Ont., June 23.

[Once in a great while there will be a queen that will produce hermaphrodite bees or drones. Almost any queen-breeder, if he does any business in queen-rearing, will see cases of this kind two or three times in a season; but it is very seldom that a honey-producer runs across it, and hence it is nothing strange that you should not have seen it before. It is very rarely that one finds a worker or drone with its head wrong end to in the cell. You will probably never see the like of it again.—ED.]

SHADE FOR BEES; COLONIES DO BEST IN UNPAINTED HIVES THAT STAND IN THE SUN.

My bee-yard 33 years ago was in a young apple-orchard, and about half my bees were placed in the shade, or partial shade of the trees, and the rest in the open. As the years passed on, and the colonies that stood in the shade died, others were transferred to their places, and so it went on for about ten years when I stopped replacing the dead colonies that stood in the shade, and from that day to this all of my bees have stood in the open sunshine; for, looking backward, how sorry I feel for those bees in the shade! They were doomed—they had no chance. Those bees in the shade made but a small surplus, and at best were short-lived in comparison with those in the open. Since then I have taken note of other bee-keepers who kept their bees either in the shade of trees, vines, or bee-houses, and invariably, as they termed it, were "having such bad luck with their bees." They would all die out, and oftimes their owners would courageously buy more and try again; but bad luck would continue if they continued the shade. To have success with bees the sun must shine on the hives—preferably unpainted hives—and the bees must be properly cared for besides. Take, for instance, the escaping bees that go to the woods and into hollow trees. It is the same—they are doomed. The great majority die the first winter, and the rest dwindle away the second summer or winter.

I would ask you, Mr. Editor, and the readers of GLEANINGS, to take a backward look into your own past experiences and say if I am not correct.

Plainfield, N. H. H. C. DANIELS.

ALSIKE AND TIMOTHY.

There is a great deal of horse sense in the following excerpt from the *Northwestern Agriculturist.* There is no better crop than alsike and timothy where the climate and soil are suitable. Every bee-keeper who is located in an alsike neighborhood ought to keep the seed on hand and sell it as cheaply as possible. Many of them ought to grow it, both for fodder and seed. Alsike and timothy always sell at the highest prices when properly handled.

There is a growing demand for a combination of clover and timothy for hay and pasture in all sections of the Northwest. The medium and mammoth red varieties do not succeed on low moist grounds as well as the alsike, which also matures with timothy. The feeding value of alsike clover is superior to the medium red variety—in fact, is quite equal to alfalfa in that respect. Alsike and timothy also make a very profitable seed crop in many sections of the Northwest. This is specially true on poorly drained lands where crops of grain are grown with much uncertainty during a rainy season.

The writer has called the attention of our readers on several occasions to the profits arising from growing crops of grass seeds, especially timothy, on fields that are inclined to be wet during the spring months. The wisdom of the suggestion is appreciated this spring by people who have their low lands seeded to the tame grasses. The addition of a quantity of alsike clover seed with timothy increases rather than decreases its selling value on almost every market. Farmers prefer such a combination for hay or pasture, and the seedsman uses them in making his various pasture mixtures. When the alsike clover is ripe and dry, the seed thrashes out from the straw quite as well as timothy with a common grain-separator. This should be speeded high, and the seed crop fed into it rather slowly. In fact, to do an economical job of thrashing grass seeds about half of the crew of helpers should take a rest and enjoy seeing the others work. If the machine is crowded, waste — an expensive and needless waste — is quite sure to occur. Grass seeds will be in active demand next spring at good prices. Save the clover-seed crop in every instance. Fodder corn will take the place of hay, but there is no substitute for clover seed.

MORE IRRIGATED LAND FOR BEE-KEEPERS.

ACCORDING to newspaper report, Mr. E. H. Harriman, the great railroad magnate, has decided to finance a great irrigation project in Imperial County, Cal. The area which will be reclaimed is over 1,500,000 acres of the very best land. The present system of canals in the Imperial Valley will irrigate only 500,000; but this is the largest single system in this country at present. It is one of the finest spots for bee-keeping in the United States, bees being phenomenally successful, as well as fruit-growing and alfalfa hay.

W. K. M.

OUR HOMES

By A. I. Root

Receive my instruction and not silver; and knowledge rather than choice gold. For wisdom is better than rubies; and all the things that may be desired are not to be compared to it.—Prov. 8: 10, 11.

He that is slow to anger is better than the mighty; and he that ruleth his spirit than he that taketh a city.—Prov. 16: 32.

You know, friends, or at least most of you do, that I have a strain of White Leghorn fowls down in Florida that I think promises great things in the way of egg-laying; and before I take up my work again down there, say next November, I shall need a new male bird; and while I am about it why should I not have a pretty good one? While I do not think of going up into fancy prices (for I care little or nothing for high-scoring birds), I should like a male bird whose mother and grandmother were great layers. Well, I have got one—or at least I think I have. I bought him of the Glenolden Poultry-yards, near Philadelphia. Their sole business is to raise "trap-nested" fowls. I paid $5.00 apiece for two cockerels whose mother had laid 220 eggs in a year. Now, before shipping them down to Florida I thought best to give them a careful test this summer here in Ohio. Accordingly I purchased three pullets, no relation to the cockerels, whose mothers also have made a fair record. As soon as they came to hand I gave them one of the cockerels, and set the very first eggs the three pullets laid. Mrs. Root insisted that the first eggs laid by pullets are not good for strong healthy chickens. But I was in a hurry to see how well they would do, and was agreeably surprised to have every egg produce a chicken but one, on the first trial. On the second trial I gave the hen 13 eggs, and she brought out 13 nice strong beautiful chicks; and they are a delight to me to study and watch, morning, noon, and night, and a good many times between.

What we have to do with, however, this beautiful bright morning, is with the first hen that hatched every egg but one. She is a Rhode Island Red, belonging to Mrs. Boyden. I "brought her up" last summer, and she *ought* to be a good young mother; and, in fact, she *was* one of the gentlest and nicest hens I ever saw. When she was sitting I could pat her on the back and admire her and call her pet names as much as I chose; but on the morning of the twentieth day, as soon as I came near her nest I found something had happened. She gave me to understand at once, very decidedly, that from that hour on it was to be "hands off" and no foolishness. In trying to get the eggshells out of the way of the chickens I got so many "digs" that I was obliged to get a bent wire and fish them out. By the way, it certainly is very desirable to have your sitting hens gentle and docile; to have pleasant relations between them and their owner, and I generally do have such a state of affairs. I got along with this hen very well by giving her a wide berth until one Sunday afternoon when a gusty thunderstorm came up very suddenly. She was a rod or two away from her home, under the stairway, and I was quite anxious to get her in and shut down the storm-door before the rain came. When I undertook to drive her she showed fight; then I gently pushed her with my foot; but she had got it into her head that I was after her chicks, and in a little while she became frantic. I finally said, "Old lady, there is no time for fooling, and you might as well understand right off now that you are my property, and that I am going to boss things."

