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MAY 5 1908

Gleanings in Bee Culture



Apiary of splint hives (daubed with mud) on the frontiers of Russia and Asia Minor.

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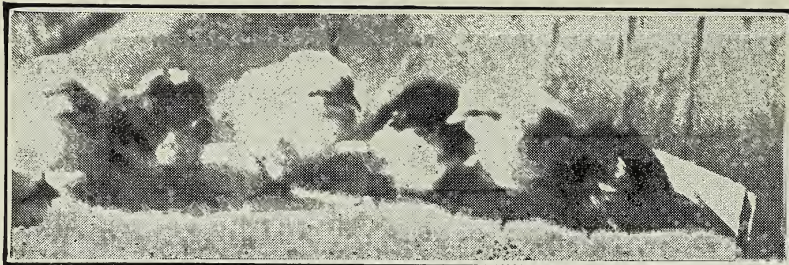
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Vol. XXXVI

May 1, 1908

No. 9



ARE THEY WORTH SAVING?

Mr. Haviland Saves 28 Chicks in One Hatch.

Fully one-third of all the chickens ready to hatch die in the shell. After 30 years' study and practice we have discovered a simple way to save every chick that is fully developed and ready to hatch, whether the egg is pipped or not. This, we believe, is one of the lost arts of the ancient Egyptians. It takes but a minute to save a chick, and no skill required. Note Mr. Haviland's success:

Dear Sirs:—
I received my copy of the Philo System at noon, the last

Brookville, Md., Feb. 27, 1908.

hour of the 21st day for my incubator, containing 172 fertile eggs. About 100 were out of the shell and about 30 of the remainder were still alive, some pipped. According to directions with our hot-air machine these were worthless. We immediately proceeded according to "A Trick of the Trade" in your book and hatched them all, even one that showed signs of life after laying in a garbage-pail for some time. We still have 128 chicks three days old; lost but two. Many of the eggs were three or four weeks old when set.

Respectfully,
E. W. HAVILAND.

\$200 IN SIX MONTHS FROM 20 HENS

To the average poultryman that would seem impossible, and when we tell you that we have actually done a \$500.00 poultry business with 20 hens on a corner in the city garden, 30 feet wide by 40 feet long, we are simply stating facts. It would not be possible to get such returns by any of the systems of poultry-keeping recommended and practiced by the American people, still it is an easy matter when the new PHILO SYSTEM is adopted.

The Philo System is Unlike all other Ways of Keeping Poultry

and in many respects is just the reverse, accomplishing things in poultry work that have always been considered impossible, and getting unheard-of results that are hard to believe without seeing; however, the facts remain the same and we can prove to you every word of the above statement.

The New System Covers all Branches of the Work Necessary for Success

from selecting the breeders to marketing the product. It tells how to get eggs that will hatch, how to hatch nearly every egg, and how to raise nearly all the chicks hatched. It gives complete plans in detail how to make every thing necessary to run the business, and at less than half the cost required to handle the poultry business in any other manner. There is nothing complicated about the work, and any man or woman that can handle a saw and hammer can do the work.

Two-pound Broilers in Eight Weeks

are raised in a space of less than a square foot to the broiler without any loss, and the broilers are of the very best quality, bringing here three cents per pound above the highest market price.

Our Six Months' Old Pullets are Laying at the Rate of 24 Eggs Each Per Month

in a space of two square feet for each. No green cut bone of any description is fed, and the food used is inexpensive as compared with food others are using.

Our new book, the Philo System of Progressive Poultry Keeping, gives full particulars regarding these wonderful discoveries with simple, easy-to-understand directions that

are right to the point, and 15 pages of illustrations showing all branches of the work from start to finish.

Our New Brooder Saves Two Cents on Each Chicken

No lamp required. No danger of chilling, overheating, or burning up the chickens as with brooders using lamps or any kind of fire. They also keep all lice off the chickens automatically, or kill any that may be on when placed in the brooder. Our book gives full plans and the right to make and use them. One can be easily made in an hour at a cost of 25 to 50 cents.

Dear Sir:—
I am well pleased with your system in poultry-keeping. We have more than doubled our egg production.
Yours truly,
J. C. THAYER.

Gentlemen:—
Some time ago I ordered your book, Philo System, and your paper. Want to say I am highly pleased with them. Never in my life have I received so much for so little money. It is a very comprehensive treatise indeed. Your methods are so simple that a child might follow them.
Yours truly,
J. BERT MCCONNELL.

Gentlemen:—
Your publication, the Philo System, at hand, and after careful comparison, must say that without doubt or hesitation that more boiled-down, good common sense and natural facts and instruction are condensed in the pages of your book than in all I have tried (to learn) and read the date.
Yours with best wishes,
GEO. A. WOLFE.

Dear Sir:—
Your book came to hand and I must say I am very much pleased with it. It is far the best book I have seen on poultry. The ideas set forth in the book, which are the results of your experimenting, certainly show that you are a little in advance of others in this work.

Common Era, Ill., March 19, 1908.
I have built several of the brooders as described by Mr. Philo, and at present time have young chicks, a week old, outdoors, healthy and strong, without being warmed by any artificial heat.
Yours respectfully,
WILSON BROOKS.

SPECIAL INTRODUCTION OFFER. We will send the book and right to use all patents and one year's subscription to Poultry Review for \$1.00.

POULTRY REVIEW, 23 Third Street, ELMIRA, NEW YORK.

C. H. W. WEBER

Headquarters for

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**Distributor of Root's Goods
Exclusively, at Root's
Factory Prices**

GIVE ME YOUR ORDERS for the **Best Goods Made**. You will be pleased on receipt of them. You will **save money** by ordering from me. My stock is complete: in fact, I keep **every thing** the bee-keeper needs. Cincinnati is one of the best **shipping-points** in the Union, particularly in the South, as all freight now **goes through Cincinnati**. Satisfaction guaranteed. Send for descriptive catalog and price list. It will be mailed you promptly **free of charge**.

Special Discount on Early Orders

I will buy your **HONEY AND BEESWAX**. I pay **Cash on Delivery**; or if you are in **need of honey**, write for prices and state quantity wanted, and I will quote you the lowest price of any quantity wanted—in cans, barrel-lots, or car-lots—of **extracted or comb honey**. I guarantee its purity.

WANTED=Sweet Clover.

If you have **Sweet Clover**, state if yellow or white, hulled or unhulled, also quantity and lowest price.

C. H. W. WEBER

Office and Salesroom, 2146-2148 Central Ave.
Warehouse, Freeman and Central Avenue.

CINCINNATI,



OHIO

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 unsold by travel-stain or otherwise; all the cells sealed except an occasional one, 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 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. 2.—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. 3.—Three-fourths of the total surface must be filled and sealed.

No. 4.—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 separated honey to average 21 pounds net per case of 24 sections, no section in this grade to weigh less than 13 1/2 ounces.

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

Cases of unseparated 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 separated honey to average 21 pounds net per case of 24 sections; no section in this grade to weigh less than 13 1/2 ounces.

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

Cases of unseparated 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 separated honey to average not less than 19 lbs. net.

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

Cases of unseparated honey to average not less than 21 pounds net per case of 24 sections.

CINCINNATI.—The conditions of the honey market are not satisfactory, as there is no consumptive demand for either comb or extracted honey. Lower prices are no inducement. We must await the revival of business in general, which, no doubt, will be as soon as the weather settles. Quote our fancy water-white honey for table use at from 9 to 10, according to the quantity purchased. Amber extracted honey in barrels brings 5 1/2 to 7, the price depending on the quality and quantity. There is an abundance of beeswax, for which we are paying 30 cts. in cash and 32 in trade for choice yellow, delivered here, free from dirt.

THE FRED W. MUTH CO.,

April 14. Cincinnati, O.

KANSAS CITY.—The crop of 1907 of both comb and extracted honey is pretty well sold out. What little comb is left shows signs of granulation. The demand is fair. We quote: No. 1 white comb, 24 sections, per case, \$3.00; No. 2 white and amber, ditto, \$2.75; white extracted, per lb., 7 1/2. Beeswax, 25 to 27.

C. C. CLEMONS & CO.,

April 20. Kansas City, Mo.

BOSTON.—White comb honey, fancy, 17; No. 1 white comb honey, 16; white extracted honey, 10; light amber, 9; amber, 8.

BLAKE-LEE CO.,

April 10. 134 State St., Boston, Mass.

ST. LOUIS.—The honey market has not undergone any change since ours of March 20. There is no demand for honey, and the quotations are nominal as follows: Fancy white comb honey, 15 to 16; No. 1, white and amber, 13 to 14; broken and defective, less; extracted white, in cans, nominal at 8 1/2 to 9; amber, 7 to 8; in barrels, 6 1/2 to 7. Granulated extracted honey sells at 1/2 to 1 ct. per lb. less. Beeswax is firm at 28 1/2 for prime; impure and inferior, less.

R. HARTMANN PRODUCE CO.,

St. Louis, Mo.

April 11.

BUFFALO.—There is a fair demand for white-clover comb honey. Other grades are very much neglected. It is almost impossible to sell No. 2 white or mixed at even low prices. No. 1 fancy white-clover comb honey, 15 to 16; No. 2 ditto, 11 to 12; No. 1 dark, 10 to 11; No. 2 dark, 9 to 10. Beeswax, 28 to 30. Tumbler honey, 90 cts. to \$1.00 per dozen.

W. C. TOWNSEND,

April 11. Buffalo, N. Y.

ST. PAUL.—Receipts are very light; demand moderate and prices steady. The prices below represent those obtained for shipment in small lots. Fancy white-clover comb, new, per lb., 18; fancy California, 24 combs per case, \$4.00; strained, in 60-lb. cans, per lb., 10. W. H. PATTON, Sec. Board of Trade,

April 22. St. Paul, Minn.

SCHENECTADY.—There is not enough doing in honey at present to be worth quoting. There is but little stock on hand, with an occasional order. The attention of the trade is now in the direction of maple syrup and sugar, of which there is a very good crop reported.

CHAS. MACCULLOCH,

April 20. Schenectady, N. Y.

INDIANAPOLIS.—Jobbers are fairly well stocked, but very little honey is being offered by producers. Best grade of extracted honey is in good demand, but comb honey is finding slow sale. Jobbers are offering the following prices, delivered here: No. 1 and fancy comb, 15 to 17; extracted white clover, 8 to 9; amber, in barrels, 6 to 6 1/2. Beeswax, 28 cts. cash or 30 in exchange for merchandise.

W. S. POWDER,

April 17. Indianapolis, Ind.

ZANESVILLE.—The demand for honey continues quite light, and one or two of the smaller commission men are cutting prices. From No. 1 to fancy comb honey brings, when sold to the wholesale grocery trade, about 18 cts. Extracted is moving very slowly. The supply of beeswax exceeds the demand. I offer 30 cts. for best grade in exchange for bee-supplies.

EDMUND W. FERRE,

April 18. 136 W. Main St., Zanesville, O.

SAN FRANCISCO.—Prices on honey still rule as before, but every thing is closely held. There is a fair supply of comb, but extracted grades are almost cleaned up. It is said that the dry weather will cause a shortage, if not an entire failure of the crop, in some sections. We quote: Water-white, comb, 16 to 17; white, 15; water-white, extracted, 8 to 8 1/2; light amber, extracted, 7 to 7 1/2; dark amber and candied, 5 1/2 to 5 1/4.

Pacific Rural Press, April 18.

LIVERPOOL.—The honey market is steady and quiet, but stocks are not large. Fine quality meets with fair demand, but low grades are almost entirely neglected. We quote: Chilian, 4 to 6 1/2; Peruvian, 3 1/2 to 5 1/2; California, 7 1/2 to 9; Jamaica, 4 to 5 1/2; Haiti, 6 1/2 to 6 1/2. Beeswax is steady—African, 27 to 30; American, 30 to 33; West Indian, 27 to 32; Chilian, 30 to 36; Jamaica, 34 to 35.

TAYLOR & CO.,

April 11. 7 Tithebarn St., Liverpool.

CINCINNATI.—The market on comb honey is very quiet, there is hardly any demand. The price for extracted amber in barrels is 6c. We have no white clover to offer. California white sage is selling at 9 and 9 1/2c.

C. H. W. WEBBER,

April 23. Cincinnati, O.

DENVER.—The market on comb honey is slow, and prices are declining. We quote to our trade, No. 1 white, per case of 24 sections, \$3.00; No. 1 light amber, \$2.85; No. 2, \$2.70; extracted, white, 8 to 9; light amber, strained, 6 1/2 to 7 1/2. We pay 25 cts. for clean yellow beeswax delivered here.

THE COLORADO HONEY-PRODUCERS' ASS'N.,

April 22. F. RAUCHFUSS, Mgr.

We're Modest Bee-supply People, but == We've Just GOT to Tell You about this Letter

It came from Mr. John M. Davis (yes, the Queen Bee Davis, known everywhere).

It was written to Mr. J. M. Buchanan, of the Tennessee Bee-keepers' Association, and—

We didn't know a thing about it until Mr. Buchanan wrote us: "I quote from a letter received from Mr. John M. Davis to-day (March 7, 1908):"

DAVIS DECLARES:

"I think the supplies you bought from Mr. Muth you will find about the best you have ever seen, judging from those I got from him some time ago. I have used supplies from nearly every manufacturer in the United States, and the makers of Muth supplies do the most perfect work of any I have seen."

Mr. Buchanan wrote us on March 2, 1908 :

BUCHANAN SAYS:

"I must say this is the best lot of supplies it has been my lot to handle: they **could not be surpassed.**"

With two **authorities** saying such things about **Muth's** Beeware, can **you** hesitate? There is never any gamble about them—they are **always** the best of their kind—everything a bee-keeper needs, and at factory prices here in Cincinnati. We charge no drayage to depot.

Better send for catalog—free.

The Fred W. Muth Co.

THE BUSY BEE MEN

51 Walnut St.

Cincinnati, O.

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1873.
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Devoted to Bees, Honey, and Home Interests.

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New Lands in The Northwest.

Montana, North Dakota, South Dakota.

Many who live in the Eastern States imagine the West has been fairly well settled by thrifty farmers—so much so that there is very little opportunity for a new comer to get in and do well. No greater fallacy could be entertained. The Northwest is just opening up, and infant empires are being nursed which are destined to cut a great path in the history of the world. This is no exaggeration, for Montana is nearly three times as large as England, and even richer in natural resources, besides being possessed of a splendid climate which enables the white man to work to his extreme capacity. There is an idea that the winters are bad, when it is actually true that they are more equable and pleasant than the winters of Ohio, Indiana, and Illinois. It is a fact that the thermometer goes down low in Eastern Montana and Western Dakota, but that is not for long; besides, the air is very dry, light, and invigorating. There are long spells of very pleasant weather in between the cold snaps. This makes the problem of wintering bees actually easier than it is in the Eastern and Central States. In summer there is no sweltering heat as in the States near the great lakes or the Gulf of Mexico. The summer days are long and pleasant, with cool

nights. If the farmer does a long days' work he always has the satisfaction of knowing the nights will be cool enough to allow of sound sleep under a cover of some kind. The crops of the temperate zone reach the highest state of perfection. Oats, barley, buckwheat, and clover are of the best quality, and, if well cultivated, yield much higher than in Illinois or Ohio. This makes poultry culture a success wherever tried with ability and persistence. It is practically the same with the bee industry. Clover, alfalfa, and many lovely wild flowers, render it a success. Of course, some localities are better than others, and there are some places where it would be a failure; but this much is sure—bee-keeping in Montana and the western part of South Dakota and North Dakota, Idaho, and Eastern Washington and Oregon, is merely in its infancy. These States are extremely rich in mineral resources, so that mining is a prominent industry. These miners are well paid, and, as a result, there is a first-class local market for all honey produced. It is just the same with eggs, poultry, and butter, of course, or any other agricultural product of a similar nature. This being the case, there is seldom any necessity for the Montana farmer to ship long distances to find

a market for produce, unless it is wool, which is easily transported.

There is also an impression that the West is wild and woolly, and that children and delicately nurtured women have no place there. Just the reverse is true. In most of the States of the West, educational facilities are superior to those of the East, and good schools abound. By paying good salaries they draw as with a magnet the best teachers from the States further east. This process has been going on for years, and still continues. Churches abound. Every little town has its public library, and the latest ideas of the scientific and literary world are discussed as soon as presented. Under such conditions everybody is an optimist, believing all things are possible. The light, dry, invigorating air and genial sunshine have much to do with this. Consumptively inclined people gain a new lease of life, and the man with the "blues" is unknown.

Nobody wants for work; and the more people flock, the more work there is for all, and this condition of affairs will continue for many years—very probably a century or so.

Scattered over Western Dakota and Montana are fine tracts of land, either not settled at all, or sparsely so. Though rich and fertile, some of this land is still open to homestead entry. In many other localities of the Northwest the Chicago, Milwaukee & St. Paul Railway is building a new line which taps a new country all undeveloped.

In Fergus Co., Montana, for example, the area of land available for farming is over 3,000,000 acres, and at least 2,000,000 is fit for cultivated crops. This is rich land; and yet the whole country, having an area of 6762 square miles, has only a handful of people, and those who are there are largely interested in mining rather than agriculture, for it excels in the production of gold. It is safe to say 1,000,000 acres can be carved into fine farms if homesteaders will only come along and claim them. In the western and northwestern sections of Fergus Co. the land lies in the famous Judith Basin, which contains 2,000,000 acres or more of the finest kind of agricultural land. It was only in the summer of 1907 that one could reach this region by railroad, hence it is no wonder it has not been settled. It is the kind of land on which a good farmer may produce 40 bushels of wheat and 100 bushels of fat oats. Will it answer for bees? Yes; very soon the farmers will plant all kinds of clover, and the wild pastures will become white-clover meadows. Wild flowers are everywhere, and, what is very important, there are excellent markets not far away. Butte City, the greatest mining-camp in the world, with 80,000 inhabitants, is not so far away, and pays higher prices for produce than Chicago.

The capital of Fergus Co. is Lewistown, with 3000 inhabitants. Here is located the United States Land Office. It has all the leading churches,

and also a fine public hospital. It has all the "improvements" of a modern city, and quite, possibly in a quarter of a century may contain 100,000 inhabitants, as it has a splendid country all around.

Extensive coal-fields lie near by, and mineral deposits of all kinds are not far away. It will be very strange indeed if these American men do not create a great city there; and it will be a grand city with beautiful homes. There is every thing there to make it so. Nothing is now lacking but the right kind of people.

These States draw toward them the pick of the brain and brawn of the American nation. Somehow the other kind does not find its way to the Northwest, especially Montana. The sort of people now there are home-builders of the intensest sort. There is plenty of hustle, but women and children are splendidly protected, both by law and chivalry. Fergus Co. has been instanced as an example; but there are sections just as good—some of them not opened up yet to civilization, because railways are too remote.

The reason why we instance the Chicago, Milwaukee & St. Paul R. R. is because the line is absolutely new; in fact, several hundred miles of track will be constructed or finished this coming summer, and ere long it will reach the Pacific Coast. This gives the homeseeker a grand opportunity to get in on the ground floor. There is no need to go to Canada or Mexico when fine lands on a well-known railroad are so easily secured. If you are an American citizen you may lay claim to 160 acres of excellent land, or you may journey further westward and invest in irrigated fruit lands which will, in a few years, be worth \$1000 an acre if planted in apples, and the same properly cultivated. The railroad managers are anxious to get new people to settle near their property, for unless towns and cities spring up, their investment will prove a failure. They do every thing to facilitate the movement of settlers, and go to a great deal of trouble to furnish the desired information. Nothing would do more harm than for them to promulgate erroneous ideas of the country, and usually this work is delegated to men whose only interest in the work is the salary they draw. This prevents exaggeration and fanciful conceptions. While land is good and the conditions good, this is essentially a country for the hustler. It is no place for the man looking for something easy.

As a land of beauty it is unexcelled by any in the world. Not far away is the famous Yellowstone Park, where people flock from all parts of the world to view the scenery. And there is plenty of more scenery of the same kind all through the Northwest. It is the paradise of the sportsman and angler, and the elysium of the naturalist and geologist.

There are great forests for timber, and waterfalls for power. Taken all together it is a happy land.

Gleanings in Bee Culture

E. R. ROOT,
Editor

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Editor Home Department

H. H. ROOT
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CONTENTS OF MAY 1, 1908

HONEY MARKET.....	532	Rendering Wax, Hatch on.....	558
STRAY STRAWS.....	545	Transferring Hand on.....	560
EDITORIAL.....	546	Bottom Starters.....	561
Wiley on Glucose as a Food.....	547	Eight Queens in a Hive.....	562
Farms, Irrigated.....	547	Production of Extracted Honey.....	562
Objections to Glucose.....	547	Swarming.....	567
Honey, To Liquefy.....	548	Hand-car in Apiary.....	568
Honey, Composition of.....	549	Comb Built in Open Air.....	568
CONVERSATIONS WITH DOOLITTLE.....	551	Queens, Breeding of.....	569
NOTES FROM CANADA.....	552	Honey Removed from Roof.....	570
Wintering in Canada.....	552	Bee-moth.....	571
Comb Honey, Production of.....	552	Spring Feeding.....	572
Bottom Starters and Split Sections.....	552	Hives, Evolution of.....	574
Wax, To Remove from Cans.....	553	Bee-keeping in New Mexico.....	580
GLEANINGS FROM PACIFIC COAST.....	553	Injury to Basswoods.....	580
Apiculture in Agricultural Colleges.....	553	HEADS OF GRAIN.....	581
Bees and Scale Insects.....	553	Alfalfa Honey Remaining Solid.....	581
BEE-KEEPING AMONG THE ROCKIES.....	554	Queen with Dent in Back.....	581
Sections, Split.....	554	Nails in Cigar-boxes.....	582
Splints, Foundation.....	554	Screened Entrances in Cellar.....	582
Hive-corners, Fixing.....	554	Stray Swarms, Catching.....	583
GENERAL CORRESPONDENCE.....	555	Honey Evaporated in a Vacuum-pan.....	583
Queen-traps, Taylor on.....	555	Petroleum for Repelling Robbers.....	583
Queen-traps, Miller on.....	556	Chicken that Ate Drones.....	584
Hot Water to Render Wax.....	557	Starters, Top and Bottom.....	584
Wax-press, The Hershiser.....	557	OUR HOMES.....	585

FIX YOUR ROOFS.

Have you written for the little book on mending the old roof, published by The Anderson Mfg. Co., Elyria, Ohio? It's a good money-saving little book to read. Write for it. Just say: "Send me that free book on fixing roofs advertised in GLEANINGS IN BEE CULTURE."

TEMPERANCE POST CARDS.

Mr. A. T. Cook, of Hyde Park, N. Y., the well-known seedsman, is a prominent temperance worker as well. To help the good cause he has published a series of very nice post cards which cover temperance problems very well. Correspond with him if you are interested. See his ad't, page 597.

HARDY PERENNIAL FLOWERS.

It is pleasing to know that the hardy perennial flowers are becoming popular. They are so readily raised from seeds, so easily cared for, and withal so beautiful and lasting, that they are sometimes called "The Poor Man's Flowers," a name not inappropriate, as they do not have to be coddled and fussed over every year to have them grow and bloom.

Pansies and Daisies, which begin to bloom with the Snowdrop in early spring, soon usher in a wealth of snowy Arabis and Golden Alyssum and pink Carpet Saponaria. Then comes the Columbine in great variety, Campanula, or Bell Flowers, stately rows of Foxglove, and glowing clumps of Clove Pink, Sweet William, and Carnations, Forgetmenot, Feverfew, and a host of other beautiful and fragrant perennial flowers, making a rich array of color in the garden, and perfuming the air with delicious odors.

May and June are the months in which to sow these seeds to get the most satisfactory results, and if you get them and plant them at this season, you will never regret it. The plants are hardy, lasting, and free-blooming, and will afford a glorious return for the modicum of cost and labor of raising them. They will live and bloom well for years, and are a never-failing source of real garden enjoyment. Do not fail to start a bed of hardy perennials this season. See page 591.

SAVING

is more important than hard work.

Money deposited with us is secure and works for you continually. Our perfect system of Banking BY MAIL brings this opportunity to your door.

4%₀

The Savings Deposit Bank has a capital and surplus of \$70,000, and assets of over \$700,000. Its policy is conservative; its affairs are ably managed by capable and successful business men.