Now, I hate to confess it, dear friends, but right then and there, with a storm blowing almost a hurricane, I had a regular fight with that sitting hen. Yes, and the saddest part of it is I lost my temper. She bit pieces out of the back of my hand, clawed my wrists, soiled the cuffs of my clean Sunday shirt, and was not whipped even then. I finally decided to *choke* her into submission, and so I choked her, as long as I dared to, to make her be decent; but the minute I let up she showed me that she was not whipped a bit. I had an exceedingly plain demonstration of the old saying,

A hen convinced against her will
Is of the same opinion still.

May be my couplet as above is not exactly as it has been handed down from generation to generation, but it hits the point exactly. While smarting from the wounds on my hands, and getting a glimpse of my soiled Sunday clothing, I was most sorely tempted to "wring her worthless neck," and it makes me shudder now, as I think how *near* I came to doing such an inhuman, unmanly, and unchristianlike thing. I was so angry at that hen that it made me shake like a leaf. I tried to collect myself; but while doing so she contrived to get loose, and, either with her head or leg, she managed to give me another vicious dig. But I *did* stop and consider. If I wrung her neck there was a brood of chickens only three or four days old, without a mother, and a storm coming up. Then, again, I reasoned, what could be accomplished, even if I *did* by my superior brute strength crush out her life? As I began to cool off I reflected that her only sin—that is, if animals can commit sin—was the sin of *misapprehension*. She *meant* well; she was defending her chickens as God taught her to do, but she did not *understand*. Oh dear me! How many others are there in this world of ours whose only sin is like that of this mother hen! She meant well, but she had a wrong understanding of things in that little head of hers. I set her down near her home where her chickens were hatched; but although the big drops of rain were now falling she did not see her shelter nor understand *any thing*. She was crazy with rage. She went to scratching in the dirt in a frantic way because she did not know what she was doing. She cackled, and stepped on her chicks until I finally picked her up and placed her by main strength in her domicile; and after chasing the chickens out in the rain I succeeded in getting the last one out of the weeds and under shelter. In this last encounter I felt *sure* I could keep my temper down; but she was so exceedingly idiotic in her frenzy that I actually lost my temper again. I did not hurt her at all. I did not *do* any thing out of spite;* but I was sorely tempted. Let me digress a little.

A few days ago I was thinking I had not been angry for many long months, perhaps not for years, as I used to be; but this provoking sitting

*Be ye angry, and sin not.—Eph. 4: 26.

hen had stirred me up and reminded me that my old temper (or perhaps I should say my old *tempter*) only lay hidden in the background, and I think it must have been hidden by only a *very thin* ambush.

Our first text reminds us that wisdom, or the ability to act wisely under all circumstances, is more to be desired than any thing else this world can offer; and our second one reminds us of the exceeding importance of ruling our own spirits, or keeping that wild demon that seems to be implanted in the most of us, if not all, in complete subjection. Under no circumstances should it ever be let loose. We can excuse a sitting hen or a dumb brute for getting into a frenzy of rage; but no human being should ever let any such impulses from the evil one prompt his actions.

I have not finished with my good friend Biddy, however. A few days later she was hovering her brood in the middle of the road leading from the barn to the street. A team was coming up, and I studied a little how to get her out of the way without a fracas. After I got her chickens out from under her I saw she was determined to fight, and so I gently gave her a "hist" with my foot clear up to one side of the road. Dear me! she came back and right up into my face like a perfect whirlwind. I grabbed her by the legs and caught her by the neck as I had on the former occasion, but not before she opened anew some of the scratches on the back of my hand, and, worse still, stirred up *also* that old temper. I was tempted again to wring her neck and not have such a vicious animal around; but the temptation was not nearly as strong as the former one,* and just now I have got two jobs on my hand. One is to teach this virago of a hen *decency*; and the other is to teach this *quick temper* of mine to behave in a like manner. I can say with good grace to both of these obstacles in my way, "Here! you keep back and down. *I*, through the grace of the Lord Jesus Christ, am going to be master and *ruler*."

Now, friends, this is a simple story. Some of you may wonder why I have told it at all. Well, I have told it because it illustrates humanity. Husbands and wives are quarreling with no more reason than there was why this mother hen and I should have differences.† Over and over again when we look into the matter we find it is misapprehension and misunderstanding. When Satan gets hold of them, men and women often act as silly and foolish as that mother hen.

I told you some years ago of a man who wanted to move a building past a neighbor's house, and it was going to brush some of the shade-trees —may be break off a limb or two. The two neighbors got into a quarrel, and their wives and children became so absorbed in it that they came pretty near staying out in the street all day long, or at least while that house was going by. Lawyers were consulted, neighbors took sides, and it was the excitement of that part of the town for some time. But when they came to consider the matter coolly, they all decided there was really nothing to make a fuss about.

When Huber and I were taking that trip up through Northern Michigan, some people were afraid their horse was going to be frightened by our automobile. A woman got up in the buggy and gave Huber and me a piece of her mind. Before I could stop him, Huber retorted back to her, "We have just as good a right in the road as you have." I succeeded in quieting him; and I hope I convinced him, at least partially, that, as *our* method of conveyance was an unusual one, we had not *exactly* as good a right in the highway as they had, and when things became quiet we found the horse paid no attention to our vehicle at all, and I have found this to be the case over and over again.

There is one thing more I wish to consider. Had I given way to temptation, and wrung the neck of the poor mother hen by my superior physical strength, I should have succeeded in crushing out the life that God gave. I should have, in one sense, won the field, but would I have been any happier by so doing? There are several points to be considered right here. If a burglar breaks into your house at night, with a revolver in his hand, perhaps you would be excusable in taking his life—that is, in self-protection. It may be that the good of the community would demand that he be not permitted to live; but if this is true, by far the better way would be to have him put to death by law; but neighborhood quarrels are quite a different thing. Some years ago in our vicinity two men were quarreling over a very trifling matter. One called the other one a liar; and as it seemed to be the prevailing code at that time, and in that neighborhood, that one should knock a man down who had called him a liar, the other struck him a blow that killed him. In olden times where two men got into a fight the one who "licked" or killed his opponent was supposed to come out ahead. I believe it is not so much so now. If I were obliged to take the place of one or the other of those two neighbors I think I should prefer that of the one who lost his life. The man who killed his neighbor went to the penitentiary for a time; but an intimate friend assured me that his regret and remorse were so great for that act that he had had scarcely a moment's piece of mind since. Many times one is called on to act as peacemaker; but where both parties are in a frenzy of passion it is not only difficult but dangerous. I have heard of cases where one who interfered, with the best of intentions of stopping a quarrel, was either killed or killed somebody else before the matter was ended. I do not know how many temptations policemen have in handling men who are crazy with rage, or perhaps rage and drink together, but I think it very likely they

*Resist the devil, and he will flee from you.—JAMES 4:7.