Deposits of \$1.00 and upwards accepted, on which we pay a yearly interest of 4 per cent, compounded semi-annually. Send currency in registered letter, your own check; or by P. O. or Express money-order.

WRITE FOR THE BOOKLET
TO-DAY

Established 1892

A State Bank

THE SAVINGS DEPOSIT
BANK COMPANY

MEDINA, OHIO

A. T. SPITZER, President. A. I. ROOT, Vice-pres. E. B. SPITZER, Cashier.

Lansing, Mich.

Yes, we've moved to the best point in Michigan to reach bee-keepers. We have four great railroad systems and three express companies reaching out in every direction. At a low-cost freight expense we can supply you with

"ROOT QUALITY"

bee-supplies at factory prices. Hives, sections, and foundation ready for immediate shipment in any quantities.

SPECIAL OFFER

GLEANINGS one year, new or renewal, and a good bee-veil with a silk-tulle front for \$1.15. No matter where you live, take advantage of this GLEANINGS offer.

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M. H. Hunt & Son

Lansing Michigan

Opposite P. M. depot.

Extracted Honey Wanted

We are always in the market.

If you have any to sell, mail small average sample to

**NATIONAL
BISCUIT COMPANY**

Purchasing Department,
Washington Blvd. & Morgan St.
CHICAGO, ILL.

HONEY WANTED.

Wanted to contract for 20,000 lbs. comb honey in shallow extracting-frames 5 $\frac{1}{2}$ inches deep.

Requirements: Honey to be produced on full sheets of extra-thin super foundation, in shallow extracting-frames, not wired.

Grade: Same as first three grades in GLEANINGS grading-rules—Fancy, A No. 1, and No. 1 (all included as one grade).

Quality: Honey must be produced from clover, basswood, or raspberry.

Combs must be even and of uniform thickness—not over one inch.

Will furnish frames, shipping-cases, and carriers for re-shipping the honey.

Bee-keepers in Michigan or Ohio interested in this proposition, write, stating approximate number of frames you can furnish, and price wanted for the honey per pound, *net weight*, F. O. B. Medina.

Address

HONEY BUYER,

c-o GLEANINGS IN BEE CULTURE,
Medina, Ohio.

WE WILL BUY AND SELL

HONEY

of the different grades and kinds.

If you have any to dispose of, or if you intend to buy, correspond with us.

We are always in the market for WAX at highest market prices.

HILDRETH & SEGELKEN,

265-267 Greenwich St. 82-86 Murray St.

NEW YORK.

INDEX TO ADVERTISEMENTS.

Agricultural Imple'ts. Electric Wheel Co. 592 Banking by Mail. Savings Deposit Bank. 536 Bee-smokers. Danzenbaker, F. 542 Bee-supplies. Blanke & Hauk 543 Bondouneau, E. 540 Buell, S. D. 592 Colorado Honey-pro's' Association 542 Daniels, F. R. 591 Falconer, W. T. 602 Grainger, E., & Co. 540 Grafiam & Bro. 595 Griggs' Brothers. 541 Hilton, Geo. E. 542 Howkins & Rush. 592 Hunt & Son, M. H. 537 Jenkins, J. M. 542 Jepson, H. H. 592 Minnesota Bee Supply Co. 539 Muth, F. W. Co. 533 Nebel, J. & Son. 539 Nysewander, Jos. 541 Peirce, E. W. 592 Ponder, Walter S. 544 Prothero, John N. 543 Rawlins Imp. Co. 542 Root Co., Syracuse. 540 Root Co., St. Paul. 543 Stringham, I. J. 542 Texas Seed and Floral Co. 543 Toeperwein, U. 593 Weber, C. H. W. 531 Woodman, A. G. 592	Bees and Queens. Barnes, G. W. 595 Blocher, D. J. 595 Case, J. B. 594 Hand, J. E. 541 Fajen, J. L. 594 Hutchinson, W. Z. 539 Laws, W. H. 594 Littlefield, W. J. 594 New Century Queen Rearing Co. 595 Quirin 594 Ross, H. A. 595 Routzahn, G. 519 Shaffer, H. 595 Shaw & Co. 595 Shuff, Wm. A. 594 Shumard, I. T. 594 Simmons, E. A. 594 Soper, W. D. 601 Taylor, J. W. & Son. 594 Victor, W. O. 595 Wardell, F. J. 595 Wurth, D. 594 Berry-boxes. New Albany Box and Basket Co. 590 Bicycles. Meade Cycle Co. 590 Brooders. Root Incubator Co. 591 Buggies, Carriages. Elkhart Carriage and Harness Mfg. Co. 590 Fouts & Hunter, back cover. Ohio Carriage Co. 591 Classified Advertise's. Bees and Queens. 598 Bee-keepers' Directory 599	For Sale 597 Help Wanted 597 Honey and Wax Wanted. 597 Honey and Wax for Sale 598 Plants 597 Post Cards 597 Poultry 597 Real Estate for Bee-keepers 597 Rugs 597 Wanted, Situations 597 Poultry Offers 597 Wants and Exchange 598 Comb Foundation. Dadant & Sons 602 Dittmer, Gus 542 Educational. Univ. of Michigan. 592 Fencing. Mason Fence Co. 591 Honey-dealers. National Biscuit Co. 537 Hildreth & Segelken. 537 Honey Buyer. 535 Hotels. Hotel Tuller. 589 Household Specialties. Best Light Co. 591 Land for Sale. Chicago, Milwaukee & St. Paul R'y. cover. Seaboard Air Line. 589 Mail-order Houses. Gordon, Van Tine Co. 590	Miscellaneous. Babson, F. K., cover. Michigan Honey Co. 595 Mugler Engraving Co. 592 Paints. Lowe Bros. Co. 589 Patents. Williamson, C. J. 592 Poultry-supplies. Chamberlain, W. F. 590 Publications. Am. Bee Journal. 539 American Bee-keeper. 602 Inland Poultry Jour'l. 592 Nat. Fruit Grower. 592 Poultry Review, back cover. Seaboard Magazine. 589 Roofing. Anderson Mfg. Co. 591 Seeds and Bulbs. Park, G. W. 591 Sprayers and Pumps. Myers, F. E. 591 Rochester Spray Pump Co. 591 Swine. Wheeler, J. M. 592 Tools. Bateman Mfg. Co. 591 Trees and Plants. Schuh Brothers. 601
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LEAVING THE BUNCH BEHIND.

Along with marbles and baseball, renewed interest in wheeling manifests itself as a sure indication of spring and the joys of outdoor exercise.

Nothing ever invented serves so admirably the triple purposes of utility, exercise, and pleasure as does the bicycle. The best grade of wheels are now selling for less than one-third the prices of ten years ago, and at that the rider gets a better mount than was possible then. The coaster brake and two-speed-gear features alone mark a big step forward in bicycle construction since the boom days.

Inquiry among jobbers and dealers discloses a demand for bicycles, not only from the small boy (who has always ridden) but also from his older brother and his father also. The lady cyclist is also venturing timidly forth from the mysterious retreat where-in she has hibernated for a decade, and she's not in bloomers either—thank the Lord for that.

"Leaving the Bunch Behind" is the attractive picture adorning the gold-embossed 1908 catalog cover of the "oldest exclusive bicycle house in America," a copy of which has just reached us. The catalog is a work of art, and is brimful of valuable and interesting matter for riders or those thinking of buying wheels. It is well worth getting, and may be had by writing the Mead Cycle Co., Department SX-113, Chicago, Ill. They also send a wheel for ten days' free trial, and will engage live agents.

A NEW SPECIES OF CHICK-BROODER.

Almost anybody can use any of the standard makes of egg-incubators, and get fairly satisfactory results. It is when we come to take care of the young chicks that failure in many places takes place. The little things die from want of heat or too much of it, or they die from lack of fresh air; but, more than all else,

they die from from huddling too close together. In a word, they are "huddled" to death. A Mr. Root, of Cleveland, O., saw the need of a radical departure from the present-day brooder, and after considerable study of the problem he seems to have solved it. In his brooder are small hot-water pipes arranged in rows close enough together so that the chicks just manage to get their heads and necks comfortably through between them. This places a hot-water pipe on each side of the chick. The head of the chick is out in the fresh air very much the same as when underneath an old hen and the little heads pop out between the feathers of her wings. This gives conditions more in accordance with nature. The pipes are all hot alike, hence there is no huddling, and every very thing has an equal chance.

Though on the market only a short time, the new brooder has met with flattering success, large orders having been obtained from Buenos Aires, Argentina, and even from places beyond the sea. The brooders are constructed by The A. I. Root Co., of Medina, Ohio, which is an excellent guarantee that they will be well made, because their bee-supplies are famous all over the world. Mr. Root, the inventor of the brooder, is no relative of the members of The A. I. Root Co. He is the organizer of The Root Incubator Co., Cleveland, O., where communications may be addressed.

SPLINTS VS. WIRES.

Perhaps you may have overlooked the article on splints in the April 1st issue of GLEANINGS by Dr. C. C. Miller who is the inventor. In that communication he reviews the whole question and a careful reading of it will be found useful by all bee-keepers who intend to use full sheets of brood foundation.

Bees For Sale.

My bees have wintered perfectly—clean, dry, and free from dysentery—and I have decided to sell a few colonies. The bees are of the Superior stock, the hives nearly new, in good condition, and well painted. The combs are all-worker—mostly built on wired foundation. Everything is strictly first class.

For a colony in an eight-frame Langstroth hive the price is \$6.00; in a ten-frame Langstroth, or in a new Heddon hive (two sections) the price is \$7.00; and to each purchaser of one or more colonies the Review will be sent free for 1908.

I am now ready to accept and book orders accompanied by the cash; and when I have received as many

orders as I care to fill, no more will be accepted. The bees will be shipped by express, about the close of fruit-bloom, when the newly gathered honey will furnish the necessary water, and safe arrival will be guaranteed in every respect.

If you wish to stock your apiary with a strain of bees that has no superior, here is a chance to get a breeding-queen, such as the most of dealers ask from \$3.00 to \$5.00 for, already introduced, in a full colony, whereby she can be shipped without injury, early in the season, all at a moderate price.

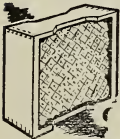
W. Z. HUTCHINSON, Flint, Mich.



will be a profitable industry this season.

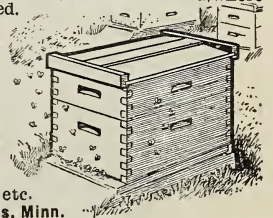
Honey is high—short crop last year. The shortage of the honey crop for 1907 in the United States warrants bee-keepers to increase their colonies. About a half crop was produced, and in California, where the cheap honey comes from, only a quarter of the average crop was produced.

Get Ready Now for More Honey



Let us send you our catalog. We are manufacturers and sell only our own make of bee-supplies. Minneapolis is the largest lumber-distributing point; the Mississippi river furnishes us power, and our organization and labor conditions are the best for economical production. Send us an estimate of your requirements and let us give you prices. We have a large stock of standard bee-supplies on hand.

Dovetailed Hives, Sections, Section-holders, Separators, Brood-frames, Comb Foundation, Smokers, Extractors, Shipping-cases, etc.
MINNESOTA BEE SUPPLY COMPANY, 23 Nicollet Island, Minneapolis, Minn.



LISTEN!

DO YOU HEAR THOSE BEES WORKING?

Soon they will want room or will swarm.

Have you gotten your hives and supplies? If not, send your order at once. If you have The A. I. Root Co.'s catalog you can order from it. We sell their goods at their factory prices. We can fill your orders promptly now. Write for further information and our 40-page catalog.

JOHN NEBEL & SON SUPPLY CO., HIGH HILL, MONTG. CO., MISSOURI.

This Coupon worth 25 Cents!

If not now a subscriber and you want one of the most helpful aids to successful bee-culture—a paper that tells how to make your bees pay—you should subscribe for the

New Subscribers Only.

Name.....

Postoffice.....

State.....

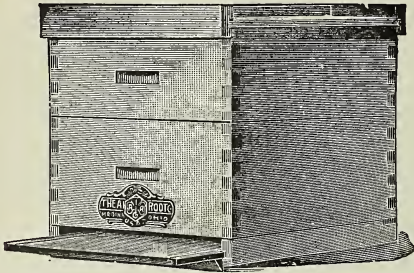
AMERICAN - BEE - JOURNAL

A 32-page illustrated 50-cent monthly. It tells all about the best way to manage bees to produce the most honey; with market quotations, etc. A dozen different departments—one for women bee-keeper. . . . Best writers.

It will increase your Honey-money!

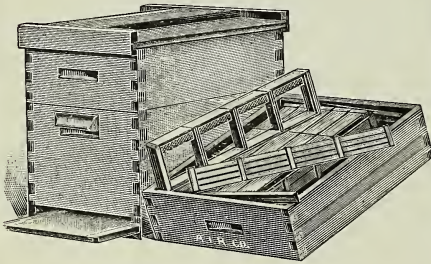
If you will send us your name and address with 25 cents (stamps or coin) together with this coupon, we will send you a trial trip of our journal for 12 months. Order now, and let us begin with this month's fine number. Address

American Bee Journal, 118 W. Jackson, Chicago, Illinois



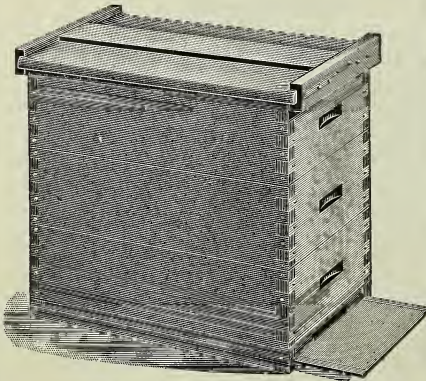
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The Best Comb-honey Hive



1 1/2-story Dov'd Hive for Comb Honey.

The Best All-around Hive



Divisible Brood Chamber Hive.

The Best Hive for Experts

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 SYRACUSE,  NEW YORK

European Bee-keepers!

**Save Time
 and Expense**

by sending direct all your orders and correspondence to our exclusive agent for the European continent and its colonies. . .

EMILE BONDONNEAU
 142 FAUBOURG - ST. DENIS, PARIS

**Prompt Service
 and Satisfaction
 Guaranteed. . . .**

The A. I. Root Company

TO THE
**BEE - KEEPERS
 OF CANADA.**

WE are pleased to say that we are able to offer, in Canada, goods manufactured by The A. I. Root Co. While we do not offer every thing listed in their catalog, we have selected such articles as we believe will best meet the wants of the Canadian bee-keepers.

The heavy duty and freight charges we have to pay make it impossible for us to sell in Canada at Root's prices. We have, however, made prices as low as possible, and in no case do we charge nearly as much extra as the amount of freight and duty we ourselves have to pay on the goods.

We would ask you, when comparing our prices with those of other dealers, to take into consideration the QUALITY. If you do so we feel satisfied that you will place your order with us. The splendid quality of the material sent out by The A. I. Root Co. has given "Root's Goods" a world-wide reputation. Remember, The best is cheapest."

E. GRAINGER & COMPANY,
 Deer Park,
Toronto, Ontario, Canada.

CANADIAN AGENTS FOR
 THE A. I. ROOT CO., MEDINA, OHIO, U. S. A.

We are Still Here, But Not Here Still.

BEE-MEN HAVE realized all over the country that they could save money by buying bee-supplies in TOLEDO.

THIS ANSWERS the question as to why OUR sales increase from 30 to 50 per cent over each previous year.

A LARGER SUPPLY OF ROOT'S GOODS

on hand than ever before, and more arriving every day to take care of our increasing trade.

LET US LIST YOU as one of the thousands who is saving money each year by buying goods of us.

OUR LARGE CATALOG of poultry and bee supplies is free. Just send a postal for it.

THE SECOND LARGEST railroad center in the United States. Why not save money by buying in TOLEDO?

Best prices, cash or in trade, for your honey and wax.

Griggs Bros. & Nichols Co.
523 Monroe St. .. Toledo, Ohio.

WESTERN Bee-keepers

.. will ..

SAVE TIME AND FREIGHT

by ordering **ROOT'S GOODS**
from Des Moines, Iowa.

Complete NEW STOCK now on hand. Our stock includes a full line of Danzenbaker lives and all other up-to-date goods.

Remember we sell at Root's factory prices, and offer liberal discounts now.

Estimates cheerfully given. Send us a list of your wants, and get our net prices by letter.

Our 1908 catalog is now ready to mail. Write for it to-day. Address

JOS. NYSEWANDER
565-7.W.7th St., Des Moines, Ia.

WE HANDLE the BEST GOODS OBTAINABLE

Lewis Root's Dadant's
BEE-HIVES and SECTIONS. SMOKERS and EXTRACTORS. COMB FOUNDATION.

If you live west of the Missouri river, send for our FREE 48-page illustrated catalog to-day and save money. We are a co-operative association of bee-keepers, and can supply comb and extracted honey at all times.

The Colorado Honey-Producers' Association

1440-1444 MARKET STREET :: :: :: DENVER, COLORADO



HIGHLAND FARM QUEENS



are the result of years of careful selection and judicious breeding from the best honey-gathering strains of superior long-tongue red-clover Italians in America and Italy. Highland Farm methods will produce perfectly developed, long-lived, and prolific queens. If you want bees that will winter well, build up rapidly in the spring, and roll in the honey, Highland Farm queens will produce them. We are now booking orders which will be filled in regular rotation, beginning

May 15. You should get in line by placing your orders early, and avoid the rush of the busy season. Single queens, \$1.00; 6, \$5.00; 12, \$9.00. Safe delivery and satisfaction guaranteed.

For further information send your address on a postal card to

HIGHLAND BEE AND POULTRY FARM, J. E. HAND, BIRMINGHAM, ERIE CO., O.
Proprietor,

What's the Matter With Hilton?

WHY!

He has got his new goods fresh from The A. I. Root factory, and his 1908 catalog, and wants you to send for one free—40 pages illustrating and describing Root's goods at Root's prices. Send him a list of what goods you want, and let him tell you how much they will cost you.

Cash or supplies for beeswax at all times.

GEORGE E. HILTON
FREMONT, :: :: MICHIGAN

Furnishing Bees and Supplies to Bee-keepers has been our business for 15 years.

NEW YORK CITY

where our supply business is located, means quick shipments and low freight rates to our customers. Our prices are f. o. b. cars here, Colony of Italian bees in an 8-frame D. T. hive, complete \$9.00
Italian queens 1.00
Catalog free.

I. J. STRINGHAM,
Apiaries, Glen Cove, L.I. 105 Park Pl., N. Y. City.

Root's Bee-supplies at Root's Prices

But f. o. b. Baltimore instead of Medina. Write for catalog L. No charge for drayage. ❖ ❖

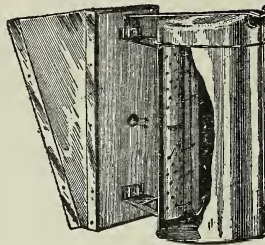
RAWLINGS IMPLEMENT COMPANY
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THE DANZENBAKER SMOKER

PAT. OCT. 3, '05, JUNE 4, '07

GOLD MEDALS

St. Louis Exposition, 1904
Jamestown Exposition, 1907



IS THE BEST,
STRONGEST,
COOLEST,
CLEANEST,
CHEAPEST,
AND LARGEST
SMOKER SOLD
FOR A DOLLAR

The perforated side grate seen above holds a removable, metal, asbestos-backed fire shell, preventing burning the tin off the outer case, and deflects the air at right angles, preventing back draft to the valveless bellows. The air, passing to the back and over the top, cools and expels the smoke, fanning the burning fuel at top or side till all consumed, giving cool smoke for hours from one filling. It can't clog. No top-heavy cap to choke with soot: no valve to fail; no holes shedding sparks or hot ashes.

Four years' sales prove its success beyond a doubt, expensive dies making it uniformly perfect as possible to devise. We confidently guarantee full satisfaction or refund the price.

Price, \$1.00; 3 for \$2.50; by mail, add 25c. each

Send address of yourself and Bee friends for 8-page leaflet on "Smoker," and facts about Bees and Queens, 80 pages, free.

F. DANZENBAKER, Norfolk, Va.

1884

1908

Root's Goods always in stock

FOR YOU

Twenty-two successful years manufacturing bee-supplies and raising Italian bees and queens.

Root's Goods in Stock.

J. M. Jenkins

Wetumpka, : : Alabama

Dittmer's COMB FOUNDATION

is the best, not because we say so, but because the bees prefer it to other makes.

Dittmer's Process is Dittmer's

It has built its reputation and established its merits on its own foundation and its own name.

We make a specialty of working wax into foundation for cash.

Write for free catalog, and prices on full line of supplies.

GUS. DITTMER CO., Augusta, Wis.

Hammer Free!

With Every Order of Supplies of \$5.00 or Over.



This is the handiest tool for nailing up hives, frames, and all parts, or for opening up hives. Made of steel, nicked.

Three per cent discount off all prices in catalog.

FULL LINE OF ROOT'S GOODS

NO CHARGE FOR DRAYAGE.

John N. Prothero
Dubois, .. Pennsylvania

Northwestern Bee-keepers!

We are headquarters for the ROOT supplies for the States of Montana, Minnesota, the Dakotas, and Western Wisconsin.

You can save freight by ordering from this branch. A complete line of bee-keepers' supplies always in stock.

Secure a catalog at once.

BEES and QUEENS.—Your orders will be attended to.

The A. I. Root Company

H. G. ACKLIN, MANAGER

1024 Mississippi Street, St. Paul, Minn.

At St. Louis

On a  Line

to all points in the South and Middle West.

Send for our free illustrated catalog of

Root's Bee-supplies

We sell at factory prices. Send us a trial order.

Beeswax Wanted.

Blanke & Hauk Supply Co.

DEPT. B.

1009-11-13 Lucas Ave. St. Louis, Mo.

Manufacturers and Jobbers of Dairy, Creamery, Ice-cream, and Poultry Supplies.

North Texas Bee-keepers

will find Dallas the best point from which to purchase supplies. We have a carload of **ROOT'S GOODS IN STOCK**, and sell them at the Factory Prices. Don't forget that we can furnish any thing in the way of Field or Garden Seeds, Plants, and Poultry Supplies. Our large illustrated catalog for 1908 free on application. Mention GLEANINGS when you write.

TEXAS SEED AND FLORAL COMPANY

Dallas, : : . Texas

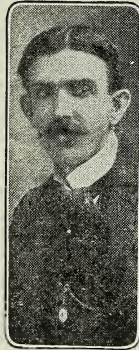
**"If goods are wanted quick, send to Pouder."
Established 1889.**

A Thrilling Rescue.

By the Bee Crank.

There was a young woman from
Lynn
Who was so exceedingly thin
That, when she essayed
To drink lemonade,
She slipped through the straw
and fell in.

Now, a bee that was loafing
around
Spied her rose-covered hat on the
ground,
And said, "Isn't it funny,
What's become of the Honey?"
Then, hearing her squeals,
Dragged her out by the heels—
If he hadn't, she'd surely have
drowned.



They tell a good many
bee stories and comb-honey
yarns that test the credulity
almost as much as this one,
which, I admit on the face of
it, seems improbable. I make
the admission in order to draw
the distinction clearly between
fact and fiction. The following

statements are FACTS.
I have the finest, clean-
est, freshest, and larg-
est stock of Root's
goods that I have ever
carried. They are ready
to go on the same day
your order is received.
I sell them at Root's
prices, and save you
time and freight char-
ges. Danz. hives,
fresh new foundation,
section boxes, bee-smokers,
veils, and a host of other need-
fuls. My catalog tells all about
them. Send for it; it's free.
I pay 28 cts. cash for beeswax
or 30 cts. in trade for goods.
Send large shipments by freight
and small ones by express.

Walter S. Pouder,

513-515 Massachusetts Avenue, Indianapolis, Ind.

GLEANINGS IN BEE CULTURE

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

E. R. ROOT, EDITOR
H. H. ROOT, ASST. ED.

A. L. BOYDEN, ADVERTISING MGR.
J. T. CALVERT, BUSINESS MGR.
A. I. ROOT, EDITOR OF HOME DEPARTMENT

Vol. XXXVI.

MAY 1, 1908.

No. 9



I SUPPOSED that feeding 20 pounds of sugar (made into syrup) was equivalent to adding 28 pounds of honey to the winter stores. According to Allan Latham, page 509, it is only 23 or 24. I accept the amendment.