† I believe MRS. Root is one of the kindest, most sensible, and best-tempered women in the world; yet if I were to be wicked enough to set about it deliberately, I might be able (Satan helping me) to make her as unreasonable and bad-tempered as that sitting hen. Suppose, for instance, I should deliberately and on purpose walk into some yellow clay such as we have here in some places in this part of Ohio, and suppose I should purposely walk over her clean kitchen floor, and suppose I did this again and again, and give her to understand I did it on purpose to vex her. I sincerely hope that none but a drunken man ever did such a thing. But I greatly fear there are men, and perhaps women, who show such a devilish spirit. God forbid, however, that any *woman* be found of that kind. As I was going to say, I fear there are men who, under the influence of Satan, deliberately nag and provoke the women they have before God sworn to love and protect. Well, whenever such a state of affairs comes to pass, nobody knows, who has not been there, what a frenzy of passion *may be* stirred up in even a *woman's* soul. I say "may be," mind you; for God's promises are all sure and true; and where Christ Jesus rules in the heart of either man or woman they will be saved from any temptation that this world has to offer; for "God will not suffer you to be tempted above that ye are able."

find it extremely hard at times to let reason and good common sense rule the day.

The great crying need of the present hour is for men of ability to fill important offices for State and for nation; men who can not be tempted by great opportunities to enrich themselves while they are discharging important public duties; men who can not be swayed from the straight and narrow path by any allurement that this world has to offer. We have had such men, who have lived and died with an untarnished and unstained record, and just now we need more like them—men who can be entrusted with all this world has to offer. How much would it be worth, dear friends, when you come to die, and look back over the record of the life you have lived, to feel that you have merited the precious words of the dear Savior, "Well done, thou good and faithful servant; thou hast been faithful over a few things, I will make thee ruler over many things; enter thou into the joy of thy Lord?"

Well, it is a fact, even if it is a sad one. that it is not only individuals who get into a frenzy through some misapprehension, but sometimes it is great bodies of people—a whole political party or perhaps a great religious denomination, Let me give you one illustration. First I clip from the *Missouri Issue* for June 19.

The official organ of the liquor-dealers' organization in Philadelphia in February last said, "It is the Anti-saloon League and not the Prohibition party which is chiefly responsible for the big conquests which liquor exclusion has been making in recent times. The League has no politics; it works as effectively in Democratic as in Republican communities. All parties look alike to the Anti-saloon League."

As I have been with the Anti saloon League from the very start up to the present time, I think I am in position to declare that the above statement is true. The Anti-saloon League *is* working for the kingdom of God and his righteousness, and nothing else. Now, to illustrate how we are misunderstood, and in a way that seems to me "perfectly *awful*," I want to clip again from this same *Missouri Issue:*

While we are fighting the brewers, the official organ of the Prohibition party, whose editor, by the way, is managing Dr. Palmoree's campaign for the Prohibition nomination for the presidency, both editorially andlin its correspondence, goes after the League, and the following is a sample of extracts from that paper, which have been recently going the rounds of the secular press:

"Damnable dope is local option, says State Chairman Stokes, editor of the Kansas City *Leader*, official organ of the Prohibition party."

Then follows extracts from the *Leader* where the editor of that paper gives it as his candid opinion that the Devil himself could not devise a more damnable dope than local option. Another where he says trying to demoralize Prohibitionists seems to be the principal business of that organization, referring to the Anti-saloon League, the organization which the brewers of this State would rather see broken up than any other opposition they have ever had.

Why, dear friends, is not this all wrong? I can readily believe that it was the Devil himself who suggested using such words to be applied to the Anti-saloon League. It is true that, from the very nature of things, especially in the way the Anti-saloon was started, we can not now pull down our colors and become a political party. We recognize the reason for the existence of that great political party, and God knows we have the kindliest feeling toward them. We are glad to give them all the aid in our power; and as we are working for one common end, and with the great Father above us, why in the world should we not be friends and neighbors, even if we do not see things exactly alike? May God help us all to take a lesson from the poor, mistaken, and misapprehending mother hen, and let reason and common sense rule, even in politics.

THE CANCER THAT IS EATING AT THE HEART OF OUR NATION.

The following is a clipping from the *Temple Appeal:*

The Republican party has held its great convention in Chicago, and nominated a splendid man, William H. Taft, of Ohio, as nominee for President. We have read the Republican platform which Mr. Taft has to stand on. We are sorry for him, and sorry for the Christian voters of the G. O. P. The great subject which is nearest the hearts and homes of America finds no mention in their platform. They dare not touch the cancer that is eating at the heart of the nation—the American saloon. The time is not far distant when the voice of the people of this land will demand a temperance plank in the platform of the party that expects to be voted into power.

To all the above I hope our readers can join with me in a hearty amen.

POULTRY DEPARTMENT

WHY THE EGGS DID NOT HATCH.

"Do you see that nice brood of chickens? Are they not beauties? There are just thirteen of them. That mother had thirteen eggs, and she hatched every one of them; and as they are now over two weeks old, if no accident happens she will raise every one of them."

The above was a remark I made to my sister, Mrs. Gray, while she was looking over our premises; but just as I finished Mrs. Root put in:

"Now, dear husband, you want to show her the *other* hen with only eight chickens (one a cripple), that had nineteen eggs and brought out only the eight chickens."

As there were several standing around (the occasion was on the Fourth of July), it raised quite a laugh at my expense; and somebody suggested that it was doubtless providential that Mrs. Root and I were united together so she could tone down a little my disposition to see the bright things, so that, taking us both together, people could get a fair and unbiased view of this world as it opens up before us. Yes, it *is* true that the very next hen that I set, with exactly the same kind of eggs that were laid after the successful thirteen, hatched only eight chickens from the nineteen eggs. I boiled the eleven eggs that did not hatch, so I could dissect them without having a disagreeable mess of it, and in order, also, to utilize valuable animal food. Some of you may criticise me here; but I have been in the habit of boiling the eggs that did not hatch in the incubator, and giving them to my young cockerels to see if any bad results followed. They became ravenously fond of them, and they seemed to take the place of other animal food to perfection. The practice might teach a flock of chickens to eat their eggs; but if given to a pen of cockerels that are kept by themselves I have never noticed that it did any harm. Now, why did not that next setting, right away after the successful thirteen, give a good hatch? Mrs. Root said I gave the hen too many eggs; but as I had repeatedly been successful with twenty or more I did not think so. An accident

gave me a clew to the trouble. The hen with eight chickens hatched them upstairs in one of the little poultry-houses. One night she climbed the stairs to go back to her old nest. The eight chickens could not follow, so they doubled up with the hen that had the thirteen; and I concluded I would save time by letting them stay, especially as their mother was a borrowed hen; but when I picked her up to carry her home (she belonged to Huber, across the way) she was so light that I uttered an exclamation of surprise; in fact, she was nothing but skin and bones; and then I remembered that, when I borrowed her, about three weeks before, she seemed to have so little weight I was astonished; but I thought that, with plenty of food, and nothing to do but to sit on a nest, she would fatten up all right. But it turned out the other way. She got poorer and lighter still. Why did I give such a poor scrawny hen *nineteen* eggs? Well, I did *not* give her the nineteen. I first had a good large fat hen with the nineteen eggs; but after she went out on a strike and threw up her job I went all around the neighborhood to get any kind of sitting hen; and that is how I got hold of this light one. Now, my theory is this: That hen was out of health, and she could not keep up the proper temperature, even during the last days of June. And the moral I would adduce is this: When you get a sitting hen to do a good job (especially if you are going to give her *nineteen* eggs), get a good big fat hen that has a good constitution and a lot of stored-up flesh and blood to furnish the proper amount of bodily heat when needed. It just now occurs to me that the hen that hatched every one of the thirteen eggs used to get off her nest and stay for two or three hours during warm days. Yesterday, July 5, I noticed a hen that had a little inclosure about her nest, so that the other hens could not disturb her, got off her eggs in the middle of the day, and sat down beside them, instead of over them, for all of two hours; and the sitting hens that do the best work often take almost a "half-holiday" when the weather is quite warm. One very successful hatch came off when the mother was away for a couple of hours when two or three of the eggs were chipped. Of course, the weather was very warm; and although I was tempted to think she did not know her own business, the *result* seemed to indicate that she did. One of the poultry journals has suggested that an ordinary sitting hen has more wisdom in her little noddle than all the great incubator manufacturers and poultry people of the whole wide world massed together; and I confess that I often feel like uncovering my head and sitting down at the feet of a sitting hen when she stands up beside her nest, and tips her little head to one side as if to say, "You may bring on your scientific man and scientific books; but after you have got them all piled up, not all of you together know as much about this business as I do."