G. M. DOOLITTLE, in that nucleus, where the queen with all drone comb laid worker eggs, p. 492, I wish you would tell us whether the workers first contracted the mouths of the cells. I have seen worker brood in drone-cells a number of times, but never yet unless there was a contraction of the cell-mouths.

"PROHIBITION in the South is having a remarkable effect upon the fruit consumption in that section, fruit growing in demand at almost the same ratio that liquor has vanished. An Alabama dealer in fruits claims that his books show double as much business in January and February, 1908, as in the same months in 1907."—*N. Y. Com. Bulletin*. Why will not the same rule hold with honey?

MY LENGTHY Scotch friend on p. 499, you have given us the best lecture I ever read on transferring; but why do you hurt my feeling by tying strings around your ankles? Bicycle trousers-guards, costing 3 cents a pair, are ever so much handier, and are they not just as effective? [You are right; but as our lengthy Scotch friend is progressive we know he will accept your correction. He probably did not have any bicycle pants-guards, and simply used a string in lieu of something better.—ED.]

I HAVE traveled about considerably, visiting hundreds of bee-keepers in their homes, and one of the things that I have noticed is worth pages of theory, and it is this: *The*

most prosperous bee-keepers are those who keep the most bees.—*Review*, 93. Yes, Bro. Hutchinson; but were they prosperous because they kept the most bees, or did they keep the most bees because they were prosperous? A man prosperous with a few bees is likely to become more prosperous with more bees; but if he is not prosperous with a few bees will he be more prosperous with more bees?

S. D. CHAPMAN seems not in accord with the theory that bees, from choice select too old larvæ for queen-rearing, and that the first batch of cells should be destroyed and the second used. For 25 years he has re-queened by taking away queens, allowing the bees to select their own larvæ, and there has been no deterioration. He also says, *Review*, 119: "Nature has so ordered that the best queens a colony can produce are those hatched from the *first cells started*; seemingly, they are better fed, more vigorous, and give better results." Sorry Bro. Hutchinson made no comment upon this.

J. E. HAND doesn't believe in the theory that brood-rearing will go on better with abundance of stores in sight than where the bees have only enough to use from day to day. He says, *Am. Bee-keeper*, 91: "I have never been able to see that the amount of stores in a hive above the present needs of the colony had any more bearing upon the amount of brood reared than the amount of wheat in my bins has upon the number of eggs my hens lay." Can we have any definite proof either way? [Perhaps not definite proof; but, in the language of the court, there is a great deal of "circumstantial evidence" that would seem to favor the contrary view.—ED.]

SAMUEL SIMMINS says: "Queen-cells should not be removed if not near hatching—until after a queen has been safely inserted. By removing them in the first instance the bees are again thrown back to the original uncertain and restless condition; but all the time they possess queen-cells, especially if capped ones, they are in the natural condition of expecting another, and will almost invariably

accept a stranger, provided she be not old and worn." Is not this directly contrary to the general belief and practice? Which is right? [We do not know, but we suspect he may be right. It looks reasonable.—ED.]

GOOD BRAINS must have been used in getting up those Colorado rules for grading, p. 400. With such rules, selling by the section is all right, wholesale and retail. No. 1 honey averages 14 oz. to the section, and the consumer can never get any thing less than 13½. One can omit separators, but he must pay for that privilege a tax of 1 lb. of honey on every 12 sections sold. [This will do more to discourage and stop the practice of trying to get along without separators in Colorado than any other one thing. The progressive bee-keepers of that State are to be commended for the action taken.—ED.]

How LONG does it take to test a queen as to the storing qualities of her worker progeny? You can hardly introduce her (to say nothing of rearing her) early enough in the spring so that results shall be exactly the same as if she had been in the colony all winter. Say she begins her work in April; you can't really tell what she is till the close of the harvest the following year. Introduce her in the fall, or rear her in the hive *a la* Chapman, and you can say she is really tested not till she is a year old; and isn't that about as young as you can ever have a queen properly tested? [Yes, the only way to test for honey-gathering is to wait till the queen is a year old unless one lives where the honey-flow is late. The very best breeding queens, or those tested for honey, are always a year old at least. We believe that the rule is universal among the best breeders.—ED.]

THE ADVANTAGE in change of name from "glucose" to "corn syrup" is only temporary. The name "glucose" is objectionable because the people have learned what glucose is. How long will it take them (more on the lookout than ever before) to learn what "corn syrup" really is, and then what good will the change of name do the glucose crowd? [You have not quite the correct point of view, and apparently we have been at fault in not making clear this matter of the glucose-versus-corn-syrup decision. Of course, it is unfortunate that the change of name should have been allowed. That in itself would be a tremendous advantage to the glucose crowd; but when a mixture of glucose and cane syrup was allowed to be called by a new name—a name *not* descriptive of the contents, and misleading as to its source—a powerful precedent was given for the misbranding of other foods. The intent of the national pure-food law is very plainly for labeling every thing just what it is. We bee-keepers, for example, are not allowed to mix tupelo and clover honey and call it "clover," although we may say it is pure honey. Neither are we allowed to make a mixture of sugar syrup and honey and call it honey; but, strangely enough, the glucose people may mix glucose with cane syrup and call it "corn syrup."—ED.]



It will be noted that this issue is extra large, being the promised number that contains special instructions on early summer management for the production of honey.

PAPER-WINTER-CASE COLONIES NOT QUITE UP TO THOSE IN DOUBLE-WALLED HIVES.

THE former do not quite seem to have held their own with the double-wall chaff hives. Indeed, it is hardly to be expected that they would. Our paper cases have several folds of newspaper under them, but this would make a packing material only from ½ to 1 inch thick over the ¼ thickness of wood, or a total thickness of 1½ to 1¾. In double-wall chaff hives there is a clear packing-space of 2 inches filled with chaff between walls ¾ inch thick, or a total of 2¾ inches. When this is contrasted with 1¾ it will be readily seen that the difference, so far as figures go, is very much in favor of the double-wall hive; but it must be said, on the other hand, that paper-packed colonies wintered almost as well, and far better than they would have wintered without any covering if the experience of former years is any criterion. It would appear that the remedy, to make one method winter as well as the other, would be to put enough packing under the paper caps so that the actual thickness of protection will be equal to that of double-wall hives.

SERIOUS CONSEQUENCES AS A RESULT OF SPRAYING FRUIT-TREES WHILE IN BLOOM.

MR. N. E. FRANCE, General Manager of the National Bee-keepers' Association, in his Information Bureau No. 8 says:

Mr. W. sprayed his orchard often during open bloom, and killed 55 colonies of bees on an adjoining farm. Mr. B. not far away, also sprayed his fruit-bloom, killing all his bees, leaving hives full of honey, which his two little boys ate of and died before doctor could be called (Oklahoma) See that your neighbors do not poison-spray open fruit-bloom. It is dangerous. Some State laws forbid it.

I have late reports from most of the States, and bees wintered well; honey prospects are also good. In 1907 the Western States had a fair honey crop; but owing to warm winter and bad financial conditions there are now several car lots left unsold. Many dealers are now well supplied with the 1907 crop. I have had several complaints of bee-keepers shipping fancy comb honey in front of case with poor and uncapped sections in back. This lowers market, and I ask that you never be one of such.

We wish we had more particulars regarding the case mentioned, where all the bees were killed and two little boys who ate of the honey were poisoned to death. Perhaps Mr. France can tell us.

We are also glad to note that he is using his influence against the dishonest grading of honey. The influence of Mr. France and Mr. Rauchfuss will mean much.

DR. WILEY ON GLUCOSE OR CORN SYRUP AS A FOOD PRODUCT.

WE notice through the current press that Dr. H. W. Wiley, of the Department of Agriculture, is credited with saying that glucose or corn syrup is not palatable, nor is it eaten as a syrup. He says that it has to be highly flavored with other syrups before consumers will take it. This is the statement:

I have spoken of maple syrup as an important food product. Other table syrups should also be carefully scrutinized in regard to their purity. We have in this country abundant supplies of syrup-making materials to provide for all the table syrups needed. The maple-grove, the sorghum-field, and the cane-field are ready to furnish all the table syrups that we need. There is no necessity any longer, if there ever has been, of using glucose as a basis of a table syrup. By itself it is not palatable, nor is it eaten as a syrup. When used it is very highly flavored with the lowest-grade products which are entitled to the name of either syrup or molasses. For instance, the final residue of a liquid character from the sugar-refinery is the most common substance used to flavor glucose when offered for consumption upon the table. Not only is it used for the flavoring, but its presence is usually designated by the statement that the syrup has a cane flavor. The table syrups of this country would be vastly improved if glucose were entirely eliminated from their composition, and if there were substituted for this mixed mass the pure products of the maple-grove, the sorghum-field, and the cane-field.

We do not think there are many consumers, who actually know the quality of pure glucose, or, under its new name, corn syrup, who will take issue with the statement.

IRRIGATED FARMS.

UNCLE SAM has quite a number of fine irrigation farms which he desires to sell on nominal terms to *bona-fide* settlers. These are located in Nevada, Montana, Wyoming, and other western States. In some cases the payment required is very small. Most of them are about 40 acres in extent. Particulars may be secured from the "Statistician," Reclamation Service, Department of Interior, Washington, D. C. Any of our readers who desire accurate details of any government reclamation project in the West can get particulars from the same source. Just now large projects are being opened, both by the United States government and the State government of Wyoming. The conditions are about the same as in Colorado, but the lands are probably a good deal cheaper, as Wyoming is a newer State.

W. K. M.

OUTLOOK FOR HONEY FROM SOUTHERN CALIFORNIA VERY POOR.

WE have just received a line from Mr. L. E. Mercer, of Ventura, one of the most extensive honey-producers in California, dated April 5, saying that the bee-keepers of California are up against one of the worst seasons they have had for years. He adds that there has been no rain since February; cold nights have chilled the brood to such an ex-

tent that many colonies are very weak, and some of them are in the condition of spring dwindling. He has let all of his help go, as he does not expect any honey-flow, and he is of the opinion that the same conditions exist over pretty much all of Southern California. Mr. M. H. Mendleson, of Piru, has written almost as discouraging a letter, except he thinks there is a chance for some honey yet.

While the prospects were very promising in the early part of the year, it now looks as if the California bee-keepers would have another bad year.

WHY WE OBJECT.

SOME may wonder why we bee-keepers object so strenuously to glucose as a food. There are several reasons, and it may be well to state them. First, in nine cases out of ten it has been used to fool the public; that is to say, consumers have bought it unknowingly or unwittingly. Second, it has been used to depress the prosperity of certain legitimate industries such as syrup-making, bee-keeping, and preserve-making. The man who tried to do an honest business could not compete with the competitor who used glucose, and sooner or later he had to acknowledge defeat.

After the passage of the new national pure-food law all this was, to a great extent, changed. But under the recent decision, by which it is permissible to call glucose "corn syrup," there is a big chance to fool the public again. Articles of food naming glucose as the main ingredient would not sell; but under the new name it may now masquerade as a newly discovered food product, and it will continue to go in the stomachs of consumers until their owners discover that they are paying a big price for the old-fashioned glucose with a flavoring to cover up its brassy twang.

Glucose was largely used in preserves such as jams and jellies. Many housekeepers will on no account buy store articles of this sort, and are compelled for this reason to put up their own preserves. Hundreds of thousands of women do this rather than buy in the store a concoction of stale fruit, glucose, and benzoate of soda. Possibly it would be nearer the truth to say that *millions* of women put up their own preserves.

In Europe, on the contrary, there is a vast industry in the manufacture of jams and jellies. This is more particularly true of England, where good jam may be purchased in any store. It is a great national industry, and much is exported. Formerly the United States exported a considerable quantity; but glucose and benzoate of soda killed that trade.

There is a third and even greater reason. The human palate revolts against glucose, and it has to be flavored before it is really passably fit to eat.

There is considerable resemblance between the case of glucose and oleomargarine. The latter threatened to destroy the dairy indus-

try of America, not because it was good, but because it was very frequently sold as butter. *Oleo destroyed our export trade in butter.* This trade went to Canada, which does not allow oleo to be made there.

Artificial vanilla destroyed the trade in real vanilla, though it is distinctly an inferior product to that made from the vanilla bean, and some say the artificial product is poisonous.

Artificial indigo destroyed the industry of growing indigo, once a southern industry of importance. The artificial dye fades, and the natural is everlasting; yet the substitute won the fight.

Our fine carpets and rugs are made by eastern nations who use no artificial dyes or shoddy. Our Navajo Indians make the best blankets with purely natural dyes. The result is, they get high prices from white men who prefer the real goods; and it is economy to buy the high-priced goods—they last for ever. It looks as if we were too smart in some things. In any event, it will pay the bee-keepers of America to watch the glucose industry. W. K. M.

LIQUEFYING COMB HONEY, AGAIN; THE PLAN A SUCCESS.

FURTHER experiments in liquefying comb honey in an incubator, as related on pages 278 and 414, have been made, and we may state that the machine has been kept going on another lot of honey. We selected some comb honey that was candied solid, so that it was almost hard; but the cappings were intact. It took nearly a month to dissolve all the granules of the honey. At the end of that time the combs and cappings were intact, and the honey entirely liquefied. The honey itself was more waxy, of heavier body, and to this extent was actually improved. We are satisfied now that a comparatively small room, having a sufficient number of steam or hot-water pipes, could liquefy almost a carload of honey at a time. If the cappings were intact, such honey would be fully as good as if not better than when it was taken off the hives.

In the matter of regulation we can not conceive of any thing better now than having a ventilating-pipe connected with outdoors. This should be operated by a valve or door that will lift through the action of a thermostat, allowing the excess of hot air to escape the same as in an ordinary egg-hatching incubator. In addition, for safety, an electric thermostat set between the low and high point would notify the owner, by means of an electric bell, when the temperature was going above 105° F. And right here we may say that we found the best temperature for liquefying comb honey to be between 103 and 105° F.

It is well known that many a dealer will get a quantity of alfalfa honey on his hands, partly candied. Such honey usually sells at one-third or one-half price. If he can have a suitable hot room he can save this honey at a comparatively small cost. A very small hot-water boiler, with sufficient radiation if

hot water be used, would keep a room 10×10 feet and 8 feet high hot for a month, at an expense, we will say, not exceeding \$10.00 for fuel. If there be \$1500 worth of honey in the room it can be readily seen that the fuel item is practically insignificant.

OUR POLICY TOWARD UNPOPULAR OR UNORTHODOX TEACHINGS.

ONE of our old correspondents recently made the statement in one of his letters that he supposed that what we published without a footnote reflected our own sentiments, and therefore had our editorial indorsement as if we had written it. In reply we said that, while that may have been true at one time, it was now our policy to publish any fair and reasonable statement, even though such statement might be in opposition to the well-known views of the editors of GLEANINGS.

Where a correspondent is obviously wrong, and is clearly at variance with the best thought and modern practice, we feel it our duty to put in a footnote of caution to prevent the beginner from being led into expensive error. But where an unorthodox correspondent sets forth a proposition that has a semblance of truth in it, we feel that we should let it go unchallenged. To footnote every statement that seems to be beyond the pale of orthodoxy or our beliefs would make our journal simply a mouthpiece of the views of the editors, and we hope we are fair enough to believe that no editor is infallible. At all events, we do not claim to be. We desire to have GLEANINGS reflect all shades of opinion and practices, believing that a general discussion will in the end bring out the truth. At the end of that time we may or may not summarize the facts proven or brought out as we did in the plural-queen discussion.

Lately, when R. L. Taylor, of Michigan, stated that clipped queens were "an unmitigated nuisance," and that he preferred to restrain his queens with queen-traps instead, he was clearly running counter to the views of most bee-keepers in general. But as those views were clearly and fairly stated, we did not challenge them with a footnote, believing there was an even chance that he might be right. This called forth a rejoinder from Mr. Halter, and then from Dr. Miller in this issue. If we had made an effort to squelch Mr. Taylor at the start by a vigorous footnote, other correspondents would never have thought of writing to state their views, and there the matter would have ended. But who knows but this discussion, which is free for all, may draw out new facts to an extent that will cause a revision of opinion?

To exemplify this matter further, any one who would have been bold enough at one time to declare against spring feeding for stimulating brood-rearing, such person would have been branded a heretic; now, apparently, there is a sentiment against it. Suppose, for example, the editor of this journal had suppressed these communications advising

against spring feeding because they were counter to his notions. Suppose, again, he were to hold back all others of the same character—clearly he would be molding his journal to his own notion of orthodoxy, and in time GLEANINGS would be a one-horse publication.

These remarks on the policy of GLEANINGS are dictated by the one who has been longer at the editorial helm than any other person on the force—namely, E. R. R. We are heralding no new policy, but an old one that has been undergoing a slight revision.

U. S. DEPT. OF AGRICULTURE BULLETIN NO.
110; CHEMICAL ANALYSIS AND COMPO-
SITION OF AMERICAN HONEY, BY
C. A. BROWNE AND W. J.
YOUNG.

MR. N. E. FRANCE, General Manager of the National Bee-keepers' Association, placed on exhibition before the convention that was held in St. Louis during the year of the exposition 100 samples of honey which he had obtained from members in various parts of the country. A larger and more representative collection of American honeys has probably never before been obtained. These, apparently, were subsequently placed on exhibition in the great exposition where they could be further seen and studied.

To Dr. E. F. Phillips, of the Bureau of Entomology, in charge of apiculture, belongs the credit of procuring these samples for the government. These were assigned to the Bureau of Chemistry, the head of which is Dr. Wiley, himself a sugar chemist, who in turn placed them with Dr. C. A. Browne, another accomplished and skillful sugar chemist, who subjected them to a long and searching investigation. Forty more samples were secured from elsewhere, notably from the Hawaiian Islands, where abnormal honeys are common. The pollen in the different samples was examined by Mr. W. J. Young, as a means of further identifying the source from which the nectar came.

Taken all together, we have as a result a brilliant contribution to the subject of American honey analysis, equal at least to that possessed by any other nation. Hereafter we have a guide to the subject that is safe, scientific, and authoritative, for Prof. Browne has so well done the work assigned to him that there is little left for others to do, though the author thinks he could have extended the investigation still further. It is to be hoped he will be allowed to do so.

With the data so carefully collected and tabulated, the pure-food authorities of this country are now in position to do justice to all the claims of the American bee-keepers. Some of the latter were just a little afraid the "big stick" might be applied to them, when, as a matter of fact, they were quite innocent of any wrong-doing. In this book the information is tabulated ready for use, such as a court of law requires in a pure-food case. Hitherto such information was unobtainable. In this way justice will be

promoted, and the interests of bee-keepers protected.

Some of the facts elicited by the investigation are quite new; for example, 20 per cent of the samples showed no signs of granulation. This is surprising. The two most important of the non-granulating honeys are tupelo and sage, both southern honeys of high purity and quality.

Evidently honey-dew is easily detected, for the report says, "The presence of much honey-dew in a sample could usually be detected by the very marked molasses-like odor and flavor." This looks simple enough, and yet it may be quite an accurate test.

It is almost unnecessary to say that an extended inquiry of this kind elicited a number of new facts; for example, on page 42 we find the following:

"The statement is sometimes made, that a pure honey will rarely polarize more than -20° V. at 20° Cent., and that a higher reading than this, while not conclusive evidence of adulteration, may well be looked on with suspicion. This statement is hardly borne out by the analytical results given in the table, where 16 of the 100 honeys examined polarized more than -20° , the results going as high as 24.6° in a tupelo honey and 24.8° in a mangrove." Tupelo honey had an invert polarization of -28.38° at 20° C., and yet contained 7.24 per cent of non-sugars.

It is very evident from this that tupelo honey is of very high quality, and yet it must be admirably suited to the purposes of the baking trade. For a long time bakers have preferred southern honey for their uses, and it is evident they have a good reason for so doing. One result of the publication of this book will be to raise the selling price of tupelo honey. It is clear that it has been underestimated.

Errors in present-day methods of analysis were detected by the author. For example he says, "The error resulting from a neglect of the phenomenon of birotation in the calculation of sucrose in honeys by Clerget's formula has already been mentioned. Another very serious error is that due to the change in the specific rotation of the levulose of the honey after the inversion by hydrochloric acid. This error in sugar analysis has been so thoroughly studied by Lippman and others that no detailed study of it need be undertaken here. Folman, who has recently made an investigation of this error, shows by analysis that many honeys which, when analyzed by the Clerget method, appear to contain cane sugar, contain in reality none at all, the error in many cases exceeding 1 per cent." Adding his own experience, Dr. Browne arrives at the following decision:

"On account of numerous errors just cited in connection with the Clerget method, and the difficulty of introducing any correction for these errors, the determination of sucrose in honey, when accuracy is required, should be made only by the gravimetric method. A neglect of this precaution might cause injustice to the producers. Honey No. 23, for example, had been found to contain 8.95 per

cent sucrose by the Clerget method, a larger amount than that allowed by the standard (8 per cent).” This is an important decision for a government chemist to arrive at.

It may be well right here to state that the United States standard for honey is as follows: “Honey is lævo-rotatory, contains not more than 25 per cent of water, not more than 25 per cent of ash, and not more than 8 per cent of sucrose.” Most sugars deflect a ray of light to the right when subjected to polarization in a polariscope, but honey deflects it to the left as much as 24 degrees, hence it is termed lævo-rotatory, or left-handed. This action is due to lævulose sugar in the honey. Honey also contains dextrose, but the lævulose seems to be the more powerful, and deflects the ray to the left.

The author made one very important discovery, one which is likely to be of far-reaching importance in the future determination of adulterations in honey. He says: “In other words, 50 per cent of the honeys examined gave a constant* ranging from 26 to 28°; 80 per cent from 25 to 29°, and 95 per cent from 23 to 30°.” He here refers to honeys which have been “inverted” by means of strong hydrochloric acid and then tested in the polariscope.”

It is clear that a honey that does not come in between these figures is suspicious to say the least. This discovery is worth a good deal to the bee-keepers of America. He says: “*It will thus be seen that we have a constant for honey which will be as valuable in analytical work as the Reichart-Meissl number is in the examination of edible fats.*”

As regards moisture in honey, the average amount was 17.90, with a range of from 12.42 to 26.88. This shows that American honey is 3 per cent dryer than German honey, and German honey is dryer than British. This is due to our dryer climate; but honey-buyers ought to note this, and act accordingly. Nevada honey is dryer than that of Missouri, for the former had only 14.61 per cent of water, whereas the “show me” State had 19.57 per cent. It is a truism to say the locality having the highest rainfall has the highest percentage of water in the honey produced.

As we might expect, very careful consideration was given to the subject of honey adulteration in all its relations. From what we glean, it is abundantly clear that our greatest danger arises from adulteration by the use of syrup made from invert cane sugar. Glucose is easy of detection. The author thinks that, if bee-keepers were more careful in naming the source on the label, it would greatly facilitate the detection of adulteration, and that is undoubtedly so. He says bee-keepers are exceedingly careless, and apply the name of almost any flower, thinking that they keep within the requirements of the law so long as their product is pure honey. This is a mistake, and more care would assist the bee-keeper as well

as the pure-food officials. For example, if a sample of honey is labeled *tupelo* or *sage*, the official chemists could tell very quickly if it was by its behavior in the polariscope, as they know just what to look for at once.

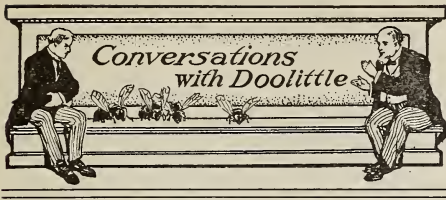
A feature of the report is the examination of the honey-dew honeys of the Hawaiian Islands. There, almost the only pure honey comes from the mesquite, which was introduced there many years ago. In localities where it is common, mesquite yields largely of the very best quality of honey; but in the sugar-growing districts the bees feed on the exudations from the sugar-cane, caused by insects. This results in honey-dew honey, or right-handed honey. It will be remembered that Uncle Sam has refused to allow this honey to be sold as normal honey. If sold at all it must be denominated “honey-dew honey.”

There is quite a list of methods given for discovering different kinds of adulteration. These will be extremely useful to food chemists everywhere, and it is in this the chief value of the work lies. Food chemists who are not particularly well versed in the latest modes of examining honey will find here just what they require, and no doubt this was the object of Prof. Brown's studies. We say this because some might think this is a book for bee-keepers, which it is not.