DUCKS, APPLE-BLOOM HONEY, ETC.

You may wonder what ducks have got to do with apple-bloom honey; and, by the way, quite a few of the friends have inquired anxiously about my ducks this season. Well, I am *sorry* to tell you I am not in the "duck business" at present —not because I have lost interest, for, in fact, it is just the other way; but it was because I became satisfied that no one should think of keeping ducks unless he is off on a farm or where there are no neighbors very near.

As my ducks became older they seemed to be more and more inquisitive. At first the neighbors laughed at their queer actions, and said they rather liked to see the ducks around. But pretty soon they got to be a little *too* inquisitive. They were not only inquisitive, but they had a fashion of sampling every thing that looked as if it might be good to eat. In fact, I could not get a single blossom from my perennial peas last year because the ducks would, by some hook or crook, snap off the blossom-buds. Ducks are great explorers. Every day they went a little further, and I am just now waiting until I can get off by myself somewhere (may be down in Florida), where I can renew my acquaintance with those odd friends of mine, the Indian runner ducks.

On page 1157, Sept. 1, last year, I told you about my friend and neighbor, Mr. Philip Bohlei and his ducks. Well, he has over one hundred young ones already, and his first hatching has just been sent to market. Last year he got 60 cents each, live weight; but this year the price is somewhat better than that. He is on a good-sized farm, with no neighbors near. The ducks wander into a brook that runs through the woods nearly a quarter of a mile from his house. These ducks almost board themselves this season of the year. If you are interested you had better turn back and read the article I have mentioned. Well, I want to tell you this last day of June that Mr. Bohlei is also something of a bee-keeper. I think he got a few colonies last spring; and he has just surprised me by bringing me a jar of apple-bloom honey. In fact, he has extracted during apple-blossom time 240 lbs. from 7 colonies, and it was all sold quickly to his neighbors at the rate of $1.00 a gallon. You may begin to suspect what I have just found out, that Mr. Bohlei, with his nice family of boys and girls, is one of the men who succeed in almost every thing they undertake. The family all get up early in the morning, and they not only know how to work, but I think they *love* to work. So you see it does not make very much difference whether it is ducks or bees or general farming. They always have their dish right side up when it rains honey, even if it be for only just a day or two during apple-bloom as it did here in Ohio.

HOW TO MAKE A HEN'S NEST.

Mr. Root:—The box you described on p. 768, June 15, is ideal, but the contents is where we differ. Fix your box as you described; then go to some good sod land, cut a piece of sod a little larger than you wish your nest to be, and let the sod have green grass on it three or four inches long if you can get it. Place it on the box. Now take some clean straw and make the sides of your nest to keep the eggs from rolling out, and place your eggs on the sod. The green grass will soon turn yellow, and the eggs will be on a nest as soft as a pillow. In the winter months the cold air can not come up through the bottom of your nest to chill your eggs, and in summer it keeps cool. Your hens will sit better, the eggs will hatch better, and this is my way to make a nest after fourteen years of experience in raising poultry. I am a cripple, made so by having my hip dislocated while playing base ball fourteen years ago. I can not do a day's work, so I turned to poultry, which I have studied very closely.

In the month of March I set nine hens on 135 eggs. They broke but one, and hatched 122 chickens, strong and robust. The eggs seem to draw some moisture from the sod. The nest stays clean and sweet — no foul smell about it, even when used the second time.

L. M. MORRIS.

Bower, W. Va.

SPECIAL NOTICES

BY OUR BUSINESS MANAGER

HONEY-PACKAGE LEAFLET.

We have finally got ready for distribution a four-page leaflet of honey-packages, some of which are not listed in our general catalog. This, together with our label catalog, we shall be pleased to mail on application to those interested.

SECOND-HAND CASES FOR DANZENBAKER SECTIONS.

We still have sixteen crates, of nine cases each, for twenty sections 4 x 5 x 1⅜. In our last isue we mentioned eight cases to the crate, but find they are packed *nine* to the crate. Price, to close out, $1.50 per crate, or $20.00 for the lot.

ONE-FRAME OBSERVATION HIVES AT A DISCOUNT.

We have a few one-frame observation hives, slightly shop-worn, which we offer at reduced price to close out before taking inventory. They are almost equal to fresh new goods. There are seven with supers, which we will sell at $2.25 each, and two without supers, at $1.90 each.

SECOND-HAND 60-LB. CANS.

We have on hand from one to two hundred second-hand five-gallon cans, two in a case, in fair condition, which we offer at $4.00 for 10 cases; 25 cases or over, at 35 cents. They are all looked over, boxes put in good shape, and no cans included which are rusted on the inside so far as we can determine by careful examination. They ought to be worth this price, especially for cheap grades of honey.

JAPANESE BUCKWHEAT.

Just after going to press with our last issue we secured 50 bushels of Japanese buckwheat seed in Wisconsin, which will undoubtedly be here before this reaches our readers. We inquired of one of the large seedsmen, and they wanted $1.70 per bushel of 48 lbs. in ten-bushel lots. We can still supply seed in two-bushel lots and upward at $1.50 per bushel, no charge for bags, although at this price we have very little margin. One bushel, $1.75; half-bushel, $1.00; peck, 60 cents, bag included in each case.

EXTRACTORS WITH POWER GEAR.

Since the publication of the last edition of our catalog we have developed a special gear for use on extractors intended to be driven by power, which adds five dollars to the price of the machine. A crank is also included, so the machine may be run by hand if any thing happens to your engine or other motive power. The gear-bar across the top of the can projects beyond the can far enough to receive a third bearing outside the pulley and belt-tightener. The bearings stand higher, and are much heavier. The cross-shaft is one inch instead of ¾—the usual size on hand-driven machines.

HONEY-LABELS.

On the inside cover pages of this issue will be found samples of some of our honey-labels printed in colors. Our job-printing department is prepared to furnish promptly these and other styles which you will find listed in our label-catalog, mailed on application.

Bee-keepers can not be too careful or painstaking in putting up their honey for market in a neat and attractive way. When you look over the shelves of the modern up-to-date grocery and note the neatness and taste displayed in many of the tempting packages, you will see the reason for care and forethought in putting your honey in tasty and attractive form before placing it on the market.