As a further means of detecting adulteration in honey, Mr. W. J. Young was detailed to examine the samples to discover the origin of the pollen in them. Almost all the samples contained several kinds of pollen. For example, catclaw honey from Texas contained, in addition to catclaw pollen, rosaceous, hop, mesquite, labiate, coniferous, evening-primrose, cruciferous cactus, magnolia, cotton, composite (three kinds), ellipsoidal (four kinds), and subtriangular types were also found. Goldenrod honey from Maine contained five kinds of pollen of the composite type, probably including dandelion, goldenrod, and aster. There was also white and red clover, cruciferous ellipsoidal (probably willow), basswood, rosaceous (raspberry), and ericaceous types. The subject of pollen is well illustrated. Possibly, in some cases, examination for pollen may be the quickest method of detecting fraud.

At the end is given an excellent bibliography of all the chemical literature of honey from 1892 to 1907. This is a valuable feature. These are mostly from German sources, but several are by Americans and Canadians. Not one is written by an Englishman. There are 89 monographs mentioned, so that the literature of honey is not small by any means. We note, also, that some French work of recent date is not mentioned in the list, probably because we go to Germany for our chemical knowledge. All together this is an excellent contribution to our knowledge of American honeys, highly creditable to all concerned. It may be purchased from the Superintendent of Documents, Washington, D. C., at the price of 80 cents. Five cents more to foreign countries. W. K. M.

*Constant in this case refers to a certain range of reading allowable in honey on the scale of the polariscope.



ABOUT HIVES.

"What kind of hive are you using, Mr. Doolittle?"

"A hive which holds the regular Langstroth frame. It would probably be called the Langstroth hive, but it is simply made of four plain boards, nailed together with square ends, just the same as an ordinary box would be made."

"But you used to 'bank' on the Gallup hive, did you not?"

"Yes. I used to think that the Langstroth idea, as embodied into a hive by Gallup, was all that could be desired."

"Did you ever try any other?"

"No. Have you tried others, Mr. Smith?"

"Yes. I have used the Weeks, Champion, Kretzmer's, Root's Simplicity, Quinby, Gallup, Langstroth, and American; and I came over to-day to ask you if you thought the so and so would not be better than any of those I have used."

"Whew! You almost take my breath away. Such a list as that! I should say that it was enough to satisfy any reasonable person that there is very little virtue in a *hive* as a means of securing a large yield of honey, to say nothing about adding another to the list."

"What do you mean? Does not the *hive* have a whole lot to do with the crop of honey we secure?"

"It may have much to do with the marketable shape in which we secure our honey; but so far as the amount obtained by a colony of bees is concerned, the *hive* plays no very important part. Gallup told us, nearly or quite forty years ago, that, if of sufficient capacity, bees would store as much honey in a nail-keg as anywhere, and no man has been able to contradict the statement successfully. Hives do not *make* honey, and there is no virtue in any hive as a honey-maker."

"Well, then, what about hives, any way?"

"Simply this; and this was just the thing I hoped you had learned by using so many different ones: That hive is the *best* whose brood-chamber conforms the nearest to the natural habits and wants of the bee, and also to the wants of the bee-keeper, so as to enable him to take what surplus honey the bees may store, in the *most marketable shape*. That is all there is of it."

"And you now think that the Langstroth will meet those requirements as well as any?"

"I certainly do, or I would not be using it altogether."

"Well, I am surprised. You may be right. But there is another thing I want to know about. What color is it best to use in paint-

ing hives? I painted one black, and this was the worst to cast swarms of any I ever had. Then I have had many that were painted red, but they seemed to get too hot in warm weather, and cause swarming."

"But don't you know that black or red hives will not draw too much heat if allowed to stand in the shade from 8 in the morning to 4:30 in the afternoon, as they should in all well-regulated apiaries, after they become nearly filled with bees and brood?"

"But mine stood in the sun."

"Then if your hives stood in the sun they should have been painted white, because that is the only kind of paint that will allow the hives to stand without great discomfort to the bees during hot weather. But you do not say how you found matters in the hives that were left unpainted. If your colonies were in unpainted hives, and your locality similar to mine, I think you would have noticed that colonies in unpainted hives did the best. If there is a single *good* reason that can be advanced for painting hives at all, except for looks, I have never seen it; and as I believe there is no such reason, and not being naturally proud, or greatly concerned about looks, I have for more than 32 years left all of my single-walled hives unpainted."

"Do you paint double-walled hives?"

"Yes. With double-walled hives the case is different, for then the bees are practically in an *unpainted* hive, even if the outer shell is painted."

"But we are told that it is economy to paint hives, are we not?"

"Most bee-keepers talk that way; but I believe this is a mistake; for if cost of paint, time of putting it on, etc., be taken into account, said cost will more than renew the hives as often as those unpainted become unfit for use. But I think the economy is the other way. If any man would give me \$1.00 a hive for the privilege of painting my single-walled hives he could not thus buy the privilege, for I should consider that I lost \$2.00 in honey, because in painted hives there is not so great an efficiency toward brood-rearing early in the season, and this efficiency applies mightily along the dollar-and-cent line, where the flowers which yield honey bloom early in the season, as does white clover."

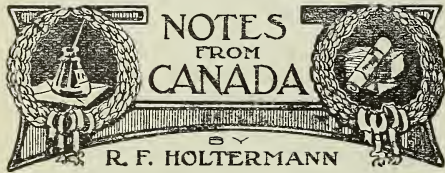
"But you would paint the top or cover?"

"No. All hives need a shade-board to protect them from the fierce rays of the sun from 8 A.M. to 4 P.M.; and as this shade-board not only protects from the sun, but from the rain as well, the covers and hives need no further protection, as it is rare that the sun warps the boards or the water enters or stands on any part of the hive."

"My hives are under trees."

"But the bees want the sun, morning and evening, to do their best, and the trees do not allow this. With me, colonies under trees do not do nearly so well as those out in the sun, but having a shade just over the hive during the middle of the day. I have often wished they did, for in extreme hot

weather, shade is much more comfortable to work in than the sun. But the bees thrive much the best out in the sun, with a shade just over the hive during the hottest part of the day. My advice to you and all others is this: Try a part of the apiary each way, and then you will *know* which is best for you. Depend upon the knowledge you gain through experimenting for yourself. With this knowledge there will come a certainty which can not be had in any other way."



COMB HONEY IN CANADA.

There appears to be a regular stampede toward the production of comb honey during the coming season, probably on account of the high prices asked for and obtained last fall. Years ago comb honey sold in Canada at a figure as low as \$1.00 per dozen sections, and quite commonly for \$1.25 per dozen, with the result that many stopped producing it. I doubt the wisdom of an extensive move in the direction of an increased production. The prices of comb honey have not been maintained in Toronto. The dealers have plenty on hand, and Mr. Grainger and others have not been able to sell their stock, even at a reduction of 30 per cent on last fall's prices. During a visit, March 10, Mr. Grainger gave the names of several well-known bee-keepers who had been trying to dispose of comb honey. If the financial depression should continue, the prices on comb honey will suffer more than those of extracted; for at high prices comb honey comes more under the head of foods that can be dispensed with. These conditions have greatly curtailed the demand for comb honey. This is, in brief, the situation in Canada. Every one will, of course, use his own judgment in the matter.

WINTERING CONDITIONS OF BEES.

On p. 52 of the *British Bee Journal* D. M. M. Banff writes: "Bees have been much confined, and had few thoroughly good flights. Never, perhaps, have I seen more dead thrown out, and very seldom, if ever, have there been so distinct and general signs of the markings of dysentery. It may be owing to the past inclement summer causing an overplus of pollen-gathering—not only in the regular store-cells of this substance, but also in the honey in the capped stores, and the spotting is uncommonly dark and malodorous."

In Ontario, those who winter their bees outside depend more or less upon the bees getting a cleansing flight some time during

the winter. During the past winter, from early November till March 10 the bees had no proper flight, and a good deal of dysentery is again reported in localities where the honey-flow was not good last season, and where sugar-syrup stores were not supplied in sufficient quantities to carry the bees through the winter. I am more and more convinced that the only safe course to pursue, unless the bees are sure of frequent flight, is to feed sugar syrup for winter if the honey season has not been good.

COMB-HONEY PRODUCTION.

My article, "Bee-keeping in Quebec," should have read that the weakness in comb-honey production in that province is that the comb is *not* fastened to the sides and bottom, owing to the use of starters instead of full sheets. Thanks, Dr. Miller, for drawing attention to the matter. By the way, Dr. Miller and Allen Latham are having a profitable and friendly discussion on the question of bottom starters and other matters.

Mr. Latham, page 290, GLEANINGS, states, "Yet it is desirable to get the plump section, for the simple reason that it will sell better—sell better because the buyer thinks he is getting more honey for his money." That is true; but a much more important point is that a well-filled section is *very* much less likely to break in transit. Even at the expense of showing my ignorance, I will confess that, although I have noticed many differences in varieties and strains of bees as to comb-building, my attention had not been drawn to a difference as to the attachment of comb, p. 291; yet Mr. Latham may be quite right. It is certainly an exceedingly important point raised, and it should be followed up in GLEANINGS. I do not like those pesky German black bees any way, and am quite convinced that *every good trait* they possess can be found in other varieties.

BOTTOM STARTERS AND SPLIT SECTIONS.

Because I have written and spoken mostly on the production of extracted honey I am often credited with knowing nothing about the production of comb honey. Let me say that Mr. Eugene Secor judged my comb honey at the World's Fair, Chicago, and it scored the highest of any there. It was not taken with a bottom starter. I can, however, see that the *method* of putting the foundation in the sections may have much to do with the need or not of a bottom starter in the section. Again, Mr. Latham believes that it would be very objectionable to have the edge of the foundation show on the top and sides of the split section. Another one thinks the consumer will look upon this with suspicion. I believe I introduced the *split-top* section from England to this continent. It looks unsightly, but I doubt if it throws suspicion on the product. The consumer cuts the section out of the wood, and probably never sees the foundation in the split; and even if he does he ei-

ther knows what it is or does not know enough to know any thing about it. It is surprising how little people know about some things.

HOW TO REMOVE WAX CAKES FROM CANS.

Sometimes through rapid cooling the cake cracks, and the outside portion adheres tightly to the side of the can.

Mr. R. L. Taylor, at the last Michigan State convention, gave a good and simple method of loosening the cake in such a case. He advised turning the vessel upside down and pouring over it boiling water out of a tea-kettle spout. I find that this works well. The tin expands at once, being metal, and down drops the cake. Simple enough, but many have not learned it. [If the can is larger at the top than at the bottom, and if the sides are well brushed with thick soap-suds, the wax will almost never stick.—Ed.]



APICULTURE IN OUR AGRICULTURAL COLLEGES.

And why not? Yet it is true that in only a very few has any special attention been given to this branch of agriculture. In Michigan, bee-keeping has been taught since the '60's. In several other States, especially in Colorado, good work has been done. That Michigan has set a good example appears from the fact that such men as Benton, Porter, and Hershiser are among her graduates. Bee-keeping is most worthy, and should no longer be neglected. It conserves the vast deposits of most wholesome nectar which otherwise must go utterly to waste; it gives a profitable and very delightful occupation to scores of our most worthy citizens; and, best of all, it insures cross-pollination of our plants, which is indispensable to the most successful agriculture, and without it, and that by our honey-bees, in many lines of fruit and vegetable growing, there would be no success at all. If all our agricultural colleges, which are doing such admirable work in other lines, would give to apiculture the attention that its importance demands, we should not only advance the industry by spreading information regarding bees and the production of honey, but we could capture men of rare ability who else will never be attracted to bees at all. There are many Clutes, Phillips, and Hershisers, could we only get them trended beeward, who would be bright and shining lights in the apicultural world.

I suppose that the first class in bee-keeping ever taught west of the Rocky Mountains was taught by me here at Pomona College,

in 1894—as fine and enthusiastic a group of young ladies and gentlemen as ever delighted a teacher.

BEES SPREADING SCALE INSECTS.

Mr. R. F. Weir, Sunnyside, Washington, writes that at their "farmers' institute," at Sunnyside, much was said regarding the spreading of scale insects by the honey-bee. The special pest was the San José scale, and the fruit-men were loud in their complaints. There were very few bee-men present, and so the matter was very much one-sided.

This is another case where ignorance is loud with complaint, and where a little more knowledge would have made a very different showing. Like the case of the spread of pear-blight, there is some truth; but the conclusions are utterly misleading and wrong. It is true that all scale insects are spread while very young, and while they are crawling about on leaf and twig before settling down to their real business, which consists of sucking and growing. It is also true that most of this spreading is done by insects and birds. The bird or insect alights on the tree where the young scale insects are crawling about in search of the right place to locate, and these latter crawl upon the feet of the bird or roving insect; and as the latter fly to other trees, the young tiny scale pest is carried along. It is possibly true that, in rare cases, the bees may do some of this mischief; but surely it is very little that they do. The bees do not alight on leaf and twig, nor even on the fruit; and as the young lice are very rarely on the bloom, they are but little likely to be carried by bees. The little scale insects are so tiny that they walk about very slowly, and so would rarely crawl on the blossoms, and hence would almost never crawl on to the feet of bees. I have never seen the wee scale lice on flowers, though I am wont every year to examine flowers daily and most carefully with a good lens; and as seldom do I see bees on any part of the plant except the bloom, and so we may rest assured that bees are scarcely ever wrong-doers in this work of scattering the young scale. This accusation has even less foundation than that of the spread of pear-blight. There the bees do their part; but there are enough other insects so that the mischief would be as effectually done were there no bees at all. Here we may feel very sure that the bees do almost none of the evil.

WE have before us Vol. I. No. 1 of *The Guide to Nature*, a magazine devoted to nature study, by Edward F. Bigelow. It is a beautifully gotten-up journal of 40 pages and cover; price \$1.50. It is well illustrated from original photos, and contains a range of subjects that will be of more than ordinary interest to nature students. It is seldom that the initial number of any magazine presents a nicer appearance than this, and we congratulate its editor. For particulars apply to Edward F. Bigelow, Stamford, Ct.



SPLIT SECTIONS.

Split sections have been brought before the public lately in a way that seems likely to induce some to adopt them, or at least to give them a trial. It should be remembered that the plan is by no means new. Fifteen years or more ago I knew of a man who used them to a considerable extent, and I believe the plan had been published some years before that. The fact that it has made so little progress since that time that most regard it as something new, while it does not prove the plan valueless, is, to a certain extent, indicative that it is not likely to be generally satisfactory. I believe the points of superiority claimed are, less time required to fill the section with foundation, and a better filled and finished section of honey. As to the first point, I think the difference would be so small that it would be hardly worth considering. On the second point I would be willing to concede a little superiority in results over ordinary methods, but one that is so slight, when better methods are followed, that I do not believe it begins to compensate for the objections to the plan.

Chief among these objections are the general appearance of the section and the color which it gives to the old belief in manufactured comb honey. It is beyond question that many persons unfamiliar with comb foundation would find in these sections with their margin of unaltered foundation proof positive to their minds of the artificial nature of the honey, and thus one of the most injurious things that ever happened to the honey market would be given new life and strength.

FOUNDATION SPLINTS.

I used a number of splints for supporting full sheets of foundation last summer, and found them very satisfactory for the purpose. I was never satisfied with the results of horizontal wiring except when used with heavy foundation and under the most favorable circumstances of temperature, etc. The old vertical wiring gave perfect combs, but it is hardly suited to the thick top-bars in such common use, and the wires on the tops of the frames are considerable of a nuisance when it comes to scraping burr-combs off from them. When I came to manufacture the first splints I used to experiment with, I very soon found that they were not easily made by ordinary methods. Such small articles were difficult to handle in circular-saw work. I soon hit upon a method, though, that made it very easy. It may be that the slicing method of which the editor has told

us is best suited to factory use, but perhaps there are some who, like myself, use a special size, or who want only a few to experiment with, or, for other reasons, want to manufacture their own, so I will give my method. I made them out of the ordinary sawed wood separators. Cutting single splints at a time was too slow; and cutting a number at a time was troublesome and inexact. Either way made rough work, and the saw had a way of scattering those light splints all over the shop. So I took half a dozen old separators, more or less daubed with propolis, put them in a press in a warm place for a few minutes, and then cut the lot up as though they were a single board. Eureka! Then I took new separators and piled them up, dipping each alternate separator into melted beeswax, then put the pile into a press until the wax was cold. This pile was then sawed up as though it were a solid board. The best work was done by a thin fine-toothed saw without set, running at a high rate of speed. With this I could readily slice off splints at the rate of 250 a minute, all nice and exact. The wax did not clog up the saw in the least; and as the splints were to be soaked in hot wax anyhow, it was no detriment, but an advantage in handling that they were stuck together.

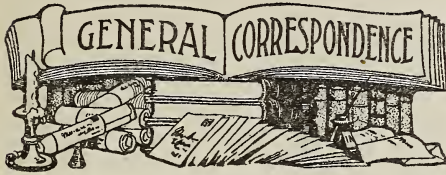
FIXING UP OLD HIVE-CORNERS.

Perhaps bee-keepers in the East are not much troubled by hives gaping open at the corners; but in the dry climate of Colorado it is a very common fault, especially with the Dovetailed hive as it was made several years ago, with the top edge of the ends of the hives coming between the sides. The cracks thus made are very wasteful of the heat of the hive, and sometimes become large enough to admit robbers. This does not do much harm as long as they are occupied by strong colonies; but if you stack up such hives or supers containing honey where the bees can get at them, you are likely to have trouble.

To put such hives in order I have a pair of cabinetmakers' clamps, by the use of which the corners may be brought up square and true. While they are held thus they may be renailed, if nailing will hold them. If not, a strip of tin may be nailed around the corner, using small nails. This holds the parts together and closes up any crack that may be left. A coat of paint on such a hive after it has been fixed up will make it look about as well as ever, and good for years of service thereafter. Instead of the tin, a wooden cleat may be nailed across the end of the hive flush with the top. This makes the hive much stronger, but requires the use of a different cover from those in common use.

The Department of Agriculture's definition of honey, as given in circular No. 19, says that "Honey is the nectar and saccharine exudations of plants, gathered, modified, and stored in the comb by honey-bees (*Apis*

mellifica and *A. dorsata*).*” How much honey is there on the market stored by *Apis dorsata*? Why leave out the other races of bees?



THE TRUTH ABOUT QUEEN-TRAPS.

How to Know the Conditions by Looking at the Trap; Managing Swarms Without Traps or Clipped Queens.

BY R. L. TAYLOR.

On p. 282 Mr. Halter makes reference to some suggestions of mine with regard to the use of the trap instead of clipped queens for the prevention of the escape of swarms. I am at a loss to determine whether he is animated by a desire to make a “drive” at me, even at the expense of the trap, or whether he is without much experience in the use of the trap for the purpose mentioned. In the former, I have no objection to make. I shall enjoy it as much as he so long as he avoids misleading insinuations concerning useful apiarian utensils.

He asks: “How can you manage a given number of yards with only one or two visits a week, simply relying on queen-traps? After an absence of five days you come to examine the apiary, is it not necessary to overhaul every trap and let out the drones? If you find a laying queen you are gratified; but if you find a virgin, was it a case of swarming or have you detained her from her wedding-trip?” And then on another visit, after heavy rainstorms and chilly weather he imagines he would find the traps full of dead drones and perhaps some dead queens.

For his relief let me say that it is not necessary to let out the drones unless he allows his bees to rear an abnormal number of them. Let them stay and die; or, if too many for that, drown them and teach the chickens to eat them. In either case it is a good riddance. Nor is it necessary to overhaul every trap for any purpose. It is only necessary to glance at each trap in passing. If the bees are simply hanging out they may lie in front of the trap, or even cover it; but they will not pack the trap itself. (It goes without saying, that hanging out *during* a honey-flow is the result either of ignorance or negligence; if *after* the flow, then swarms need

no longer be expected.) But if the trap is found packed with worker bees, that shows at once that a swarm has issued and that the queen is in the trap, and the colony can be dealt with as desired, without delay. If a trap is found with only a handful or two of worker bees there will be found there a virgin queen restrained from taking her wedding-trip. If a trap should be found containing a queen attended by no worker bees worth mentioning, it would be a virgin escaped from a rival, and is not wanted there. Thus the use of the trap is simple and effective, and swarming colonies quickly and easily managed.

Again, Mr. Halter fears the effect of heavy rainstorms and chilly weather, after which will be found, perhaps, traps with dead queens and some full of dead drones. But the drones are no deader than they would be if dead without the storm—more’s the pity. Some of the bees may get wet in a case where a swarm has issued, but not so wet as in a case of simply lying out with no trap on the hive. It may be set down as certain that no bees will be injured by any rain or weather we are likely to have during the swarming season; and as for queens, they are every whit as safe from injury in the trap in such cases as they would be in the hive itself.

Not satisfied with condemning the trap, Mr. Halter attacks my plan of managing swarms with neither traps nor clipped queens, and says, “How disastrous, when several swarms with laying queens cluster together, and the victorious queen destroys the others!” Not at all. Such queens are not bent on destroying each other. Even if the swarms are only let alone they will often divide of their own accord. In more than one case where two swarms were hived together I have had one of them come out, leaving the other in the hive after they had been together more than a day. At all events, if the apiarist is “on to his job” it is very seldom that a queen is lost. Even a virgin, though she will be balled, is not often injured.

For catching swarms I use light poles so prepared that a basket may be readily hooked on to the upper end. When several unite, some of the bees are shaken into each of several baskets—as many as there are swarms or more. The baskets, as they receive bees, are hung on convenient branches when those having queens are soon distinguished from those without by the conduct of the bees themselves. Now, traps are adjusted to the hives prepared for swarms, and the bees poured out of the baskets before the traps, taking care to divide them equally. Then we watch for queens, driving the bees in with smoke. Whenever a queen is discovered she is slipped into a cage till all have been located; then those lacking queens are supplied at once from the cages. Very seldom need a queen be lost; and should one be, she need not be deplored at that season of the year.

I have never recommended the trap as equal to the personal attendance of an apiarist during swarming. It is not. But when

* [We have been informed that Mr. Benton, then in the Department, appeared before the committee and requested that the race *A. dorsata* be added, as he was expecting to make a trip to the East, secure these bees, and introduce them in this country. Under present conditions there will probably be very little of their honey produced in this country.—ED.]

such attendance can not be secured, then it is a very convenient and helpful substitute; and to prevent, as far as may be, an unjust prejudice against it in the minds of those for whom it may be a valuable servant, I have been constrained to attempt herein its vindication.

Lapeer, Mich.

QUEEN-TRAPS VS. CLIPPED QUEENS.

What Proportion of Clipped Queens are Superseded? the Behavior of Swarms when Queens are Clipped.

BY DR. C. C. MILLER.

[On this same subject is the following article, taking the other side of the question. Of course, neither Dr. Miller nor Mr. Taylor had seen what the other had written in this issue. These two articles on the opposite sides of the question may call for some new rejoinders; if so, our space is open to both.—ED.]

On p. 19 of GLEANINGS I find the following, credited to R. L. Taylor:

"Clipped queens are an unmitigated nuisance at swarming-time. A swarm with a clipped queen behaves quite differently from one with an unclipped one, the difference being greatly against the clipped queen. These disagreeable features will disappear if the wings are left whole and a queen-trap is used; and swarms will mix much less with the trap. Moreover the trap furnishes perfect security against all absconding, which clipping does not do, for queens are likely to be superseded at any time for any cause without the knowledge of the apiarist; and when supersedure takes place a swarm will issue with the new queen, and away go bees, queen, and all."

Here I've been in the habit of looking through my colonies each year before swarming time, clipping all queens found with whole wings, and then feeling safe till the next spring, without its occurring to me that at any time a queen might be superseded and then a swarm go off with a new queen. I wonder, really, how many swarms I've lost in that way without knowing any thing about it.

But is not that matter of supersedure just a little overdrawn? "Queens are likely to be superseded at any time for any cause." Unless I am a very poor interpreter, that will be generally understood to mean that supersedure is just as likely to occur at one time as another. Is it not generally understood that supersedure takes place in the great majority of cases after the time of swarming is over? A great deal of opportunity for observation leads me to believe that the general understanding is correct.