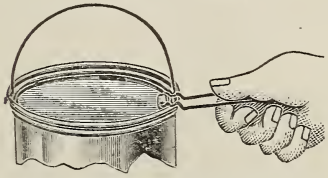
UNTESTED QUEENS.

The very favorable conditions prevailing here at Medina have enabled our queen-breeders to produce a very nice stock of Italian queens, in sufficient quantity not only to supply our trade but to have some over. We do not care to go to the trouble and expense of having these queens tested more particularly, as it is not likely many of them are mismated. Bee-keepers who are anxious to get a good strain of bees for their apiary will find this is a unique opportunity to secure something extra good at small expense, hence we think that we are doing them a favor by calling their attention to the opportunity. It is not every year we are in position to do this; but a happy combination of circumstances makes it possible for us to offer a lot of really good queens at a nominal figure. Remember a young vigorous queen is a great help in wintering, and in spring she is certain to outdistance an older one. Price for one queen, $1.00; six, $5.00.

BALL-BEARING EXTRACTORS.

For some time we have been on the lookout for a good ball-bearing at a price low enough to enable us to use it in our honey-extractors without greatly increasing the price. We have now found what we have been looking for, and propose from this time forward to equip all our extractors with ball-bearings. This we can not do at the regular price; but the machines will be so much improved in durability and easy-running quality that you will be well repaid for the slight additional price. In addition to the ball-bearings we are arranging a slip-gear device on almost all hand-power machines, to enable one to throw the gears out of mesh and stop the crank from revolving the moment you stop applying power, and allow the reel to spin on its ball-bearings, throwing out the honey while you uncap the next lot of frames ready to put into the extractor. None of these improved machines are in the hands of our dealers, as we did not get them perfected in time for this season's trade. You must not expect the new features on any extractors you may order this season unless you especially request it or mention it in your order. The revised price list, with these improvements, we expect to publish in the next issue of GLEANINGS. The increase in price over the present list will be from one to two dollars, according to size.

CLOSE-OUT BARGAINS IN TIN PAILS.

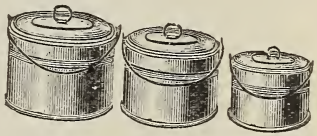


We have a little stock of tin pails, such as we formerly listed in our catalog, which we offer, to close out quickly, at the following prices:

RECORD'S TIGHT-SEAL-COVER PAILS.

Of this style we have on hand, to close out, 163 No. 1, holding 1½ lbs. of honey at $4.50 per 100, $7.00 for the lot; 102 No. 2, holding 3 lbs. of honey, at $5.50f or the lot; 36 No. 5, holding 7½ lbs. of honey, $2.50 for the lot.

RAISED-COVER PAILS.



We used to sell large quantities of these pails for honey. We have the following to close out: 43 1-qt., holding 2½ lbs. of honey, $1.50 for lot; 144 2-qt., holding 6 lbs. honey, $4.50 per 100; $6.50 for lot; 100 nests of 1 and 2 qt., $8.50 per 100 nests; 60 nests of ½, 1, and 2 qt., $6.00 for lot; 250 1-lb. Jones pails, with wax-seal cover, $5.00 for lot.

The prices named above are very much below what we formerly sold them at, and they could not be replaced now for anywhere near this figure. We offer them low to close them out quickly. First come, first served. Better name a second choice for fear the first may be gone.

CLOSE-OUT BARGAINS IN GLASS PAILS AND TUMBLERS.

We have a few remnants of stock in glass pails and tumblers formerly listed, which we offer, to close out, at greatly reduced prices. 5 bbls., 16⅔ doz. each, No. 789, tin-top tumblers, holding 1 lb. of honey. Price to close out, $5.00 per bbl.

Of screw-top glass pails we have 1 bbl., 16⅔ doz., No. 776, holding a scant pound, $5.50; 1 bbl., 12½ doz., No. 777, holding a full pound, $5.00; 2 bbls. 8⅓ doz., No. 778, holding 1½ lbs., $4.50 per barrel.

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.

Help Wanted

WANTED.—An experienced bee-keeper to install and take charge of an apiary on the Niagara River. Address
H. H. LARKIN, Buffalo, N. Y.

Poultry Offers

A. I. Root's Bee-goods, Poultry-supplies, Seeds, etc.
STAPLER'S, 412-414 Ferry St., Pittsburgh, Pa.

For Sale

FOR SALE.—Mated thoroughbred homer pigeons at $1.00 per pair. FRANKLIN G. FOX, Erwinna, Pa.

FOR SALE.—Tasmanian necklace shells, any quantity. Sam ple sent. G. H. SMITH, Ramsgate, Tasmania.

FOR SALE.—A full line of bee-keepers' supplies; also Italian bees and honey a specialty. Write for catalog and particulars.
W. P. SMITH, Penn, Miss.

FOR SALE.—1908 home-grown recleaned scarlet-clover seed, now ready; $3.50 per bushel, sacks free. A No. 1 stock.
G. L. ELLIS, Millsbo'o, Del.

FOR SALE.—If you want an illustrated and descriptive catalog of bee-keepers' supplies for 1907 send your name and address to FRANK S. STEPHENS,
(Root's Goods.) Paden City, W. Va.

FOR SALE.—200 cases of 5-gallon cans. All are free from rust inside, and the majority have been used but once. Two cans in a case; 10 cases or more, 25 cts. per case.
J. E. CRANE & SON, Middlebury, Vermont.

FOR SALE.—Alexander wire bee-veils, no pins or sewing required; made from the very best wire cloth at 60 cents each, postpaid. FRANK ALEXANDER,
Delanson, N. Y.

FOR SALE.—Best Wisconsin sections, 1000, $4.00; 2000, $7.75; 3000, $11.00; 5000, $17.50; No. 2, 50 cts. less; plain, 25 cts. less, 24-lb. 2-in. glass shipping-case, 14 cts. Catalog free.
H. S. DUBY, St. Anne, Ill.

FOR SALE.—About 1300 or 1400 cases, two five-gallon cans each, practically free from nail-holes, and were new tins when originally shipped to us. Make us an offer.
CLEVELAND HEALTH FOOD CO., Cleveland, O.

Don't bother with cans. Kegs are cheaper and easier to fill and handle. 160-lb. pine kegs, with 2-in. hole and plug, 50 cts. each, f. o. b. factory. Orders given prompt attention. Send list of supplies needed. I can save you money.
N. L. STEVENS, Moravia, N. Y.

FOR SALE.—75 eight-frame Root hives with good worker combs; used two seasons; also lid and bottom; $1.60 each. One hundred 4¼ supers, trimmed with sections and foundation; used one season; 40 cts. each. Sixty 10-frame hives and five Danzenbaker hives, with combs wired, all Root's goods, $1.75 each, without super. Thirty 8-frame supers, trimmed, $3.00 each.
H. A. ROSS, Evansville, Indiana.

Real Estate for Bee-keepers

FOR SALE.—Twenty acres—three in fruit, two in raspberries; 80 colonies or bees; no disease; 12 miles south of Sioux City. For particulars, address
J. P. GOODWIN, Route 2, Dakota City, Neb.

Bees and Queens

Golden-all-over queens and nuclei. Price list free.
J. H. WAGNER, Beatrice, Neb.