Some time in April or May I go through my colonies and clip all queens found with whole wings. Throughout the season afterward I frequently see more or less queens in different colonies; and if supersedure "at any time" were so common as one is led to believe from what is said on page 19, I ought somewhat often to see a queen with whole

wings. On the contrary, it is a very rare occurrence. My assistant, who has had even more opportunity for observation than myself, and who is morbidly sensitive as to the matter of loss from swarming, says, "Very, very rare, indeed." I really think that matter of supersedure is very much overdrawn.

Still, there may be some supersedures after the usual clipping-time; and, if I rightly understand page 19, the new queen, after she gets to laying, is likely to go off with a swarm. Really, Mr. Editor, how much chance do you think there is for that? Gravenhorst, one of the best authorities on such matters, puts it down as an unvarying rule that a laying queen never swarms in the year of her birth if reared in her own hive. Indeed, some go further and say that no laying queen will swarm in her first year; but I am sure there are exceptions to that. But in the case of supersedure, the more guarded rule of Gravenhorst bars all danger. In an experience of more than 40 years with clipped queens, and with colonies never very small in number, if page 19 is reliable I ought to have had quite a number of losses in the way indicated. It seems to me they could hardly have been very many during so long a time without my having discovered some of them. I question whether I ever had a single loss in that way.

As to the naughty behavior of swarms that have clipped queens, I have had some experience in that line. I have had bees of more than one swarm unite, and I've had swarming bees return to the wrong hive. But I do not think I've had much serious loss in that way. If the bees of No. 37 should go into No. 45, No. 37 would gather less, but No. 45 would gather more. Yet I think there is some loss by it. But don't dream for a minute that swarms with clipped queens have a monopoly of that sort of business. Swarms troubled that way before ever queens were clipped, and I've heard and read of more swarms uniting with unclipped queens than I ever had unite with clipped queens. A reputable text-book before me tells of how "as many as a dozen have been known to come out in this way, and go off to the woods in a great army of bees." I think I had never more than four with clipped queens to unite at a time. And I had no trouble fishing queens out of the united cluster as I would have had with unclipped queens. Nor did they ever go off to the woods.

Concluding, the beginner is practically told, "Don't clip, but put a queen-trap on each hive, and then you'll be all right, for every queen, laying or virgin, will be caught."

Don't you think that the natural thing will be for at least some of your readers next spring to put queen-traps on all colonies and then feel the thing is settled for the year? Certainly I've known more than one to think that would work, and without having read p. 19 at that. Then when it comes time for a colony to swarm, the swarm will issue and return, perhaps repeating the performance for several days, then the queen will be killed, a virgin will be prevented from taking

her wedding flight, and so become a drone-layer, and the destruction of the colony will be just as certain, although not so speedy, as if it had been brimstoned. How is one to know that swarms with clipped queens are so much more naughty in their conduct than swarms with queen-traps? Has some one learned it by actually trying the two side by side? I never had much experience with queen-traps, but I've had quite a bit with caged queens, and the trouble with their swarms was greater than with clipped queens allowed to hop out of the hives. Possibly it was reasoned out. Well, tell us the reason why a swarm should act any worse with its queen hopping about than with its queen in a trap. When the swarm issues, do you really think the bees know whether their queen is on the ground or in a trap? Certainly they can't know any thing about it without going back to the hive; and in any case where a swarm went back to its own hive I never knew it to trouble further by going to other hives or uniting with other swarms.

How much ventilation, Mr. Editor, is shut off when a queen-trap is applied? I suspect that at least one-half is always shut off, and in some cases four-fifths. Don't you believe that loss of ventilation is a very serious objection to traps? On the whole, would you advise a beginner that it is better to trust to traps than to clipping?

P. S.—A certain inquisitive person not far from my elbow says: "Do you think Ernest keeps traps on his hives? I wish you'd ask him how many traps he keeps on them."

Marengo, Ill.

[Dr. Miller asks us how much ventilation is shut off when the queen-trap is applied. We do not know; but not much, we suspect. As we figure, the perforated metal or bars in the trap have four times the area of passage of the average $\frac{3}{8}$ in. deep entrance, or twice the area of $\frac{1}{4}$ deep. The wire excluder would form less of an obstruction to ventilation than the perforated metal—how much we do not believe any one can positively determine.

In answer to his last question, we would say that a good deal depends on conditions. If we were running for the production of honey—well, we will state our position after our correspondents close the discussion. Our own opinion at this time would be premature. Some, accepting the opinion of the editor as final, might not give much weight to the opinion of one or the other of the correspondents.

In answer to the postscript we may say that we have traps on many of our hives in all of our yards, not to catch swarms, but to restrain and kill impure or undesirable drones. As a matter of fact, in a queen-breeding apiary one ought to use a great many traps, leaving only drones from extra select queens to have the freedom of flight. In this way we are enabled to bring about a selection of drones, and, to a large extent, the control of the male parentage of our bees for business.—ED.]

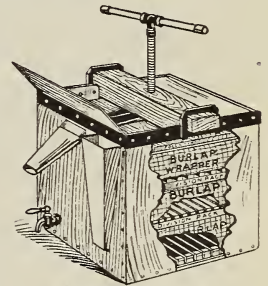
HOT-WATER SYSTEMS OF WAX-RENDERING.

Some Comments and Suggestions.

BY OREL L. HERSHISER.

I have noticed Mr. Holtermann's comments on wax-presses, page 210. Having examined the wax-extracting proposition in many repeated experiments, with a view of determining the efficiency of the various methods employed in the production of wax, I respectfully desire to file an exception to Mr. Holtermann's statement that, "in a hot climate, or where wax-rendering can conveniently be left until hot weather, the method of heating the wax in a vessel on the stove and then pressing in a machine not on the stove, is perhaps the cheapest machine and the most rapid and economic method." Mr. Holtermann's "perhaps" may imply a slight doubt in his mind as to whether his statement would exactly fit the facts. True enough, the method will "answer well;" there are many inferior methods. I have profound respect for the opinions of my friend, believing them to be the expression of conscientious convictions; but sometimes conclusions are reached without sufficient data upon which to base them. Many and repeated experiments enable me to make the counter-statement that, all things considered, there is a cheaper, more economic, and convenient method, not only for winter but also for summer wax-extracting.

Referring to the Hershiser wax-press, Mr. Holtermann states that "it takes considerable time to heat the machine and its contents." If it takes a given time to heat a wax-press and its contents of cheeses of comb or slungum submerged in water, it is obvious



Hershiser wax-press.

that, for the same capacity of tank, or volume for volume, it would take the same time to heat the material in a separate boiler where the slungum must be dipped over into the press-tank, cheeses formed, and the same submerged in water. This fact is so clear that "he who runs may read." Besides the necessity of performing the operation of dipping the slungum from the boiler into the press, enough hot water to submerge the cheeses must be dipped into the press-tank, which necessitates the raising to the boiling-point a like amount of cold water to replenish the boiler for melting the next batch of comb. Hence, if there is any advantage in the time required to heat either of such presses and their contents, volume for volume, it lies with the press-and-boiler-combined machine.

My press is designed primarily to be used over the fire; but if one really prefers to melt

the comb in one vessel and then dip it over and press in another, such preference surely would not bias him against it, as there is absolutely nothing in its construction that would in anywise hinder him from doing so. In fact, it is as well adapted for use in that way as any press could be. Further, the directions for operating it explicitly state that, "when rendering comb that contains a large percentage of wax, or in converting cappings into wax by the hot-water process, it is advisable to melt the comb or cappings in another boiler and dip out all the wax that can readily be secured," etc. This direction, while strongly suggesting the adaptability of the press for use when not over the fire, does not contemplate the pressing of the cheeses in any other way than in boiling water over the fire. This exception to the directions is made to meet the requirements where the material to be pressed is exceptionally rich in wax, and to enable the making of the cheeses of such thickness as can be most economically pressed. This manner of handling cappings or rich comb avoids unnecessary operations of the press. The hot water may be used as often as is desirable by drawing it off into another vessel to be saved while the extracted cheeses are being removed, and others, that have been made ready while the extracting of the first lot was in progress, replaced in the extractor, when the hot water may be returned. During the short time necessary to empty and refill the extractor the water will lose but little heat.

By keeping the water surrounding the cheeses at the boiling-point while pressing, we facilitate the escape of wax from between them as a result of the motion of the water. By releasing the pressure, after it has been on a short time, there is a marked agitation of the water as though it were boiling violently, which is undoubtedly due to the escape of steam from the interior of the cheeses, generated there in considerable quantity, and confined by reason of the pressure, but which bursts forth when unrestrained. This escaping steam operates to open up the cheeses, and, when thus expanded, they absorb hot water to the limit of their capacity. When pressure is resumed, violent agitation of the water again occurs, which is, perhaps, due to forcing the steam from the interior of the cheeses where it has generated and been held from free escape by them, at a more rapid rate than it would escape without pressure. The hot water, being forced from the cheeses by the pressure and steam, conveys the wax with it, and a few repetitions of pressure, under these conditions, will leave the cheeses almost free from wax. Thus the extracting is more thoroughly and rapidly accomplished than is possible where the pressing is done without the aid of boiling water.

Such injury to wax as obtains from overheating will result whether the comb is boiled in a separate boiler or in the extractor. If the quality of the wax is injured by long-continued heat and boiling, it is necessarily due to the inattention of the operator, no matter what process of cooking and pressing

is employed. A hot-water wax-press, possessing easy facilities for drawing off the wax as fast as it accumulates on the surface of the water, enables the careful operator to commence drawing off immediately after the first pressing, and as often thereafter as there is an accumulation worth while.

Theoretically, bringing the temperature of the melted comb slightly above the melting-point of wax is all that is required in extracting; but in practice it is best to bring the material to the boiling-point, as an abundance of heat is preferable. We might have too little heat if we tried to have just enough. Short-time boiling has not been found to be appreciably injurious to wax. My experience has been that wax made by the boiling-water process is not discriminated against by the most extensive comb-foundation makers and other large consumers.

We are able to secure considerable of the last tailings of wax by the hot-water process, not otherwise profitably obtainable. Admit, for the sake of argument, that these last remnants are not obtainable without slightly injuring their quality. If we secure such wax we have something of good value we should not otherwise have had, which we should be as foolish to spurn as we should be if we rejected the lower grades of honey. But the quality need not be injured. At all events, let us have more wisdom than Reynard, and not regard these last remnants as "sour grapes."

Buffalo, N. Y.

WAX-RENDERING.

Further Comments on the Sibbald Wax-press as Discussed by Mr. Holtermann.

BY C. A. HATCH.

I have been looking over GLEANINGS for Feb. 15, and, of course, saw the Sibbald wax-press article by R. F. Holtermann. If you will look up the matter you will find the same thing in principle described in "Langstroth on the Honey-bee," under the head of "The Cary Wax-press," if my memory serves me right.*

The first press I ever made was identical except the racks, which Mr. Sibbald has covered on both sides with screen wire cloth. This I infer from the picture, as nothing is said about it in the article. In my press the racks were used with no covering. I used it by setting it directly on the stove. Mr. Sibbald uses another vessel in which to boil the wax, which I can see would be quite an improvement. He pours water over the press when ready to squeeze—something I never did. He also covers up the press while hot. This, also, I never did. I discarded the arrangement as I used it, on account of the mess in getting the pressed slungum out of the press ready for a new batch. If there

* We do not find any such reference in Langstroth, either in the new or old editions. We do find a description of the Cary press in the A B C of Bee Culture, old edition.—ED.

was only one batch or filling for the press to be melted, it worked quite well; but to make a 100-lb. lot with it was too slow and messy. His way of working it may have overcome these faults.

I have used the new Root-Hatch press twice, and have just two faults to find with it: It is too small; so, also, is the screw, which is too small, for it springs sidewise too easily. I think there is a chance for improvement over any of our present wax-rendering methods.

Holtermann's caution about wax needing constant watching for fear of boiling over and setting fire to the building is good. I set my house on fire once that way; and if there had not been help right there serious damage would have been done.

Another thing should be mentioned. Mr. Holtermann says, cover the form with cheese-cloth, fold over, and pin. Cheese-cloth as known in the United States will not do at all for such purpose. It is a thin loosely woven cloth of cotton. What Mr. H. means is a stout cloth made of linen, such as our cheesemakers use to cover their vats and curd with before pressing.

Richland Center, Wis.

UNCAPPING-BOXES.

Melting the Cappings as Fast as They are Sliced from the Combs; Another Machine for Rapidly Separating the Honey and Wax.

BY J. Y. PETERSON.

The engraving shows my honey and wax extractor for handling cappings; and, as you will see, a capping-table, etc., all complete, for which I have recently applied for a patent.

The cappings and the honey drop through the hole in the top of the table, and fall di-

rectly on the tank filled with boiling water, (namely, melting the cappings as fast as they are shaved off the combs) is as correct in practice as it is in theory. Those who have tested it pronounce it a success. They further claim that the honey that goes with

ey escapes to the main honey-tank into which the honey runs; also from the honey-extractor. I used one of these machines for extracting several weeks, and it worked perfectly, and at the end of each day I had no cappings, etc., to use up time. On the following morning I always had a perfect cake of wax ready for market after removing it from the tank. It was then necessary only to light the burners and go ahead. Any water that might get into the wax and honey from the uncapping-knife goes out in steam immediately, when it gets on the tank and the honey and wax slowly drain down the one-inch incline. It takes but a very small flame to keep this tank hot. The uncapping-knife is heated in the well for the purpose, which is a part of this tank; any steam that may generate escapes through this, and you always have a hot uncapping-knife, and can here also see when the water is getting low, and pour more in.

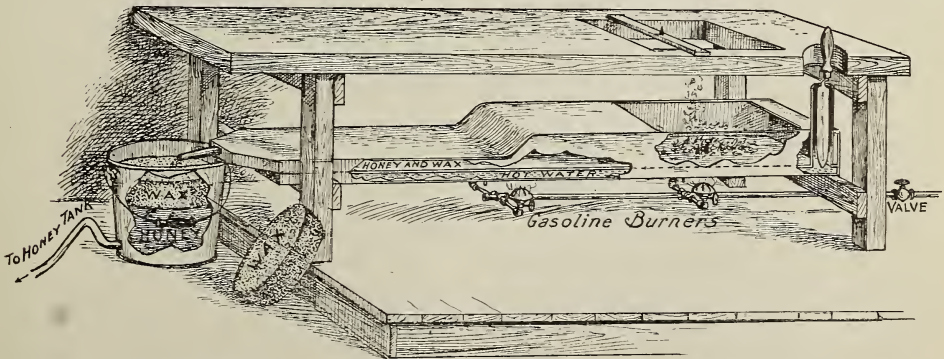
Besides the one I used I made three others for friends, and they used them with equally good results. I used No. 30 galvanized iron for the tank, which is 3 ft. long, 1 inch deep, and perfectly flat, with a rail on sides and back as shown.

The honey from this machine is not in the least colored, as is the case in the old sun extractor, and the wax does not need remelting, etc. You are through, and have a finished job each day. The honey has also a good heavy body. Because of the evaporating process it goes through draining over the tank. Not one particle of wax escapes with the honey, as the honey drains from the extreme bottom of the receiver.

While the sketch is not exact, you can get the idea. The burners should be close to the bottom of the tank. One five-gallon can of gasoline lasted me one season.

San Francisco, Cal.

[There is no question in our mind but that an uncapper embodying the principle



The cappings, as fast as they are sliced from the combs, fall into the hot pan, where the wax is melted. The wax and honey run to the end of the pan, and thence into the separator at the end.

rectly on the tank filled with boiling water, and the mass at once melts and drains off into the receiver, where the honey goes to the bottom and the wax to the top. When the division line reaches a certain level the hon-

(namely, melting the cappings as fast as they are shaved off the combs) is as correct in practice as it is in theory. Those who have tested it pronounce it a success. They further claim that the honey that goes with

the cappings is not affected as to its quality, because it quickly passes over the heated surface that melts the wax and both run into a receptacle where they cool. It is well known that a *quick* heating of honey, even though the temperature be raised above the melting-point of wax, 145 degrees, to prevent granulation for bottling purposes, does not appreciably affect the flavor of the honey, and apparently it would not with a machine of this kind. If any one knows to the contrary, let us hear from him. We know that, in a solar wax-extractor, the honey and wax run together. Because of the slow melting, the flavor of the former is impaired.

The fact that, after a day's uncapping, the honey and the wax will both be in marketable shape, is a strong argument in favor of the new method. The old uncapping-cans or boxes necessarily have to have a large enough capacity to take a day's cappings or more. After a day's work they must be allowed to stand until the cappings drain dry, after which they must be separately handled in a wax-extractor.

Mr. L. E. Mercer's outfit, which we illustrated on page 218 in our issue for Feb. 15, is of very simple design, having the advantage that it allows for the storage of a lot of combs just prior to their being put through the extractor. In this one respect it is superior to the one here illustrated by Mr. Peterson; and it is also superior in that it is simpler in design, and its construction will cost less.

An American patent has just been granted, under date of Jan. 8, to F. R. Beuhne, of Victoria, Australia. On examining the claims it would appear to us that the basic feature of melting the cappings as fast as they are shaved off the combs, by any and all means, has not been covered; but apparently the receptacle for heating the uncapping-knife as shown in the illustration of the Peterson machine is covered; so also a combination of horizontal tubes that are designed to receive and melt the cappings. But such tubes, in our judgment, are not material to the broad principle of melting cappings in some other manner.

Two other men, one in California and the other in Texas, claim to have used the principle for over two years. Just what effect this will have on the Beuhne patent we are unable to say. The situation seems to be somewhat mixed up; and for the present, at least, some time will have to elapse, perhaps, before it is fully determined who owns and controls, if any one does, the broad principle of melting the cappings as fast as they are removed from the combs in some manner *other* than that shown in the Beuhne patent.

We see no reason, however, why any one could not make a machine at the present time on the lines described on page 218, Feb. 15. But any one who makes such a machine would have to hold himself in readiness to pay royalty, possibly, to some one who could establish his rights to priority in the invention.—ED.]

TRANSFERRING TO SECTIONAL BROOD-CHAMBER HIVES.

How to Prevent Swarming, and at the Same Time Force the Bees to Work in the Supers from the Beginning of the Honey-flow.

BY J. E. HAND

"I should like to try a few sectional hives the coming season. How and when can I transfer my bees to these hives with the least loss to the colonies so treated? My bees are in ten-frame Langstroth hives, and I want to produce comb honey."

Mr. Editor, this is a fair sample of many letters that I have received during the past season, and with your permission I will answer them through GLEANINGS.

WHEN TO TRANSFER.

Assuming that your bees are in good condition, and that the hives are well stocked with bees and brood, and that each colony has a good prolific queen, the best time to transfer is at the beginning of the honey-flow from which you expect to get your surplus honey crop; hence it is very necessary that you thoroughly understand your location and the exact time of the blooming of the flowers of every honey-producing plant in your vicinity, and especially those from which your main flow comes, so as to have your dish right side up to catch the honey when it comes.

HOW TO TRANSFER.

Our new hives should be in readiness, consisting of two shallow brood chambers with frames of foundation, and a super filled with sections and foundation. The super should be separated from the brood-apartment by a queen-excluding honey-board. We will now begin work by removing the hive that we wish to transfer from its present stand and place it back and a little to one side (entrance in the same direction), so as to be out of range of the flying bees, and at the same time be handy to operate. In doing this we place the new hive on the stand from which we took the old one. After blowing a little smoke into the entrance of the hive, and rapping on it a few times so as to cause the bees to fill their honey-sacs, we will open it and find the queen, and shake her off the comb in front of the new hive, together with the bees that are on the comb with her, letting them run in at the entrance, being sure that the queen is in the new hive.

We will proceed to shake the bees from the remaining combs in like manner, leaving enough bees on the combs and in the hive to care for the brood. We now have our bees and queen in a new hive with full sheets of foundation in both frames and sections. Those the bees will immediately begin to draw out into combs, since the honey-flow is already begun. When the bees in the new hive have commenced work nicely on the foundation, say in 48 hours after transferring, we will remove the bottom brood chamber,

shaking the bees out in front of the new hive. We now have our colony in one shallow brood-section, with a section-super above, and separated from it by a queen-excluder. This is allowed for a few days only, or until the bees get well at work in the sections, when it will be removed.

In this way we force the bees to begin work in the sections at once, and at the very beginning of the honey-flow, and not only get *all* the honey in the sections, but at the same time do away with all swarming. We gave the two brood-sections at first to keep the bees from swarming out, which they are quite apt to do if hived directly into a contracted brood-chamber.

Having our bees nicely at work in the sections we will give them the brood-section that we took away, placing it at the bottom as before, and the work in the sections will not be in the least slackened by adding this room at the bottom of the brood-chamber.

In two or three days after transferring we will place the old hive close up beside the new one, with its entrance in the same direction, where we will leave it for a week or more, when it may be removed to a new stand and allowed to build up for winter to be treated in the same way another season.

Or if the hives and combs are old it is allowed to remain beside the new hive for 21 days, or until the brood has all hatched out, when the bees may be shaken down in front of the new hive, and the now empty combs be rendered into wax. In either case the bees returning upon removing the old hive will reinforce the new colony, thus keeping it in excellent condition for work in the supers.

This is known as the Heddon system of modern transferring, and was given to the bee keeping public some 25 years ago. It is also used and recommended as a means of swarm control when working for comb honey, and for a fairly good location with a sharp honey-flow it will give excellent results.

No matter what kind of hive your bees are in, you can in this way force them to begin work in the sections at the very beginning of the honey-flow. However, it is not a complete success unless used in connection with the sectional hive, for which the system was originally intended.

Expansion and contraction are important factors in successful comb-honey production—expansion up to the time of the main honey-flow, so as to get a strong force of workers, and then contraction in a new hive, so as to force the bees to enter the sections at the very beginning of the honey-flow, and at the same time do away with swarming. In this way box hives and odd-sized hives may be worked year after year, each season driving the bees into contracted hives as above described, thus securing a fine crop of comb honey. We do not advise the destroying of good hives and combs simply because they are of an odd size, for these hives are often good wintering and breeding hives.

Birmingham, Ohio.

BOTTOM STARTERS IN SECTIONS.

The Advantage of Full Sheets of Foundation; Producing Both Comb and Extracted Honey in the Same Super.

BY F. W. HALL.

I never put a section on a colony unless it contains a full sheet and also a bottom starter of extra-thin super foundation. Any thing less than a full sheet proves to be false economy.

Full sheets are not as good without the bottom starter; and the quickest way to be convinced is to try sections with and without, side by side in the same super—not only one super full, but hundreds of them; and long before the first twelve supers are taken off no magnifying-glass will be needed to tell the difference.

Full sheets of extra-thin foundation will stretch or sag with the warmth and weight of the bees from $\frac{1}{16}$ to $\frac{1}{2}$ inch or more, which brings the bottom and top starter almost if not quite together, resulting practically in a straight full sheet in the section. If simply one full sheet is used, too many will not be attached to the bottom of the section all the way across in a light colony or during a light honey-flow. On the other hand, if the foundation reaches to the bottom at first, the sag causes it to buckle, and the wrinkle at the bottom is far too often finished in an unsightly manner, and sometimes not finished at all. On the concave side the cells keep running closer together, and an occasional cell will be left out, and still it will not be greatly noticed; but on the convex side, the cells get wider and wider until the limit of capillary attraction is reached for holding the honey in the cells, and the bees are then obliged to build out the bottoms, and finally cap the cells on the sides next above, giving the lower part of the comb an appearance not at all attractive.

I am sure I have struck upon something good in a bottom-starter fastener, and it costs nothing save a little ingenuity in applying it to the foundation-fastener already in use. For full description see page 552 of the May 15th issue for 1905.

For four or five years I have been using, in a limited way, the plan of producing both comb and extracted honey on the same hive, in the same super, and at the same time. Small cleats, $\frac{1}{4}$ inch thick by $\frac{1}{4}$ inch wide and 4 inches long, are nailed on the inside ends of a ten-frame super, at such point as will admit two thin wedging boards, and five section-holders with separators. The super will then be ready for 20 sections and two extracting-frames, one on each side. This does away entirely with those outside unfinished sections so often found when one is working for a fancy grade of comb honey. The sections should be removed as soon as fully completed, and the unfinished ones put together in two or three grades, placed in these comb and extracting supers, and put over a strong colony to be finished as quick-

ly as possible. I like to take off all sections at the close of the white-clover honey-flow and extract all sections not over one-half or two-thirds full, and feed it back to the colonies on which the sections nearly finished have been congregated. Some uncapping might be done to advantage before placing these sections back on the hives to be sure of having all the combs down to one level.

Hull, Iowa.

[We believe our correspondent is right in using extra-thin instead of thin foundation. The less of midrib we have in our comb honey the better.—Ed.]

EIGHT QUEENS IN ONE BOX HIVE.

How the Bees Keep the Queens Apart.

BY M. D. TYLER.

Last spring a neighbor asked me to see to his bees, as he had two swarms that came from one hive. He had put them into boxes, and had nailed them up so that they could not get out. He wanted me to transfer them into new hives. He also wanted me to see to the old colony, which was in a two-story hive. This last was full of bees and brood to the top, and yet the hive had but three frames in it. It was hard to get the hive apart, and then fit the combs in frames, but I did. In taking out the combs I discovered two queens on one card of brood, so I set that comb to one side and watched them while I worked. I soon discovered two more queens, and I put a couple of them in a tumbler so I could take them home. It was not half a minute before one of those queens was killed by the other. This goes to show that the workers keep the queens apart. If the bees are taken off from a card of brood, leaving the queens alone, they will come together like two bulldogs, and fight to the death. It takes only a quarter of a minute. When I cleaned out the upper story I found two more queens, which, with the two that swarmed out the day before, made eight laying queens in the one hive.

It is all "bosh" to think that two queens can exist in one hive in peace unless they are protected by the bees or by some other means. It is the workers that keep the queens apart.

I have worked with bees for sixty years. A few years ago I transferred 400 colonies for farmers from old box hives into new ones in one season. I think I am the champion transferer.

Seville, O.

[Our correspondent is a veteran in the business of selling honey. He is never so delighted as when he can get a crowd of men to arguing with him and asking him questions about bees, for he says at such a time he always manages to sell a good lot of honey to each one.

It is a good plan for one who understands transferring to make a business of doing it for his neighbors who may not have had much experience.—Ed.]

EXTRACTED-HONEY PRODUCTION.

The Locality and Methods Whereby Large Quantities of a Superior Article may be Secured in a Leisurely Fashion at a Low Cost; How to Choose a Raspberry Location.

BY W. Z. HUTCHINSON.

[A short time ago Mr. W. Z. Hutchinson, editor of the *Bee-keepers' Review*, while visiting us, asked if we would like to get a series of articles detailing his experience in producing extracted honey in Northern Michigan. He added that he had secured a large number of fine photos, and if we cared to have the set he would go to work immediately on the copy and submit it for our approval. He remarked that, while it might seem a little odd, perhaps, for the editor of one paper to write for another, yet, owing to a lack of space in his own journal, he had been able to give only a brief account of his work, and he thought that perhaps GLEANINGS would like a more complete write-up, brought clear up to date. We assured him that we should be most happy to have him furnish us the manuscript and the photos, as we were sure the former would be very interesting reading; and the latter—well, the editor of the *Bee-keepers' Review* knows how to make them. The articles have been received, and, as might be expected, they are interesting as well as valuable—"good stuff" a newspaper editor would say. We take pleasure, therefore, in presenting the first installment.

The photos in this issue represent, apparently, only a dreary waste—briers and dead trees—indicative of the fact that many a desert or bleak mountain-side contains, buried beneath it, untold wealth. In this case the wealth is in sight, but it takes a trained eye to see it. There are thousands of places in the United States to-day which are supposed to be only barren wastes, useful neither to man nor beast. But how often have we seen those same wastes yield up their treasures (honey) to some bright genius who had eyes to see what others could not. Mr. Hutchinson tells how to judge a raspberry location.—Ed.]

The time was when extracted honey was of slow sale at a low price. It may not be worth while here to discuss the reasons *why*, but we can all rejoice in the *fact* that extracted honey has become a staple product, with sure and quick sales at a fair price. With the right kind of locality, sufficient number of colonies, and the adoption of proper methods, an experienced bee-keeper can make a good living—yes, more than that—put money in the bank by producing extracted honey and nothing else.

Every successful bee-keeper eventually develops a system peculiarly fitted to himself and his environments. While I have been managing out-apiaries and producing honey on a large scale for only two years, I have developed a system that seems to me unusually good—one that might be followed with profit in many parts of the country. I have written about it in the *Review* in a desultory way, but now I propose to put it together in a consecutive way, and lay it before the larger class of readers that I can reach through these columns.

FINDING THE LOCATION—SOMETHING ABOUT NORTHERN MICHIGAN.

The foundation of success in bee-keeping specialty is the location. Unless a man has the proper location he had better relinquish bee-keeping as a specialty or else seek the right location. I did the latter. I went to the wild red-raspberry region of Northern Michigan. I think I can safely say that the

wild raspberry never fails to produce honey. It does not winter kill, as does the clover, and its nectar-yielding properties are less affected by the weather. I have seen bees doing quite well working upon it when the weather was so cool that clover would not yield a drop. I have seen the bees continue to work on berries when it was raining quite a little, and had been raining some time. Many of the blossoms are inverted, like little umbrellas, and the water does not get into them.

It might not be worth while to devote so much space to the raspberry regions were it not that new tracts are being continually logged off, thus offering new pastures to new comers. That many are interested in this region, and would gladly go there to take up bee-keeping as a speciality, I know from the numerous letters that come to me asking in regard to the prospects, where to go to find locations, how to find them, etc. To help a man find a good location, where the nectar is never-failing, and he can spread out and establish out-apiaries, and make some money and enjoy life, is fully as important as to show him how to manage his bees after he is rightly located, hence the following paragraphs.

SOME VITAL POINTS IN SELECTING A LOCATION IN NORTHERN MICHIGAN.

Let no one imagine that *all* of Northern Michigan is covered with raspberries, the same as some other portions are covered with clover. This portion of Michigan is laid off in "streaks," so far as timber and

soil are concerned. Pine barrens form a large share of this northern country; and more dreary, desolate, God-forsaken spots it has never been my lot to behold—nothing left but pine stumps and logs blackened by fire; and yet, in spite of it all, there is a sort of weird, lonely fascination about these pine plains. Occasionally there is an old pinery upon which raspberries grow, but they are short, stunted, and scattering, and of little value as honey-producers.



FIG. 1.—HARD-MAPLE FORESTS OF NORTHERN MICHIGAN.

As fast as the timber is lumbered off, red raspberries spring up in myriads, furnish-
ing bee pasturage that is simply incomparable.

After driving for miles through a dreary waste of sand, pine stumps, and logs, there will come a change, sometimes within a few rods, to the most magnificent forest of beech, maple, elm, etc.; and it is in these hard-timbered belts that we must look for the honey-yielding berries. When these tracts of hard

timber have been lumbered off, there springs up a growth of the wild red raspberry that is simply incomparable as a honey-producer.

Having found such a hard-timbered tract, there are several points to be considered in the selection of a site for an apiary. First, an old-settled country is of no value unless lumbering is going on in that neighborhood,

because the farmers cut the timber off slick and clean, and plow up the ground. Of course, there will be a fringe of berries around the edges of clearings, along fences, etc., and a few colonies would probably find plenty of honey; but the man who is going to bring in several hundreds of colonies must find some place back away from the cleared

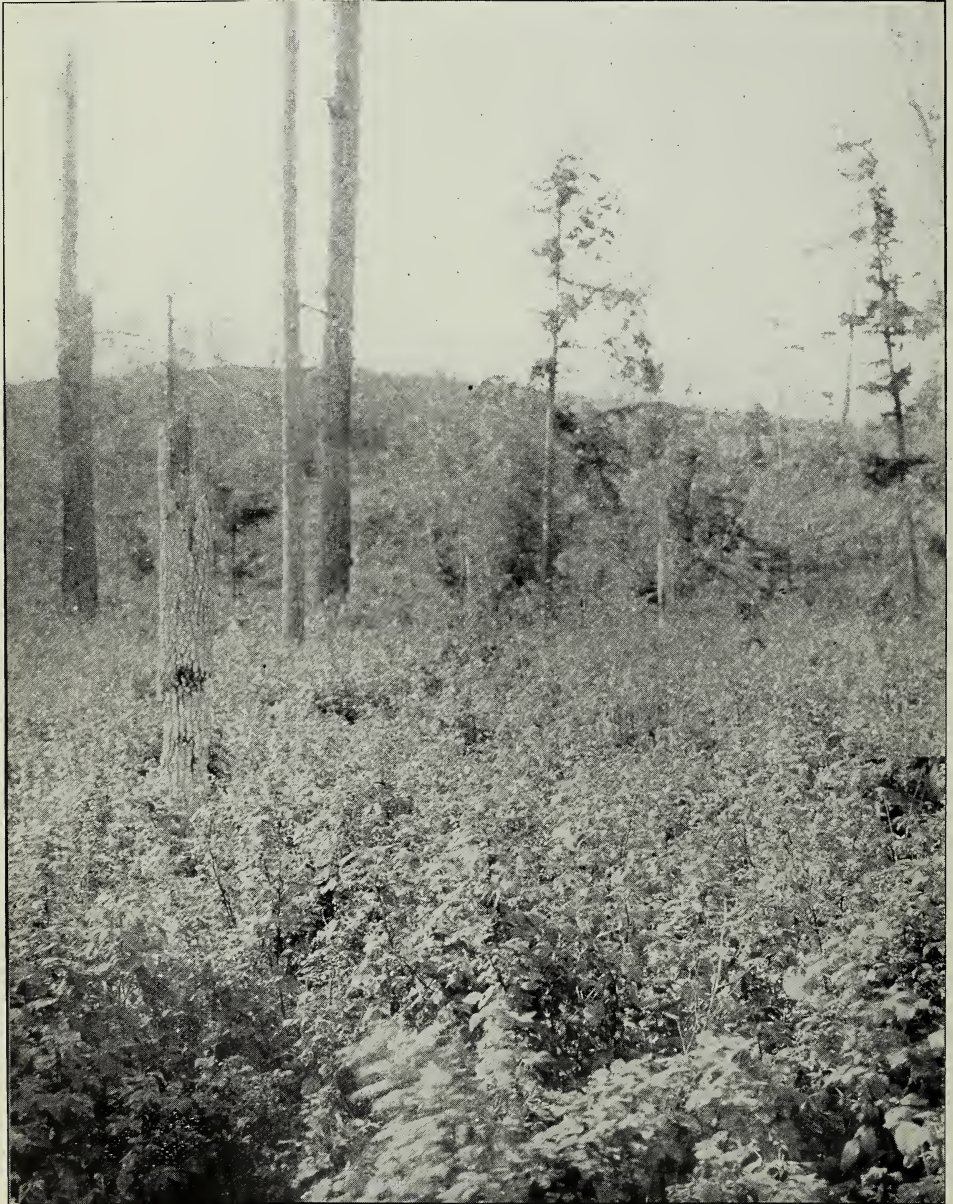


FIG. 2.—THE WILD RED RASPBERRY IN ALL ITS GLORY.

The timber has been lumbered off, or cut for furnace wood, and the berries have completely covered the ground.

land; or, at least, where the hard timber has not been lumbered off, and has not yet been sold for farms.

Still another point: it is not until land has been lumbered some two or three years that the berries are sufficient in number or growth to be valuable as honey-producers.

If fire runs through and burns up the berries they seldom come in again and grow so rank as when the brush, tree-tops, logs, etc., acted as a sort of mulch. After the sawlogs have been cut on a tract, there is more or less small timber left, and this shades the ground to a great extent, and greatly improves the raspberry pasturage — promotes a more rank growth, and prolongs the time of bloom. Let the location be what it may, it is only a question of time when the undergrowth will come up and run out the berries.

It will be seen that raspberries are not a permanent source of supply, like clover. A large share of Northern Michigan is still covered with hard timber, but it is being lumbered off at a great rate, and a man located there would be able, by shifting about, to have apiaries in exactly the right kind of locations. I have seen locations that have passed their prime, others that were right in their "glory," so to



FIG. 3.—EXCELLENT RASPBERRY PASTURAGE.

This area has not been burned over; scattering trees furnishing shade, and logs and brush act as a mulch.



FIG. 4.—POOR RASPBERRY PASTURAGE.

The ground has been burned over—no shade.

speak, and still others that were lumbered off only last winter. In some parts of Northern Michigan, lumbermen put out systems of narrow-gauge railroads, with numerous branches, in the hard-timbered districts, and all along these roads are choppings of different degrees of "ripeness."

But these choppings are back away from civilization, and the only buildings that are available are log shanties at deserted lumber-camps, most of which have been robbed of their roofs for the sake of getting the lumber. The man who goes into Northern Michigan to produce raspberry honey must expect to "rough it" to some extent, and



A GLIMPSE OF THE FIVE ACRES OF CELERY NEAR BRADENTOWN, FLORIDA, GROWN THE FIRST YEAR ON WILD LAND; THE OWNER, MR. C. L. LATTIMER, REFUSED \$5000 FOR THE CROP JUST BEFORE HARVESTING.

live in a shanty, unless he buys or builds a good house; and this is something he ought not to do until he has been there a year or two, and become familiar with the country, so as to choose wisely in reference to future pasturage.

As I have already said, the foundation of all is the *location*—one with an abundance of berries, and around this must cluster all of the other conditions. The most desirable pasture may not be the most desirable place in which to live; but I doubt if any location will be so inaccessible that the bee-keeper won't be able to get his honey out to market if he secures a crop. On the other hand, this new country has its compensations: The streams are all stocked with speckled trout; the pine barrens are often purple with the ripening huckleberries; in August and September a man can eat his fill three times a day of the great, luscious, shining, spicy wild blackberries that have grown in the shade; he can tap the giant maples and make sugar in the spring; he can rejoice in a wood fire simply by cutting the wood; and, if inclined to be a sportsman, he will find plenty of opportunity for hunting or trapping. To the right man, there is a fascination about a region where still lingers some of Nature's wildness.

But, to return: How can a man find a desirable location? This is the question that is

asked me the most often of any. There is only one way, and that is to go into this region and *hunt for it*. Very little can be depended upon what settlers say, unless they are bee-keepers, as they seem to have no conception of what is needed. To illustrate: One man who had lived in that part of the State several years told my brother and myself, with great enthusiasm, of a tract, on the banks of the Manistee, where, for miles and miles, there was a perfect sea of raspberries. As it happened, we had that day driven through that *very spot*. The ground had been burned over, and, while there was quite a dense growth, it was mostly *blackberries*, with an occasional patch of short, scattering raspberries. We were disappointed so many times, after driving miles to see some promised land, that we ceased to put any dependence whatever upon what somebody told us. As I have said, these men are not bee-keepers, and don't understand all of the points as I have given them in these pages, and are almost certain to be misled.

The best time to look for a raspberry location is in the spring, after the snow has gone, and before the trees and bushes have put forth their leaves. The berry-caness have a ruddy, brown, or purple color, very easily distinguished, at a long distance, from other brush. After the berries and other bushes



HARVESTING THE CROP AND CRATING IT UP READY TO BE SHIPPED TO NORTHERN CITIES.
 SEE PAGE 511, LAST ISSUE.

have put on their robes of green, all look alike at even a few rods.

To be continued.

SWARMING.

Some Instances to Show that Bees Often
 Select a New Location Before Leaving
 the Hive.

BY L. B. SMITH.

We have had it proven to our own satisfaction many times that bees often select a location before swarming. Away back in the 80's, we were in the woods and saw bees going in and out of a knot-hole some 15 feet up in a tree. My first thought was that I had found a bee-tree. After observing more closely I discovered that it was only bees out selecting a place for their future home, for there were more or less bees around all the trees near that showed any signs of being hollow. From their actions it was easy to see they were searching for a cavity for their future home. I watched them with much interest for several hours toward the middle of the day; but they seemed to pay little attention to any of the trees except the first one mentioned. Around this they greatly increased in numbers until it almost seemed as if a small swarm were in and around this tree. During the time, I went to the house

and told my wife to keep a close watch on a certain colony I knew was preparing to swarm. I was sure they were my bees that were so busily engaged at this tree. Pretty soon I heard my wife calling, "The bees are swarming!" I noticed, however, the bees about the tree had become very much less in numbers. A very few were to be seen at the tree just then.

I hastened to the house to watch the swarm to see what the result would be. They were pretty well out of the hive when I reached the house, and had started to cluster. Not over two-thirds of the swarm ever clustered at all when they broke cluster and made a direct line for the tree where I had been watching them for hours, and went directly into it.

At another time a neighbor called on me, saying he had found a bee-tree, and wanted to save the bees. They were working strong, as he thought. After a good many hard blows with his ax he felled the tree, and, to his utter astonishment, no bees were in it, and no signs of comb or any thing that showed that bees had ever occupied the tree. Before long he saw a big negro coming on a dead run through the brush, rattling a bell for all it was worth; and about the same time, he heard the roaring of a swarm of bees, and very soon they were hovering about the spot where the tree had stood. After circling around for a short time the bees



HAND-CAR FOR MOVING EXTRACTING-COMBS INTO THE HONEY-HOUSE.

clustered on a bush near where the tree stood, perhaps much astonished because their newly found home was destroyed.

These, with many other instances I could relate, convince me that bees often select a home before they swarm. I do not make the claim that they always do.

Rescue, Texas.

A HAND-CAR IN AN APIARY.

How to Move Hives and Supplies with the Least Possible Amount of Labor.

BY F. H. CYRENIUS.

The engraving shows a quick method of transporting hives, supers, etc., to and from the honey-house. The hives must occupy a narrow space about 15×100 ft., through the center of which runs a wooden track. The car holds six hives on the platform, and as many more piled on top as desired.

In extracting honey and taking off supers a sheet or spread that covers up the whole load is used to prevent robbing. The tracks are so arranged that the car runs directly into the house, where the load is uncovered and removed to suit convenience. I find this is a great labor-saver.

Oswego, N. Y.

[Our older readers who joined the GLEANINGS family about the time it first started will recall that A. I. Root, in his first bee-yard from which he gleaned the inspiration to start this journal, had a short railway running through it like this. We can subscribe to all the statements made by our correspondent. This arrangement ought not to be very expensive, with the exception, perhaps, of the car. But if light cast-iron wheels were made at a foundry, the rest of the car could be assembled from picked-up material, with the help,

possibly, of a blacksmith if necessary.

The track would be a simple affair. Hardwood rails could be used, made from well-dried timber that would not warp, and tied together at intervals. If made in sections, the location of the track could be easily changed, or the whole thing taken up at the end of the season and stored away in some sheltered place until the following spring.—Ed.]

A SWARM LATE IN THE FALL THAT BUILT COMB IN THE OPEN AIR.

BY A. D. STONEMAN.

This swarm of bees was discovered late in the fall, alighting on the limb of a pine-tree. Some two weeks after that they were still there, as this picture shows. The combs were built 30 feet from the ground, on quite a large limb, and about 15 or 18 feet from the body of the tree. On quite a cool frosty morning I got an extension ladder, and, with the help of my boy, put it in position, tying the top securely. Then with my smoker in one hand and a saw in the other I went up. It was ticklish business standing on the two top rounds, and trying to do any thing; but I found that the bees were very quiet, so I did not use the smoker. The bees were located on the limb where half a dozen small

limbs branched out, so by holding on to the big limb with my left hand I sawed off all the small ones; then taking hold of one of the ends of the small limbs with my right hand I sawed the large limb off with my left. By this time I had shaken the bees up pretty well, and many of them were flying around quite lively; but I held the branch at arm's length until they were all clustered again, and then started down, arriving at the bottom safely. I had to carry them about a quarter of a mile right through town, and every one who saw me coming with those bees got out of the way. I told them, however, that I had the bees hypnotized so that they would sting no one, and they did not.

When I reached home I got an empty hive and put them in it; but as the limbs were not cut short enough I had to let them rest on the edge of the hive, for by that time the weather was getting quite warm, and the bees were getting uneasy. I laid an oilcloth over them until the next morning, when I sawed the limbs off so that I could hang them in the hive by nailing two small cleats on the side. They would have been short of feed, as they had but very little honey, so I fed them syrup made of candy and sugar. To-day I have them in the cellar all right, as I put them in before the weather became too cold.

Quasqueton, Iowa, Jan. 1.



COMB BUILT IN THE OPEN AIR LATE IN THE FALL.

The swarm alighted on a limb of a pine-tree and built comb, even though the weather was beginning to get cold. One piece of comb broke off before the picture was taken, so it was laid on top.

BREEDING OF QUEENS.

Queens from Swarm Cells Perpetuate Swarming; Cells should be Cared for by a Strong Colony; a Colony Long Queenless Stores Much Pollen in Brood-frames.

BY WM. H. LONGSDORF.

I for one can most heartily indorse Mr. Alexander's recommendation to rear queens from a queen-mother only at a time when she is not under the swarming impulse, page 209. However, I want the queen larvæ *fed and cared for* in a colony that is as nearly in a swarming condition as possible—that is, with an abundance of bees, a good supply of sealed brood and honey, a comparatively small amount of unsealed larvæ and eggs, and a somewhat crowded condition. I use a single queen-excluding division-board in the brood-chamber, with the queen-cells on one side, and queen, preferably an old one, on the other. Queenless bees are not so good for rearing queens, as they are usually very poor feeders and will nearly always select a few cells for feeding, and somewhat neglect the others, producing many poor queens.

I have reared nearly all of my queens for the last ten years from selected queen mothers on the Doolittle plan. I did it at first for the simple purpose of getting my bees Italianized by buying a select queen and rearing

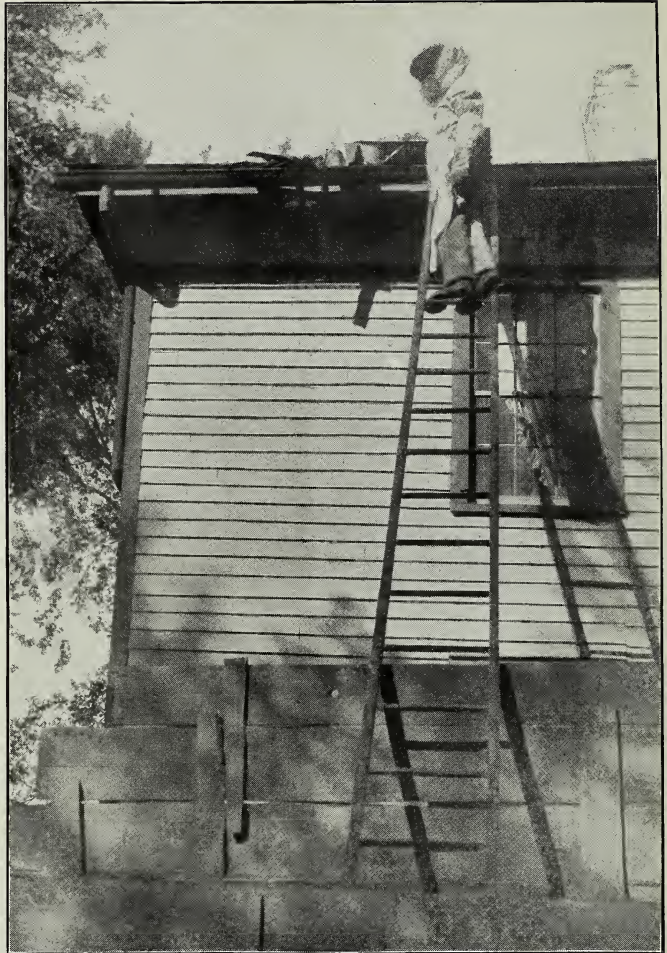
all my queens from her, the next year doing the same; and then not being satisfied with the qualities of all my bees I selected from the best for breeders, rearing all my queens from them. I found so many advantages in this plan that I have followed it up to the present.

But for a considerable time I did not think of what influence this method might have on their swarming propensity. I soon began to notice, however, that the colonies that swarmed with the hive only half full of bees and

brood, and refused to yield to my usual methods to prevent persistent swarming, were those that had managed in some way to rear their own queen from swarming-cells. With my methods these colonies are easily located, as I nearly always introduce laying queens to queenless colonies and those which have cast a swarm; and the laying queens are always clipped before introduction. If a virgin is introduced the records show it.

One of the first things to show after using select queens only, for breeders, is the more uniform color of the drones and gentleness in the bees as Mr. Alexander has said. Good wintering qualities I also attribute in part to the quieter disposition of bees from queens reared from non-swarming mothers, and also from the fact that I do not allow the bees to remain without a laying queen long enough to get the brood-frames filled up with pollen and honey, and *sealed up*. This is quite sure to cause trouble in wintering, and also spoils the comb honey produced on the hive after the queen commences to lay, by having the cappings removed and built into the new comb in the sections, and the honey filled behind it. This will not be the case if the honey in the brood-combs is not yet sealed over. The honey will be carried up, and new comb built, and it will be as nice as though built over new brood-combs, no matter how old or black the brood-combs may be.