FOR SALE.—Italian queens, clover stock; untested, 50 cents each; tested, $1.00 each. W. SIMPSON, Meyer, Ill.

Golden Italian queens by return mail, 50c.
J. F. MICHAEL, Winchester, Ind.

FOR SALE.—Golden "mortgage-lifters;" warranted queens, $1.00; tested, $1.50 to $3.00. D. E. BEST, Slatington, Pa.

FOR SALE.—Italian and Carniolan queens, untested, 75 cts.
GEO. E. KRAMER, Valencia, Pa.

FOR SALE.—800 colonies of bees; for particulars, address
DR. GEO. D. MITCHELL & CO., Ogden, Utah.

FOR SALE.—Italian queens, hustlers. Untested, 65c; tested, $1.00. MRS. J. W. BACON, Waterloo, N. Y.

FOR SALE.—Northern-bred red-clover queens. Untested, 75 cts.; tested, $1.00. E. S. WATSON,
R. F. D. No. 2. Madison, Maine.

FOR SALE.—Italian, Carniolan, and Caucasian queens. Untested, 75 cts.; 12, $8.50; virgins, 40 cts.; 12, $4.50. Stamps not accepted. EDWARD REDDOUT, Baldwinsville, N. Y.

Golden Italian queens, untested, 50 cts. each; tested, $1 each. Your money right back if you say so, if the order can not be filled in three days. D. T. GASTER, Rt. 2, Randleman, N. C.

FOR SALE.—Italian bees and queens now ready. Untested, $1.00; tested, $1.50. Bee-keepers' supplies, Root's goods. Send for prices. Eggs from Silver-laced Wyandotte poultry.
N. V. LONG, Biscoe, N. C.

Standard bred red-clover Italian queens, Bred for gentleness and their superior working qualities. Virgins, 45 cts.; untested, laying, 85 cts.; select untested, $1.00; tested, $1.50.
J. R. MCCORKLE, Wingate, Ind. Rt. 5.

FOR SALE.—Moore's strain and golden Italian queens, untested, $1.00; six, $5.00; twelve, $9.00. Carniolan, Banat, and Caucasian queens, select, $1.25; six, $6.00; twelve, $10.00. Tested, any kind, $1.50; six, $8.00. Choice breeders, $3.50. Circular free. W. H. RAILS, Orange, Cal.

Wants and Exchanges

WANTED.—Refuse from wax-extractors and old combs for cash
ARCHIE COGGSHALL, Groton, N. Y.

WANTED.—Refuse from the wax-extractor, or slumgum State quantity and price. OREL L. HERSHISER,
301 Huntington Ave., Buffalo. N. Y.

Honey and Wax for Sale

FOR SALE.—New crop fancy white-clover and amber comb honey. W. J. HARBOUGH, Kernstown, Va.

FOR SALE.—New No. 1 white clover comb honey at $3.50 per case of 24 sections; less than six cases, 25 cts. per case extra.
QUIRIN-THE-QUEEN-BREEDER, Bellevue, O.

FOR SALE.—5000 lbs. of clover and amber honey in 160-lb. kegs. C. J. BALDRIDGE, Homestead Farm,
Kendaia, N. Y.

FOR SALE.—Write for prices on clover, basswood, and buckwheat honey in 60-lb. cans and kegs; also comb honey and beeswax, all guaranteed to be pure.
W. L. COGGSHALL, Groton, N. Y.

FOR SALE.—Choice white and alsike clover honey in 60-lb. square cans, 2 cans to a case, at 9 cts. per lb., delivered at railroad station. Reference, agent or postmaster, Lakeville. St. Joseph Co., Ind., at which place address— C. A. BUNCH.

FOR SALE.—Choice extracted honey for table use, gathered from clover and basswood—thick, well ripened, delicious flavor. Price 9 cts. per lb. in 60-lb. cans, two to case. Sample, 10 cts.
J. P. MOORE, Queen-breeder, Morgan, Ky.

FOR SALE.—1908 crop of Northern Michigan red-rasbberry and clover honey; heavy body, light color, fine flavor. Price $10.50 per case of 120 lbs. (two cans). Cash with order.
IRA D. BARTLETT, East Jordan, Mich. Box 156.

FOR SALE.—Our own production of comb honey, 4 x 5 plain sections, No. 1 quality, at 18 cts. per section. Our comb honey won every important premium in the State last year. If you have a place for some " gilt-edge " comb, write.
E. D. TOWNSEND, Remus, Mich.

FOR SALE.—10,000 lbs. *clover and raspberry honey*, ripened on the hive in sealed combs; delicious aroma, rich and ripe. This honey is the best a specialist can produce; 60-lb. tin cans, two in a case, $10.75—any quantity. Sample on request.
F. B CAVANAGH, Boscobel, Wis.

FOR SALE.—Our crop of raspberry extracted honey is now on the hives curing, and will not be extracted until nearly August. This will insure its being the *very best* that can be produced—rich, ripe, delicious. Then it will be put into *new* 60-lb. cans, two in a case. It is reasonable to assume that this rich ripe honey can not be produced as cheaply as the thin, watery, ordinary kind, and we shall have to get 10 cts. a pound for it on car. A sample will be mailed free.
E. D. TOWNSEND, Remus, Mich.

Honey and Wax Wanted

WANTED.—White ripe extracted honey; will pay cash.
GEORGE RAUCH,
No. 5343 Hudson Boulevard, North Bergen, N. J.

WANTED.—Comb, extracted honey, and beeswax. State price, kind, and quantity.
R. A. BURNETT, 199 South Water Street, Chicago, Ill.

WANTED.—We are in the market for No. 1 white extracted honey in any quantity. Correspondence solicited. State kind, quantity, and price asked. We also have for sale 60-lb. honey-cans, 2 cans in case. Both cans and cases in A1 condition, at 30 cts. per case. MICHIGAN WHITE CLOVER HONEY CO.,
31-33 Griswold St., Detroit, Mich.

Bee-keepers' Directory

Bee-keepers' Supply Co., Lincoln, Neb. We buy car lots of Root's goods. Save freight. Write.

ITALIAN QUEENS from imported mothers; red-clover strain, $1. A. W. YATES, 3 Chapman St., Hartford, Ct.

ITALIANS, CARNIOLANS. No disease. Two-comb nucleus with queen, $3.00. A. L. AMOS, Comstock, Nebraska.

Golden-all-over and red-clover Italian queens; circular ready.
W. A. SHUFF, 4426 Osage Ave., Philadelphia, Pa.

I club a high-grade Italian queen with GLEANINGS, new o renewal. W. T. CRAWFORD, Hineston, La.

ITALIAN BEES, queens, honey, and Root's bee-keepers' supplies. ALISO APIARY, El Toro, Cal.

Golden Italian queens, 75 cts. each. Satisfaction guaranteed.
WALTER S. HOSS, 1127 Blaine Ave., Indianapolis, Ind.

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

For bee-smoker and honey-knife circular send card to
T. F. BINGHAM, Farwell, Mich.

ROOT'S BEE SUPPLIES. Send for catalog.
D. COOLEY, Kendall, Mich.