Another important consideration in the control of swarming is prolific queens which will produce large strong colonies; for it is the medium-sized colonies that are the most likely to swarm—those that will just barely fill the brood-chamber at the time they get it filled with brood and honey. A strong colony will have a large force to put into the supers as soon as the honey comes in, and will clean the honey out of the brood-combs so the queen will have plenty of room. I have very frequently had colonies produce from five to six ten-frame-hive comb-supers with-



REMOVING HONEY FROM THE ROOF OF A BUILDING.

out trying to swarm. I rear queens for my own use only, and not to sell.
Arkansaw, Wis.

REMOVING HONEY FROM THE ROOF OF A BUILDING.

BY M. L. BREWER.

In the footnote to my article, p. 1326, Oct. 15, you speak of the use of the bee-escape to trap the bees out and into a hive, the entrance of which is close by. The entrances to the cavities are almost universally in such places as would make it next to impossible to station a hive, as the accompanying illustration will show. Four days ago, Oct. 14, I removed the shingles that I relaid at the visit described in the article referred to, and duplicated the former amount, or better. Only the upper part of the wagon shows in

the picture, the high boards on the opposite side being used as a support for the ladder.

I always use a long apron to protect my clothing from getting smeared with the honey, and in it are pockets for my tools and supplies, such as hammer, chisel, putty-knife (which is indispensable), matches, and extra smoker fuel. The smoker and dishpan are visible, with honey showing in the pan.

This same pan (and a large one it is), with a good-sized butter-bowl and a large meat-platter were all rounded full of honey, with enough left to fill a medium breadpan.

The entrance was under the shingles just at the drip to the water-lead. Such work is hard, and straining on the muscles, and is done only by a crank of all cranks — a bee-crank.

Philo, Ill.

THE BEE-MOTH.

Their Ravages and their Eradication by Means of the Deadly Cyanide of Potassium.

BY PROF. H. A. SURFACE,
State Zoologist of Pennsylvania.

To many bee-keepers the bee-moth is known as the worst enemy. Perhaps we should say the bee-moths, because there are two species of these pests, the one of which is not half the size of the other, and is consequently known as the lesser wax-moth or lesser bee-moth. Practically all bee-keepers know that in the worm (or larval) stage these pests bore through the honey-comb, devouring it, living within the tubular silken cases, and often eating away the capping or waxy covering of the young bees in the comb in such a way as to uncap them and leave rows of young bees with their heads visible in the cells. This is one of the causes of what is sometimes known as "bald-headed brood." There are other causes of this, such as chilling or insufficient food; but the larva of the bee-moth is one of the chief. When this pest becomes grown it crawls into some protected spot, covers itself with a silken cocoon, and in the course of a few days (depending upon the temperature) transforms into a winged moth, commonly known as a "miller," and enters the hives or sections of honey-comb at any possible place, seeking comb on which to lay its eggs. In the course of a few days these eggs hatch, and the larva or worm repeats the life cycle.

The best possible treatment for the bee-moth in the hive is to keep in the hive a full and strong strain or race of bees that will look after the moth and clean out the worms if these should start. Moths always attack weak hives in preference to strong. It is important that the entrance of the hive be not too large, especially at night, when the winged moth is flying, to be properly guarded by the bees. It is likewise important that there be no fragments of comb around the entrance of the hive to attract the moths in unusual numbers. All fragments or pieces

of comb, however large or small, should be gathered into a receptacle for the purpose, and kept so tightly closed that no insect can enter it. As often as once a week, during the summer, melt all rejected pieces of comb into beeswax. Leave no deserted hive with comb for the moth to inhabit and become a source of infestation to the entire apiary. When combs are to be stored it is a good plan to put them into an empty hive-body and place this above a strong colony of bees or close it so tightly with strips of paper pasted over the cracks that even an ant can not enter.

The best possible means of avoiding the ravages of the bee-moth is by fumigation. We have recently had occasion to fumigate combs and honey. This produced no evil effects whatever, and certainly killed every bee-moth in all its stages, whether it was an egg, a larva, a pupa, or a winged moth. This fumigation is possible in the hands of a novice; but he should be very careful to follow instructions. Place all honey and comb, supposed to be infested, in a room, box, barrel, or bin that is air-tight. Determine the cubic contents of this vessel by multiplying its length, breadth, and height, and for each 100 cubic feet of space use the following formula: Cyanide of potassium, 98 per cent pure; 1 ounce (by weight); sulphuric acid, 1.83 specific gravity, 2 ounces (by liquid measure); water, 4 ounces (by liquid measure).

Compute and weigh or measure the amount of material to be used. The cyanide of potassium is sold in hard white lumps resembling alum. Determine the amount of this to be used in the vessel or room which is to be fumigated. Put the proper amount into a paper sack and put it on a stand or on the floor near the vessel which is to hold the liquids. Put a stone jar on the floor in the middle of the room or vessel, using one that is at least twice or thrice as large as will be necessary to hold the liquids that are to be placed in it. Into this jar pour four liquid ounces of water, or one-fourth pint for each one hundred cubic feet of space to be fumigated. Into the water pour two ounces of sulphuric acid for each one hundred cubic feet, or half as much of this as of the water. Both acid and water should be measured by the liquid measure rather than by weight. It is important that the acid be the thick or strong sulphuric acid, sold commercially with a specific gravity of 1.83 per cent. Drop into the acid and water the paper sack containing the cyanide of potassium, and close the vessel or room instantly. Do not remain a fraction of a second in the room or bin after the cyanide is dropped into the acid and water. There is no danger whatever until this combination is made; but as soon as this is done, fumes are given off which are deadly and instantly poisonous to all insects and higher forms of animal life, as well as to delicate plants, but will not injure metal work, varnish, cloth fabrics, seeds, nor food products of any kind. Honey is not tainted nor poisoned by being fumigated by this material, as we proved by several ex-

periments last summer. If there be domesticated animals of any kind in or adjacent to the room in which the fumigation is to take place they should be removed before it is undertaken. Also the first step in this process should be to see that all windows and doors, excepting the one through which the operator is to escape, are made air-tight, and that all cracks are stopped tightly with wet paper. Preliminary arrangements should be made for tightly closing all crevices in the vessel or room in which the fumigation is to be made, if this be not a box or barrel. A large hogshead is excellent for this process, and it is sufficient to have two wet blankets present and spread them over the vessel, having boards ready to lay on top of the blankets to hold them in place. All arrangements for closing the vessel or room should be made before the cyanide is dropped into the acid.

This cyanide is the deadly prussic acid of which many have heard, and the fumes of which are known as hydrocyanic-acid gas. If the fumigation be in a room in which any article is forgotten, let it alone. Do not enter for two hours, after which time air the room properly by opening from the outside before entering it, because to enter the room before it has been properly ventilated or aired, or to fill the lungs once with the deadly gas, would mean instant death; but at the same time this is no reason why any intelligent person should not avail himself of the benefits of it. Let the vessel or room remain tightly closed for at least two hours or longer, and then open it and give it an opportunity to become well aired before entering it for further work. If comb or honey be stored in close hives, supers, or vessels a room to be fumigated, these hives or supers should be opened before fumigation so that the deadly gas can penetrate them and kill the pests.

After having fumigated comb or honey in this way, the material can be stored in any tightly closed vessel, such as a box or empty hive-body, and can be kept for an indefinite length of time, even for years, without being attacked by the bee-worm or bee-moth, if tightly closed. It is important in storing, first, that the worms and eggs be killed by the fumigation; and, second, that they be stored in vessels that are so tightly closed as to prevent the moth from entering and laying its eggs. Remember that the lesser bee-moth is a very small individual, and can go through a small crack. Strips of paper should be pasted over cracks in boxes, hives, and supers, if piled upon one another, generally fit together so tightly that no special provision for sealing the cracks between them is necessary. Common window-screen wire is sufficient protection to comb or honey from the attacks of the bee-moths as long as may be needed. The advantage of this method of fumigation over the old-fashioned process of "sulphuring" is the ease, rapidity, and absence of danger of fire. The evil effects of inhaling the gas can be avoided with less trouble than would be necessary in avoiding fire from the burning sulphur. We repeat

the statement, that honey is not injured in flavor, color, nor otherwise, by this fumigation process. We have tried it several times. Harrisburg, Pa.

SPRING FEEDING.

The Opinions of Some of the Authors of Text-books on the Subject; Feeding for Stimulating in the Spring Considered Profitable.

BY E. W. ALEXANDER.

As I happen to be a defendant in this matter of spring feeding, as given in the March 1st and April 15th GLEANINGS, I feel it a duty I owe to myself and friends to call the attention of the readers of this journal to a few established facts along this line. We will now go to our text-books and see what they say on this subject. I will endeavor to be as brief as possible.

Commencing with Prof. Cook's Manual of the Apiary, turn to page 159, where he, in speaking of stimulative feeding, says, "As already stated, it is only when the worker bees are storing that the queen deposits to the full extent of her capability, and that brood-rearing is at its height. In fact, when storing ceases, general indolence characterizes the hive; hence if we would achieve the best success we must keep the workers active, even before gathering commences, as also in the interims of honey-secretion by the flowers; and to do this we must feed sparingly before the advent of bloom in the spring, and whenever the neuters are forced to idleness during any part of the season by the absence of honey-producing flowers. For a number of years I have tried experiments in this direction by feeding a portion of my colonies early in the season, and in the intervals of honey-gathering, and always with marked results in favor of the practice. Every apiarist—whether novice or veteran, will receive ample reward by practicing stimulative feeding early in the season, then his hives at dawn of the white-clover era will be redundant with bees well filled with brood, and in just the trim to receive a bountiful harvest of this most delicious nectar."

Now we will see what A. I. Root says upon this subject. We will take the first edition of his A B C of Bee Culture, and turn to page 75. Where he speaks of a drouth cutting short the supply of nectar he says: "Many of the queens stopped laying entirely. At this stage a little feed during the night would start the queens laying wonderfully, and the fed colony would rush to the fields for pollen in a way that demonstrated at once that feeding at such a time was a very profitable investment if one wished to build up weak stocks and nuclei. A stock that had been fed a half-teacupful only would go out for pollen an hour earlier than the others, and would bring in double the quantity. A still smaller quantity will set them to building out foundation most beautifully; and I never in my life saw the work in the hive go on so

satisfactorily as it did during the hot dry dusty days under the influence of a very moderate amount of feeding during the night."

And then, again, on page 77, he says, "And after feeding perhaps a ton of the grape sugar I am prepared to say that it is a decided success for stimulating brood-rearing, for rearing queens, and building up colonies."

We will now take the late Henry Alley's Bee-keeper's Handy Book and see on p. 107 what he said in regard to stimulative feeding:

"When a colony is being fed, the queen commences to deposit eggs more vigorously, and the colony exhibits greater activity than its neighbors that are not stimulated. Feeding for this purpose should not be resorted to until the bees commence to carry in pollen as the effect of the increased activity prior to this time would be injurious. The proper time is to feed at night, and not over half a pound of food should be given at any one time unless the bees are short of stores, and it should be discontinued when honey can be gathered from natural sources. Food for stimulating should be made quite thin with water, say six pounds of sugar and five pints of water, and a small amount of honey to flavor. The water will be utilized by the bees in brood-rearing."

I should advise making the syrup more than half water. I should like also to call your attention to the latest edition of the A B C and X Y Z of Bee Culture, and see what is there said on this subject; and right here let me say that this edition to our bee literature is worth far more than its cost, and should be in the hands of every honey-producer in the land. On page 200 the authors say:

"In getting colonies up to good strength to gather the honey harvest, or induce nuclei, or full colonies for that matter, to cells for the purpose of queen-rearing, the daily feeding of half a pint of syrup should be practiced."

They also say on page 203, in speaking of H. R. Boardman, of East Townsend, Ohio, that he practices a plan which often insures a crop of honey even during poor seasons. "In brief it is this: He feeds all his colonies as soon as it becomes settled warm weather, whether they need stores or not. The syrup is given them slowly to stimulate brood-rearing. This feeding is continued clear on to the honey-flow, when, of course, it is discontinued. The result is that the hives are overflowing with bees and brood."

Then still further on the author says, "While it costs considerable to feed bees in this way I believe Mr. Boardman's experience has been such that he feels warranted in continuing it; and then if the year proves to be a good one he will get a tremendous crop of honey. One year when I visited him he had secured a fair-sized yield from each colony, and a poor year at that, while his neighbors round about him did not get any surplus, and all they did get was brood-nestfuls of honey and nothing more."

Father Quinby and his son-in-law, L. C.

Root, many years ago were the first to call my attention to the value of stimulative feeding in the spring. They were very enthusiastic on the subject, and advised me to practice it every spring if I expected to make an early increase or secure a nice surplus of clover honey. I think you will find in Quinby's book, "Mysteries of Bee-keeping Explained," something on this subject. I have lost the copy I once had, and therefore can not quote his words. And now while I am in company with these shining lights of apiculture that I have just quoted above, I wish to be put on record as saying that I have practiced spring feeding for over 30 years, and during that period I have fed at least 5000 colonies for the purpose of promoting brood-rearing during the spring, and I am sure that, all things considered, it has been one of the most useful and profitable things I have ever done in the apiary.

As the defendant in this case, I now submit it to the 50,000 readers of GLEANINGS as a jury to decide whether I have or have not produced sufficient evidence to sustain the position I have always taken. I might continue, and produce volumes of testimony to prove that I am in the right on this subject
Delanson, N. Y.

[We are not sure that our correspondent has quite understood the point of view of his critics; and in a like manner we may assume that they may not have understood him. As we understand it, they are not arguing that bees should never be fed in the spring to stimulate brood-rearing; but they are contending that, if feeding is necessary *some time within the year* the bees should be fed in the fall, and enough so they will have plenty of stores clear up to and during settled warm weather. Or, to put it another way, it is not a question with them whether bees need to be fed in localities where natural supplies are deficient, but the time *when* feed should be given.

The text book authorities referred to, so far as we can see, were not arguing that bees should be fed in the spring rather than in the fall, or that they should be fed in the fall sufficient to bring them to early spring feeding, but to show *how* to stimulate brood-rearing in early spring when the colonies are weak or short of stores. It is true some of them advise spring feeding; but a text-book can never quite keep up with modern teachings in a journal; the old editions of works of ten or twenty years ago much less so.

Mr. H. R. Boardman's method of feeding before the honey-flow, as we understand it, had in view the jamming of the brood-nest with brood and honey in warm weather and just before the honey-flow began, so there would be no place for the storage of the nectar except in the supers. His plan would not necessarily be out of harmony with the notions of the opponents of spring feeding, for it was for a different object—leaving no room for honey except in the supers.

It is perhaps well to bear in mind that they were speaking from the standpoint of

the honey-producer where the main honey-flow comes on the last of June or first of July. Mr. Alexander's locality does not have its main flow until some weeks later. During the long period of warm weather before the buckwheat comes into bloom, there would necessarily be a large amount of brood-rearing, and it is probable that no amount of heavy feeding in the fall would give the bees all the stores they require until the buckwheat opened up. Here is, obviously, a condition very different from that spoken of in the articles by the anti-spring-feeder people.

This whole matter really resolves itself down to this: Spring feeding is really a question of locality. Alexander is right in advising and practicing spring feeding for a locality with a late flow like his. No one who has seen the big populous colonies he has, and the big crops of honey he secures, can really call in question his methods for his conditions; for the proof of the pudding is in the eating.

In Europe, spring feeding is not advised. When practiced it is called *speculative feeding* because it is problematical whether it will pay or not.—Ed.]

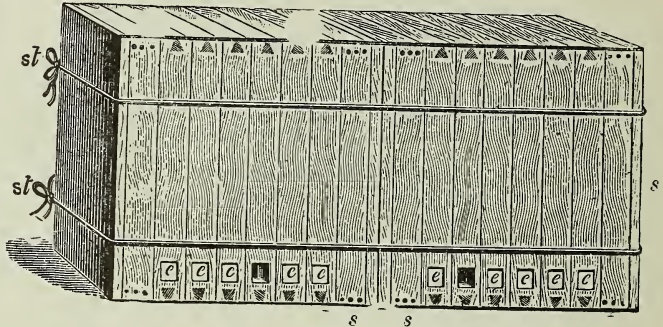
THE EVOLUTION OF HIVES.

BY W. K. MORRISON.

The first real effort to improve hives was probably the Greek flower-pot hive with bars across it, for the bees to attach their combs to. To make the roof movable, and also to

ident, from all we know, that the Greeks were well informed in bee culture before the Christian era; but it may be they borrowed their knowledge from the Egyptians, as many others did. It would not do us much good now if we did know who invented the bar hive. In any event, it was in actual use all through the Dark Ages down to the time when the celebrated Della Rocca resurrected it in the islands of the Egean Sea, and called attention to its merits.

Maraldi, the Italian scientist, was the originator of the one-comb-at-a-time idea, for he



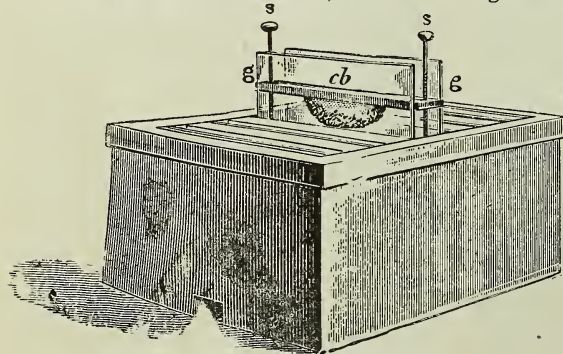
HUBER'S LEAF HIVE, ARRANGED FOR MAKING INCREASE.

was the inventor of the observatory hive. He placed a comb between two large glass plates, so that he might be the better able to watch their movements. He did not comprehend the value of a bee-space, and consequently he got the glass plates too far apart to get the best results. In the Maraldi hive the bees very frequently built the combs crosswise. This did not do any material harm, as it is actually easier to see what the bees are doing, particularly in the cells, when the combs are placed across instead of longitudinally. Maraldi, by his invention, gave a great impetus to the study of the honey-bee, and laid the foundation for greater things yet to come.

Réaumur made great use of Maraldi's invention, but we do not know just how he made his discoveries. He made a great advance in our knowledge of bees, more particularly as regards what their habits are while in the hive.

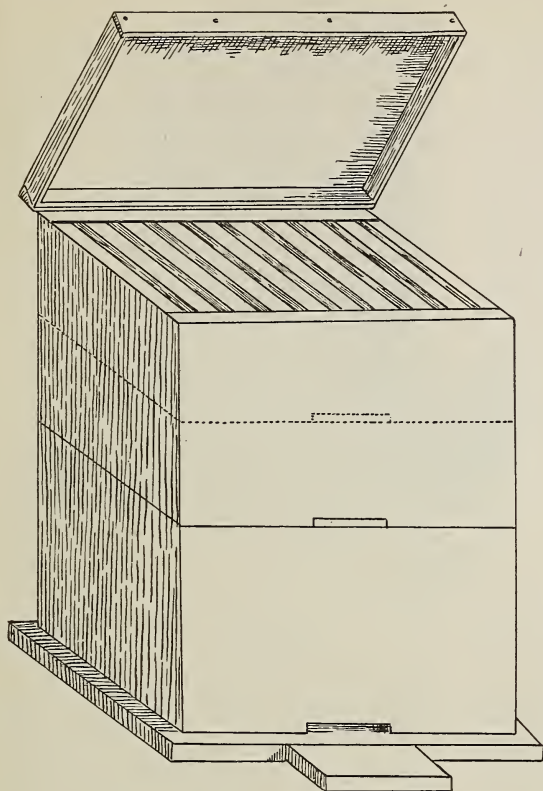
Huber followed in Réaumur's footsteps and made great use of the observation hive. He complained of the bees building the combs crosswise of the hive, and he soon saw the necessity of narrowing the space. In 1789 he invented a hive in which each comb was constructed in separate frames. His object

in doing this was to enable him to take a colony of bees and their combs all to pieces whenever he desired, and also to put it together again when the examination was finished. In doing this he showed a consummate



HUBER'S EXPERIMENT HIVE.

provide parallel bars for the combs, was quite a step in advance over the crude cylindrical hive of the Egyptians, though it is quite possible the latter were the inventors of the bar hive, and the Greeks only copyists. It is ev-



HOWATSON'S SCOTCH HIVE, 1820.

knowledge of bee architecture, for his top-bars were $\frac{7}{8}$ inch in width, and the frames were spaced $1\frac{1}{4}$ inches from center to center.

The Bingham hive belongs to the Huber type; but the Michigan man makes use of the bee-space at top and bottom. The Quincy hive with standing closed-end frames belongs to the Huber type, and so does the Aspinwall, of a later date than any. It has been said by some that hives of this sort are not practical; but as a matter of fact some of the most famous and successful bee-keepers in the world have used just such hives.

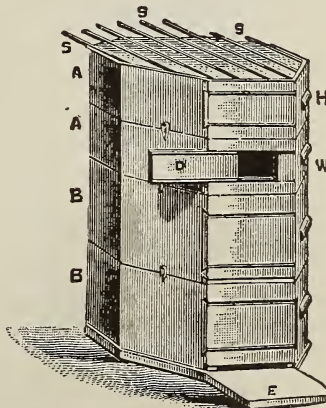
Huber's masterly work gained for him the name of being one of the first naturalists of his age, and his letters on bees were translated and published into all western languages of any prominence. Practical bee-keepers were slow to perceive the immense value of Huber's discoveries. He lived, as many a able man have done, ahead of his age.

In Great Britain, hive invention took the form of improving the hive of Mewe (1652 A. D.). The idea was to have a movable roof and bars on which to attach the combs. Howatson's hive here shown was invented in Scotland, probably about the year 1820, for his book, which is a remarkably good treatise on bees, was published in 1825, and he speaks as if his hive was no new invention—at least he had given it a fai

Hives of this kind are known as "Stewarton" hives, and it was by means of these the Scotch bee-keepers swept the English bee-men off their feet at the great bee-keepers' show in the Crystal Palace in 1878. Between the bars are strips of glass to compel the bees to attach the combs to the bars, and also to keep them in their place. A good many of these hives were (and are) octagonal in shape, as more agreeable to the bees. When the Langstroth frame appeared, the Scotch were sharp enough to adapt it to the Stewarton.

The next great bee-hive inventor was the Russian, Prokopovitch, who certainly has great claims for grateful consideration from modern bee-keepers. A glance at the cut on next page will show that the man who invented such a hive knew the requirements of bee-keeping. He had 3000 hives himself, all with bees in them, and he sold quite a number. Besides, he conducted a bee-keepers' school where he turned out a number of successful bee-keepers, skilled in the use of his hives. He was a bee genius of the first rank. Russia being an oriental country, with little intercourse with western nations, Prokopovitch's hive did not become known in Western Europe as it ought to have done according to its merits.

France and Switzerland, owing to the discoveries of Réaumur and Huber, became hotbeds of bee-keeping, and books and inventions followed thick and fast after the demise of Huber. In France, Debevoey invented a hive in 1845 that came very near depriving Lang-

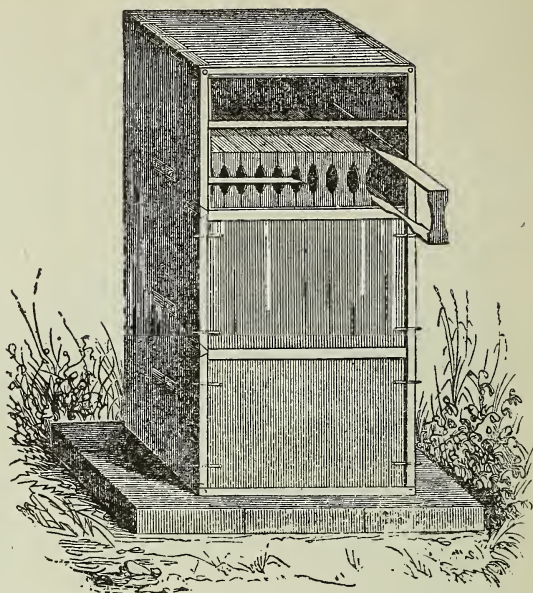


STEWARTON HIVE OF SCOTLAND, 18TH CENTURY.

stroth of his honors. Here we have the hanging-frame idea, but not the bee-space. Munn, in England, a little later, brought out a method similar but lacking practicability.