Have you seen Hand's queen circular? It's an eye-opener. Your address on a postal card will bring it. It will pay you to send for it. J. E. HAND,
Birmingham, Erie Co., Ohio.

Order your bee-supplies from Superior Honey Co., Ogden, Utah, at Root's catalog prices. You save time and money. Largest dealers in the West.

QUEENS.—Improved red-clover Italians, bred for business, June 1 to Nov. 15, untested queens, 60 cts.; select, 75 cts.; tested, $1.00 each. Safe arrival and satisfaction guaranteed.
H. C. CLEMONS, Boyd, Ky.

GOLDEN yellow Italian queens — my specialty. Price list free. E. E. LAWRENCE, Doniphan, Mo.

Mott's long-tongues by return mail, also goldens—hardy, yet gentle, but little or no smoke. E. E. MOTT, Glenwood, Mich.

SWARTHMORE Golden-all-over queens—the famous original stock. Queen-rearing outfits and books; 40-page catalog.
E. L. PRATT, Swarthmore, Pa.

Root's bee-supplies at factory prices, *Black Diamond Brand Honey*, and *bee-literature*. Catolog and circulars free.
GEO. S. GRAFFAM & BRO., Bangor, Maine.

Improved Italian queens now ready. Nuclei and colonies May 1 to 10. Over twenty years a breeder; 500 colonies to draw on. Free circulars and testimonials. For prices see large advertisement in this issue.
QUIRIN-THE-QUEEN-BREEDER, Bellevue, O.

ITALIAN BEES AND QUEENS. I breed three-banded stock only, and use the finest breeding stock to be had. For prices, see display advertising columns in this issue. Send for price list. Twenty-five years' experience.
F. J. WARDELL, Uhrichsville, O.

TENNESSEE QUEENS.— Best that experience can produce. Untested three-band and goldens, $1.00 each; 6 for $5.00; 12 for $9.00. Caucasians, $1.25 each. Write for cir cular; order goldens from Ben G. Davis; others from John M. Davis, Spring Hill, Tenn.

Breeding queens of pure Caucasian and Carniolan races—price $3.00. Order from A. E. Titoff, Expert in Apiculture, with Russian Department of Agriculture, Kieff, Russia. Remit with orders. Correspondence in English.

Texas School Lands

$1.00 to $5.00 Per Acre

Texas has passed new School Land Laws. Millions of acres are now to be sold by the State at $1.00 to $5.00 per acre; only one-fortieth cash and no more to pay for 40 years, unless you desire; only 3 per cent interest. You can buy 160 acres at $1.00 per acre, payable $4.00 down and 40 year's time on the balance, 3% interest. Greatest opportunity ever offered to investors and farmers. Texas land is better than Oklahoma, Iowa or Illinois. Send 50 cents for Book of Instructions, New State Law and Map of Texas, and I will tell you FREE how to secure list of over 400 million acres of vacant public lands in 25 different States, which are open to homestead. Address

E. C. HOWE, 784 Hartford Building, CHICAGO, ILL.

Italian Queens

GOLDEN AND CLOVER STOCK.

Choice queens, 75 cts. each; six for $4.00, or $7.50 a dozen.

GEO. W. BARNES, Box 340, Norwalk, O.

DOOLITTLE & CLARK

Are sending out fine Italian queens at the following prices: Untested, $1; 3, $2.50; 12, $9.00. Tested, $2.00; 3, $5.00; 12, $18.00. Breeders, $2.50, $5.00, and $10.00. Send for circular.

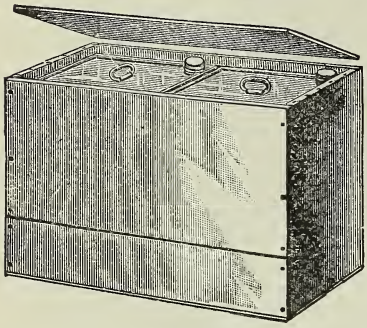
BORODINO, ONONDAGA CO., N. Y.

BIG STOCK OF
BEE-SUPPLIES AT FACTORY PRICES.

To bee-keepers sending their names and address I will send list of supplies that I have in stock up to June 30. On a cash order for $10.00 or over I will give 8 per cent off; cash order for $5.00 or over, 5 per cent off, delivered here at depot.

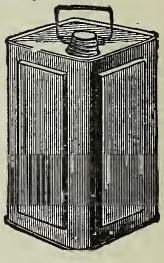
S. D. BUELL. - UNION CITY, - MICH.

TIN HONEY-PACKAGES



FIVE GALLON (60-lb.) SQUARE CANS.

A five-gallon can is the favorite package for shipping extracted honey. There is no shrinkage and consequent leaking, no taint to the honey from wood as is so frequently the case with barrels and kegs. The cans, being made square, economize space, and are easily boxed. They are used exclusively in the far West.

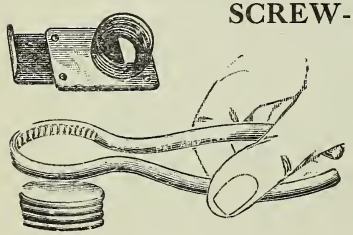


SMALL SCREW-CAP CANS.

Besides the five-gallon square cans we list also the three smaller sizes—1, ½, and ¼ gallon. These are furnished with 1¾-inch lined screw cap like the five-gallon cans with 4-inch screw as well as the 1¾, at 5c each extra; and with an 8-inch screw at 15c each extra. Latter is largely used in Texas for chunk honey. Price of cans packed in boxes or crates given in the list below.

PRICE LIST OF SQUARE CANS.

Box of	1	5-gal.	can	(60 lbs.	capacity)	$ .55;	10	boxes,	$ 5.00.	Weight	per	box	10	lbs.
" "	2	5-gal.	"	(60 lbs.	")	.85;	"	"	8.00.	"	"	"	15	"
" "	10	1-gal.	"	(12 lbs.	")	1.50;	"	"	14.00.	"	"	"	20	"
" "	12	½-gal.	"	(6 lbs.	")	1.50;	"	"	14.00.	"	"	"	20	"
" "	24	¼-gal.	"	(3 lbs.	")	2.40;	"	"	23.00.	"	"	"	25	"
" "	100	1-gal.	"	(12 lbs.	")	11.00;	"	"	105.00.	"	"	"	110	"
" "	100	½-gal.	"	(6 lbs.	")	9.00;	"	"	85.00.	"	"	"	80	"
" "	100	¼-gal.	"	(3 lbs.	")	7.00;	"	"	65.00.	"	"	"	60	"



SCREW-CAP HONEY-GATE AND CAN-SCREW WRENCH.

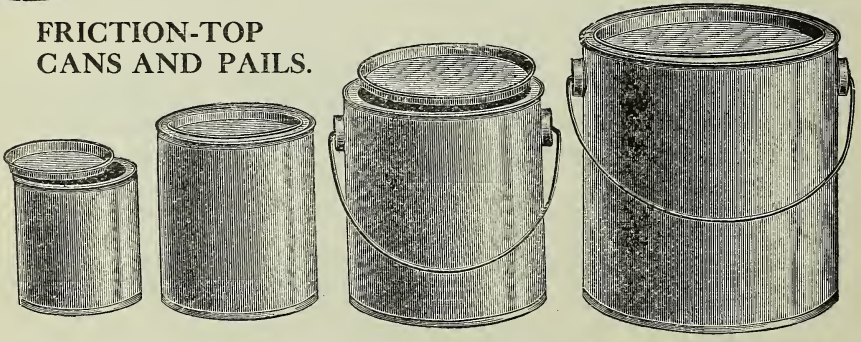
Screw-cap gate, 15c; by mail, 18c. Screw-cap wrench, 10c each; 75c per doz; by mail, 4c each extra.

We furnish the gate for 1½, 1⅝, or 1¾ screw. Other sizes made to order from caps you may furnish.

The wrench fits a 1¾ screw, and can be used on 1⅝ or smaller by a bushing between cap and wrench.

When you order these gates separate from cans we can not guarantee a fit unless you send us a cap from the screw with the order.

FRICTION-TOP CANS AND PAILS.



For packing honey in small tin packages we know of nothing better than package here shown. We do not carry these in stock, and offer them only for direct shipment from factory in original packages as indicated.

1-lb. can,	$2\frac{1}{16}$x4,	from Maywood, near Chicago, in crates of	1155	at	$25.00	per crate.
2-lb. "	$3\frac{1}{2}$x$4\frac{3}{4}$, "	Hamilton, Ohio, in crates of	588,		$15.00	per crate.
$2\frac{1}{2}$-lb. "	4x$4\frac{9}{16}$, "	" " " " "	462,		14.00	" "
3-lb. "	$4\frac{3}{16}$x$4\frac{7}{8}$, "	" " " " "	420,		14.50	" "
5-lb. pail,	$5\frac{1}{32}$x$5\frac{11}{16}$ "	" " " " "	220,		12.75	" "
10-lb. "	$5\frac{5}{16}$x$7\frac{1}{2}$, "	" " " " "	116,		9.50	" "

Send all orders to Medina for unbroken crates as indicated, to be shipped direct from the point indicated only. The 1-lb. to 3-lb. have no bail, while the 5 and 10 lb. have a wire bail.

CARTONS for COMB HONEY

We are now prepared to furnish these cartons in several styles and in two grades of stock; also in various styles of printing. We can also execute special designs in quantities on special orders. Let us know your wants.

The Danz. open-end carton will enclose a section and pack in the regular shipping-case. We furnish it for 4x5x1⅜ and 1½, 3⅝x5x1½, and the several widths of the 4¼ section. To hold the carton in place on the section you need a rubber band around it. These bands are not furnished with the cartons except at an extra price, and only when so ordered.

The folding carton is of a different pattern from those heretofore furnished. They tuck in at the top and bottom in a neater form, and are without tape handle. Sections packed in these cartons require shipping-cases made a little larger than the regular sizes, but such cases do not require glass. Some of our agencies have on hand some of the old style cartons in some sizes, which may be supplied on orders unless otherwise specified. These cartons are furnished for all regular sizes of sections; namely, 4¼x4¼x1⅞ and 1½; also 4x5x1⅜. Other sizes furnished in quantities on special order.

PRICE LIST OF CARTONS.

Danz. carton, regular size, plain or printed name blank, 50 cts. per 100; 500, $2.25; 1000, $4.00. Weight, 4 lbs. per 100.

Folding cartons, regular sizes and grade, plain, 60 cts. per 100; 500, $2.75; 1000, $5.00.

Folding cartons, regular sizes and extra quality, plain, 75 cts. per 100; 500, $3.25; 1000, $6.00.

Extra for printing stock design, name and address blank, 50 cts. per 1000 one side; 75 cts. both sides for each color.

For inserting name and address in design at same printing, add 50 cts. for any quantity. For printing in name and address in a stock design, after that has been printed, add 50 cts. for 100; 75 cts. for 500; $1.00 for 1000. Such cartons can be supplied only from Medina. Special designs or printing quoted on application.

AIKIN BAGS FOR CANDIED HONEY.

These are of tough paper coated with paraffine. Honey should be poured into them just as it begins to thicken by granulation.

1-pound bags,		3½x5½,	per	100,	$ .65;	500,	$3.00;	1000,	$5.50.	Weight	per	1000,	10 pounds
2	"	5 x7½,	"	"	.80;	"	3.75;	"	7.00.	"	"	"	18 "
3½	"	6 x9½,	"	"	1.00;	"	4.75;	"	8.75.	"	"	"	28 "
5	"	7 x 10,	"	"	1.20;	"	5.50;	"	10.50.	"	"	"	35 "
10	"	10x10½,	"	"	1.50;	"	7.00;	"	13.50.	"	"	"	45 "
Printing name and address extra,			"		.30;	"	.75;	"	1.00.				

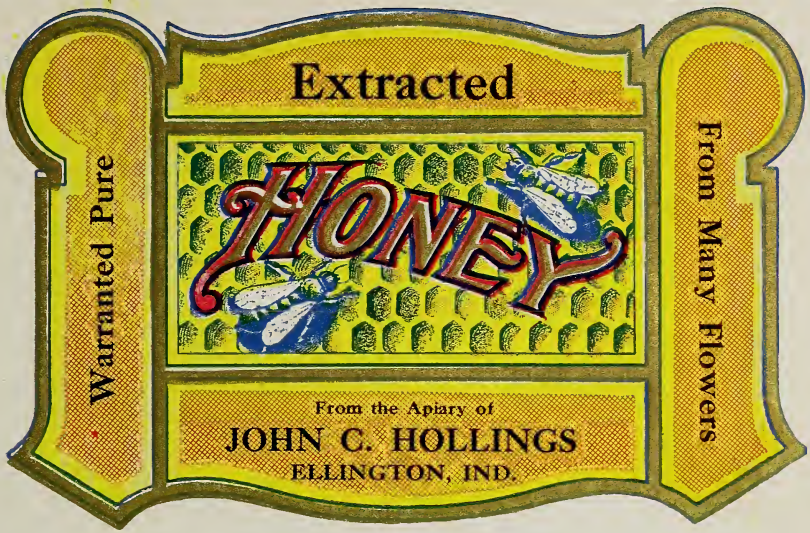
May be sent by mail for 18 cts. per pound for postage and packing.

Candied-brick Honey-wrappers.

We have developed a good trade in choice candied honey cut into 1¼-pound bricks, like a piece of butter. These bricks are wrapped in parchment paper, placed in a folding carton, and a fancy white wrapper printed in gold with end-labels put on the outside. We can supply the parchment wrappers, cartons, and labels complete ready for use at $7.50 per 1000 sets. With your name and address on the wrapper add $1.00 per 1000.

The A. I. ROOT COMPANY, MEDINA, OHIO
CHICAGO NEW YORK PHILADELPHIA

Tasty Labels for Tasty Honey-packages



No. 84.—Wording except line Honey changed to suit. 250, $1.00; 500, $1.50; 1000, $2.25.

No. 77.—Wording below line Honey changed to suit. 250, $1; 500, $1.25.

No. 85.—Wording except line Honey changed to suit. 250, 75c; 500, $1.25; 1000, $1.75.

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The A. I. Root Company,
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No. 82.—Wording except line Honey changed to suit. 250, 30c; 500, 50c; 1000, 75c.