In 1851 Lorenzo Lorraine Langstroth invented the movable hanging frame with a bee-space on all sides in combination with a movable roof, also having a bee-space on the under side. The United States Patent Office allowed him a broad sweeping patent covering all his rights in the clearest manner; yet all sorts of infringers arose to claim his great invention as theirs. Had Langstroth lived now, and been able to hire good lawyers, he would have been in a position to levy heavy fines for infringements. As it was, he was robbed of the fruits of his invention by persons of unscrupulous tendencies. Others have tried to claim for themselves or their friends the honors of this great invention which rendered the construction of a scientific hive an easy matter. Even Langstroth was himself persuaded that Dr. Dzierzon had discovered the same invention.

Dzierzon himself made no claim to such a thing; in fact, he prided himself on his side-opening bar hives. He cut his combs with a long knife, and then pulled them out with tongs. Americans would have no patience with such a plan. To the day of his death he objected to hives with movable roofs as unsanitary or unhygienic. Berlepsch adopted part of the Langstroth idea by using frames instead of bars; but the tongs are very necessary, even then, in the Berlepsch system. Any one interested in this subject, by studying Dzierzon's and Berlepsch's books, will soon perceive that neither has the slightest claim to the hive having hanging movable



PROKOPOVITCH'S HIVE, EARLY PART OF THE 19TH CENTURY.

Nederland, Switzerland, Norway, Sweden, Australia, South Africa, all concede Langstroth as the man who solved the hive problem for them. This is due in no small degree to the late Charles Dadant, who at long range fought Langstroth's battles in Europe.

Having right on his side he succeeded in convincing his opponents that Langstroth was the man who solved the hive problem for all mankind.

MAKING UP WINTER LOSSES.

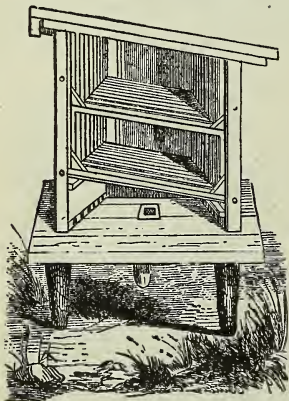
A Review of Some of the Successful Plans for Making Increase.

BY E. D. TOWNSEND.

[Our correspondent assumes that the reader has a general understanding of both the Somerford and the Alexander plans for making increase, and for this reason he does not go into details in describing them. Any one who desires fuller particulars, however, may find both the Somerford and the Alexander plans in the 1908 edition of the A B C and X Y Z of Bee Culture.—ED.]

Comb-honey producers may be striving to keep down increase, but extracted-honey men are more interested in plans for making up winter losses; for if their bees are handled as they should be there will not be enough natural swarms to make up for the loss through the year. Each season, therefore, there will be some artificially made swarms, and the purpose of this article is to show how to do this to the best advantage.

There is a rule to be observed in the making of artificial increase that is very important. The brood should be left undisturbed for the first eight days after being made



DEBEAVOY'S HIVE.

frames with a bee-space and movable roof. In addition, one ought to read Langstroth's book, which shows his invention was no accident. On the contrary, he left his German rivals far in the rear in every respect. England, France, Russia, Italy, Spain, Belgium,

queenless to allow the bees time to cap all the unsealed brood. This rule or principle is observed in the Somerford, Alexander, and Chapman plans, all of which will be considered here; and if bee-keepers would keep this thought in mind, and work out a system of artificial swarming in which no unsealed brood is carried away from the parent colony, much better success could be expected. It is well known that, when bees are carried to a new location in the process of making artificial increase, if the apiarist is not well versed in the art of making bees stay where they are put in the different manipulations, large quantities of unsealed brood will be lost by the bees deserting the hive in the new quarters and returning to the parent hive. Let us now consider the

SOMERFORD PLAN FOR MAKING INCREASE.

This is a good one; but in order to work this system to the best advantage, one ought to have a very good stock of bees. The idea, in brief, is as follows: During either a natural or artificial flow of honey, the queen is removed from a colony that is very strong and in good condition to build queen-cells. In ten days, when the queen-cells are ripe and all the brood sealed, the colony is ready to be divided.

The average bee-keeper will have no trouble with the plan up to the time the division is to be made; but the difficult part comes when the attempt is made to compel the bees to stay in their respective places on the new stands. We will suppose that it is early in the season, and that two frames of brood have been selected with at least one good queen-cell, and that the bees from a third frame have been shaken on to the first two frames. The difficulty now consists in trying to make a good percentage of these bees stay with the brood on the new stand.

In preparing the hive for these little colonies, a lath is nailed over the entrance through which a $\frac{3}{8}$ -inch hole had previously been bored, which hole, however, is now corked up. The third night after the little swarm is made, and after the bees have stopped flying for the day, this cork should be removed from the $\frac{3}{8}$ -inch hole at the entrance, when the bees will be found ready to come out; for during the confinement they will have been gnawing at every opening where a particle of light could be seen. On this account, if the entrance were thus opened during the middle of the day, every bee that could fly would rush out and many of them would go back to the old stand, for it would be natural that they should prefer the old home to the prison from which they have just escaped. The consequence would be that but a very small number would be left at this new stand, with about as many bees at the old stand as there were before the division was made. Such a small swarm or nucleus would have a hard slow pull in order to get in shape for winter, and many times it would have to be helped. The small entrance, consisting only of a $\frac{3}{8}$ -inch hole, and also the time at which this entrance is

opened, makes the plan successful where it otherwise would be uncertain and perhaps an actual failure. For instance, if this $\frac{3}{8}$ -inch entrance were opened late in the day after the bees had stopped flying, there might be, perhaps, a cupful of bees that would crawl out of the little entrance, for they are quick to realize that they are no longer prisoners, and the glad tidings go through the hive like magic. However, since it is so late that the bees will not fly, there will be practically none that will go back to the old stand. By this time the young queen has hatched, and the bees soon begin to carry out dead bees, etc., and to clean house generally. In other words, things have changed suddenly, for the bees that were prisoners, and were thinking of nothing but trying to get out, now begin to think about keeping house, and during the first night of liberty much is done along this line, so that, when morning comes, and the bees take their first flight, they no longer try to go back to the old location, but mark the new one, so that but very few go back. The consequences are that the nucleus will be in good condition, and very thrifty, when it might otherwise have been almost a failure.

In making nuclei with this Somerford plan we start a few artificial queen-cells at the time of making the divisions, which cells are from our best stock, so that if, for any reason, extra cells are wanted they will be on hand. It sometimes happens that it is convenient to use a colony for increase that we would not care to breed from, and it is less work to make artificial cells than to cut them from one comb and transfer them to another one, as would have to be done if following the Somerford plan, for many times all the desirable cells will be on only one or two combs of brood. Furthermore, only a few of the cells in such colonies will be good enough to use, the inferior ones being torn out when the division is made.

HOW THE QUEEN-CELLS ARE PRODUCED.

With the number of colonies that the honey-producer has to select from, there is no trouble in picking out colonies for cell-builders that are especially adapted to the work. I have found that nervous bees are better cell-builders than the more quiet strains, so in selecting the cell-building colonies pick out hybrids or bees that tend toward a darker-colored strain. After making this selection, see that all the cell-building colonies are strong in numbers. Then remove the brood and the queen from each, being sure, however, that there is plenty of honey left. However, it sometimes happens that there is brood in nearly all of the combs so that, when these are taken away from them, there will be almost no honey left, and thus it will be necessary to give two or three frames of stores, filling up the empty space with empty combs with the exception of one or two in the center of the hive. In this space in the center, place bars containing empty cell-cups, in order that these may be cleaned and made ready by the queenless bees for the

larvæ to be transferred later. The first day after the bees have been made broodless and queenless they will be anxious to get brood to start cells with.

We are now ready to transfer the larvæ from some of the best queens to the cells which have been cleaned out by the queenless bees. A transferring-needle, jelly-spoon, plenty of queen-cells containing royal jelly, etc., will be needed. There is enough royal jelly in an ordinary queen-cell to prepare ten cells for larvæ. It is important to get the larvæ transferred to the jelly in the prepared cells so nicely that the bees are hardly able to tell it from their own work. The cell-bars containing the transferred larvæ are now placed in the queenless colony to be started; and after they have been accepted, in a day or two they are taken from the queenless colony and placed in the second story of a powerful colony above a queen-excluder, where they may be finished. Two frames of brood should be lifted up from the lower story, and placed one on each side of the cell-bars in order to make sure that the bees do not leave the cells and go below, which might happen on a cool night. With the two frames of unsealed brood it is quite certain that the cells will be well taken care of. I am sure that the work will succeed better if the cells are started in a queenless colony in the way described, rather than in an upper story over an excluder. Of course, after the cells are started they can be transferred to such an upper story over an excluder to be finished.

For the honey-producer who raises only the queens that he needs to make up winter loss and increase, and when the regular brood-frame is used, no tools except those that I have mentioned will be necessary. These are so few, and their advantages so great, that no one can afford to be without them. In this way a queen can be supplied any time during the season.

THE ALEXANDER METHOD OF MAKING INCREASE.

This is a very good system, for, as in the Somerford method, the brood is left with the full force of bees until it is all capped. This, of course, means a saving of all the unsealed brood, and this can not be said of some of the other methods which are being used where the unsealed brood is moved to a new location from which many of the bees that were taken with it go back to the old location, leaving the brood to take care of itself.

With the Alexander plan the queen-cells are all produced artificially, as explained above. By the way, the brood-nest above the excluder is one of the finest places to get cells finished after they have been started in the queenless colony. A ten-day-old cell should be ready to give the brood four days before it is set on the permanent stand. In this way the young queen is ready to fly the first day after the division is made, and she becomes a laying queen in another week.

We made up some winter losses by the Alexander plan of increase just at the com-

mencement of the clover flow. In this case the brood-nests were all ready, some having honey where the bees had died before it was consumed. The queen and one frame of brood were put in the center of one of these sets of brood-combs, and a queen-excluder was put on top; then the brood and bees were set over this so that all were on the old stand. In one week a ripe cell was given the bees in the upper body, and on the eleventh day this upper body was set on a stand of its own with a virgin queen ready to fly the first favorable day. This worked well, for all were in good shape for winter, there being no weak inferior colonies likely to be robbed out at any time. There was one objection, however — the plan was expensive. It can be seen that a set of brood-combs to be filled with brood and honey is equivalent to a set of frames containing the best clover or raspberry honey, and this amount of honey would be worth about \$4.50. It is evident that we could go into the market and buy bees for less money than this.

Our next plan was to wait until near the close of the clover season, when the honey-flow would last but a few days longer, it having already begun to slacken. At this time the plan just described was carried out, and it worked better, for it gave the advantage of the honey-flow in which to have the cells prepared and introduced, and it allowed also the colonies to get in a little honey so that they would be in very good shape, but of course short of stores, although they usually would have enough to last them until the time to feed up with sugar syrup for winter.

While some of our winter loss is still made up on this last plan we have another plan that we like better. At the commencement of the honey-flow the division is made and the cell is given in four days, and the brood set off on its own stand on the eighth day after the division. At this time the brood is all capped so that there is no loss there. While this method takes three days more of hatching bees away from the colony that is left on the old stand, which is our honey-gatherer, we make two colonies from the brood by dividing it in the middle, giving each half an equal part of the bees, brood, and combs of honey. Each half is also given a ripe queen-cell; and although one of them will have the virgin and will, therefore, destroy the cell, it saves work in the end and is the better way. By making these nuclei of the divided brood early, they breed up rapidly and make just as good colonies for winter as if the brood had not been divided. There is this difference, however; that is, brood not divided in halves in the way I described might have enough stores for winter, while the two halves of the divided brood would have to be fed some syrup to carry them over to the next season.

While this latter plan costs only half as much honey in the first place as does the plan first described under the heading, "The Alexander Plan of Making Increases," yet more sugar has to be fed for winter stores, but not enough more to offset what is gain-

ed, and it is, therefore, a very good plan. It will be noticed that, in the plan of making two nuclei from the brood of one colony, only half as many colonies need to be disturbed to make up the winter loss, and in those which *are* disturbed to make up such loss, the colonies left on the old stand containing the working force are in about the same condition after the brood is removed, as to the amount of honey that would be stored, as a new swarm would be if hived on the old stand.

THE ALEXANDER PLAN AS WORKED FOR INCREASE.

In making up winter losses I have advised the use of drawn combs. In making increase, frames of wired foundation are used instead. Sometimes it happens that we have both increase and winter loss to make in the same yard, and in such a case a frame of brood containing the queen is placed in a hive containing frames of foundation. A queen-excluder is placed on top of this, and then the brood over the excluder, so that all is on the old stand just as usual. On the eighth day the brood is set off on a new location, and is used to make up the winter loss as I have explained.

The difference lies in the fact that no story of extracting-combs is given the colony until the foundation has all been drawn out and filled with honey and brood; for, were we to give all the comb room the bees would use above, the foundation would be neglected, and probably there would be no colony at all, so to speak, for the bees might not have more than two frames of the foundation drawn out, nearly the whole force of workers being above. In order to avoid having seven-tenths of the hive below untouched, therefore, see that this foundation is all drawn out before stories of extracting frames are given.

In the above discussion I have purposely said nothing about a flow of buckwheat honey, having taken into consideration only the white-honey flow of June and the fore part of July. Here at Remus we get some dark honey from the buckwheat and aster. Some of our winter losses in years past have been made up during this flow. While it is somewhat cheaper than to do it during the white flow, I am very sure that such colonies are not worth as much as those made earlier, judging from what the bees are able to accomplish in storing surplus the season following; and it seems that these little swarms are a little on the order of late natural swarms, for they do not winter as well, and they are, consequently, not as desirable. We have, therefore, come to the conclusion that, while it costs more to make our increase early, it is cheaper in the end, and therefore we try to do that at the present time.

A practical honey-producer can buy bees of less successful bee-keepers for much less money than he can produce them himself, if he can find any for sale that are in a desirable condition. Sometimes we find desir-

able bees, and in such cases we buy them instead of trying to make our own increase.

THE CHAPMAN PLAN OF MAKING INCREASE.

Mr. S. D. Chapman has a plan somewhat different from these others mentioned. At a period about eight days before the close of the raspberry flow (it would be the same if the flow were from clover or basswood), he hunts out and kills all his queens with the idea of having only young queens with which to go into winter quarters. In ten days, when the queen-cells that have been started come to maturity, half of the bees and brood, including a good queen-cell, is taken out of as many colonies as desired, and put into empty hives, and then both hives are supplied with empty combs from the colonies that died during the winter. As this is about the middle of July, these half-colonies that will soon contain young queens will build up into good colonies for winter, although they will probably need to be fed quite a quantity for winter stores. The bees have eight days of the last of the honey-flow in which to build their cells, which insures the best quality of cells. Furthermore, at this time it is less expensive in the amount of honey it takes to produce the increase; for when one runs for extracted honey, as Mr. Chapman does, this killing of the queens is not likely to cause any loss of honey; and the smaller amount of brood the bees have to care for may be a gain rather than a loss. Finally, by having young queens take their flight after the season is over, there is less than one per cent of swarms during that time. We have tried this plan and found it to be a good one.

Mr. E. E. Coveyou, of Petoskey, usually has his own way of doing things, and his method of making up winter loss and working for increase is no exception. When he finds cells being built in any of his colonies preparatory to swarming, the colony is shaken into a hive filled with combs or foundation.* After the bees and queen have been shaken from the combs, the brood is removed to some weak or moderately strong colony, to be taken care of for six or seven days. At the end of this time the brood is placed on a bottom-board beside the before-mentioned medium colony, over which it has been for the previous few days, and both hives are so placed as to get about the same number of flying bees. A new colony will thus be made from the brood.

If he desires to make two colonies from the brood he divides it and sets the two halves on the old stand so as to catch all of the flying force, the original medium colony of this stand then being moved to some other stand. If there are cells to be saved in the brood, a queen-excluder must be used between the upper story of brood and the medium colony before the division.

If this brood from the shaken swarm had been set on a stand of its own at the time of shaking, much of the unsealed larvæ would

* If one has the foundation, this is the place to use it, for the combs may be used later.

have been lost by the bees leaving it and going back to the old stand.

If Mr. Coveyou finds that more increase is needed than he can get from the colonies having cells, the required number of cells are provided by the plan already described. Remus, Mich.

BEE-KEEPING IN NEW MEXICO.

Some Problems not Ordinarily Met.

BY THE NEW MEXICO CHAP.

Couldn't Mr. Alexander and others, in giving dates, refer to an expected honey-flow, to the time when bees first begin to get nectar, to a killing frost, or to some such terms, instead of May 1, etc.? I am down here in New Mexico where the bees fly every day in the year. To-day, Dec. 28, I saw a great number of them follow a load of honey two and a half miles, and swarm around the wagon for a long time after it was unloaded. I have just been reading GLEANINGS for Dec. 15, p. 1594, where Mr. Alexander is quoted as having said he began extracting from the brood-nest May 1. Reference to a certain day of the month, or even to a certain month in your locality, means little in the way of actual information to me. Not having the conditions of climate, season, and flora tabulated in my head for the whole United States the phrase "May 1" for Ohio leaves me to guess when I should do the same thing in case I wish to try the plan. I believe Mr. Alexander did in the original article specify so many days before the first flow; but if such explanations were more generally used they would help me. Could you not, in some place in your columns, explain this point to the kind writers of GLEANINGS, and thus help our readers of the Southwest?

Many of the articles I read leave the impression that the writer had never conceived of such conditions in the bee business as confront me. For instance, I wonder if "Crudh" would be thinking and writing the same as he did for Dec. 15, pages 1592 and '93, if he were here, where English-speaking help is hard to get, working to put 1500 run-down colonies, scattered over ten square miles (one yard even 45 miles away), in shape to breed up to 2500 next spring, and to produce a given number of pounds each, in order to meet interest and principal where you must have gilt-edged security to get money at 10 per cent. I wonder if he would figure long whether or not a queen was too black to keep, or whether she was one or three years old. Perhaps his mind would be on where he was going to establish those new yards; how he was to get the wells put down, whether he would have to have a horse here, etc.

If the gentleman who opposes Dr. Miller's idea of controlling bee-ranges had to "buck" this sort of proposition from twelve to eighteen hours per day, I wonder if he would call it pastime, or if he would get some stronger words for it.

Now about taking off honey in the after-

noon so the bees will not sting you and the neighbors. What about taking it off from daylight until dark, and working at the extractor away into the night with the bees lying idle for weeks at a time for want of empty combs where help can not be had?

I should like to hear more about "going Mr. Alexander one better" by taking out combs and letting bees carry the honey back to empty ones in the hive. We have several thousand pounds of honey candied in the combs, so white and dry that all the power extractors in the United States would not throw it. Suggestions thankfully received.

Msilla Park, N. M.

INJURY TO LEAVES OF BASSWOOD-TREES.

BY PROF. H. A. SURFACE.

Can you tell me what to do with my basswood-trees? Every year something eats the leaves full of holes. I fear it hurts the bloom and prevents secretion of honey. I have 25 trees, one foot in diameter. They bloom full some years, and the bees work on them ten days or two weeks, some years two days. What causes the injury is so small that it is impossible to see it. Sometimes I see a very small worm. They make a perfect sieve of the leaves. J. V. N. HOUSE.

Spring Hill, Kan.

[This was referred to Prof. H. A. Surface, Economic Zoologist at Harrisburg, Pa., who replies:]

It is evident that the injury to the leaves of the basswood-tree described in the above inquiry is due to beetles, which are, no doubt, either rose-bugs or June beetles. The latter are sometimes called May beetles and drone beetles. The work of making the leaves full of holes is indicative of these creatures. Worms or larvæ may eat holes in the leaves when they are very young, but they soon go to the edge and eat away the tissue from the margin of the leaf. Also if the work were done by worms or larvæ these pests would be present in great numbers and quite conspicuous. The beetles feed after night, and the June bugs or May beetles may disappear entirely in the daytime, finding concealment in the grass and soil. If the damage be done by beetles, remedies will be difficult to apply, for the reason that these pests are so slow to poison that it is generally considered impossible to kill them by poisons. The best material to apply as a spray would be arsenate of lead, two pounds dissolved in fifty gallons of water. This would stick better than any other poison that could be used. It will not be washed off readily by rains, and will be present when needed. It should be applied upon the first appearance of such injury. If the damage be done by worms or larvæ this would undoubtedly be the best remedy to use, and spraying with Paris green would be next in order.

Sometimes it is possible to catch the leaf-eating beetles on cloths soaked with kerosene

by tacking such cloths to a frame stretcher and shaking or jarring the branches over them after night or in the early morning when the insects are yet present. If the beetles merely fall into the kerosene-soaked cloth they will eventually be killed through contact with the oil, even though they may be able to escape temporarily.

To overcome the effects of such injury it would be well to saturate the ground by the application of a little nitrate of soda, a mulching of stable cleanings, or some other nitrogen-bearing material applied around the tree as far as the branches extend. Cultivation of the soil to preserve moisture is advisable, but this can not always be done. Abundant watering will help the trees greatly in overcoming the effects of such injury.

It is difficult to name insects with certainty without very accurate descriptions of both the pest and the injury that is inflicted or without the insects themselves. It would be advisable for inquirers to mail us specimens, and thus be accurately informed instead of being obliged to rely upon assumptions from descriptions that may not be complete.



SOME ALFALFA HONEY THAT COULD NOT BE LIQUEFIED BY HOT AIR.

In regard to liquefying honey, p. 145, Feb. 1, I will say that last November I had to warm up about 150 ten-frame supers to extract them. For this purpose I built an 8x12 room and used a small coal-heating stove, and maintained a temperature from 110 to 130° for 24 hours, and had alfalfa honey in the room for three days in 60-lb. cans, and it did not liquefy in that length of time. I also had some honey in supers that was candied, and it is still in the frames. In addition I had a 6000-lb. storage-tank that I tried to get the sun to warm up last summer when it was ranging 100° in the shade, and it was a failure. I have had to shovel out 18,000 lbs. of honey in the last year, and scorched only seven cans, and they were one-gallon in size. I think that, to use hot air, would be expensive — that is, to accomplish the purpose. Of course, some kinds of hot air are very cheap. M. TOWNSEND.
Ontario, Ore.

[Our experiments in liquefying candied honey in an incubator lead us to believe it would take nearly a week with a temperature of from 110 to 130, to liquefy honey granulated so hard that it is solid.

The combs containing the honey in such a temperature, in a few days more would have

sagged or crushed as soon as the honey had begun to melt.

In the case of a large 6000-lb. tank of honey which was candied, the sun would never affect it. The same thing has been tried in California, with a much warmer climate, without results. The only thing to do in a case of this kind is to do as you did—shovel it out and melt it over hot water.—ED.]

SHIPPING HIVES IN BOXES.

The whole bee-keeping fraternity should insist on manufacturers shipping hives that are sent out in the flat in closed boxes instead of using the hive-bodies for the crate. I presume this is done to reduce the freight charges to the lowest possible point; but I believe the majority of bee-keepers would be willing to pay a little more freight and have their supplies arrive in as good a condition as when they left the factory. I am of the opinion that, if the shippers of hives packed thus could be at the destination point and see them unloaded they would very often feel like disowning them.

In unpacking the shipment the contrast is so great that one can scarcely realize the shipment is from the same factory. The inside hives are as bright and clean as a new pin, while the hives set up as the shipping-crate are black and greasy, contain several nail-holes, and the soft pine wood is marred, and the body dented and often cracked by rough freight-handlers *en route*. The hives are always shipped with the hand-holes on the outside of the package, probably to afford a place for freight-handlers to handle them, and of course they must be put together this way. In a shipment of even five hives, two sets of hive-bodies put together are necessary to hold the rest of the hive-fixture. We see by this what a large amount of extra work is necessary to put such hives in proper shape. Not every bee-keeper has the tools or the time to plane, dress, trim, and putty the nail-holes of these marred hive-bodies, nor should they be expected to do so when they pay for doing this very thing at the factory. GRANT STANLEY.

Nisbet, Pa.

QUEEN WITH DENT IN HER BACK.

In June, 1907, I purchased a breeding-queen and introduced her into a hive with two frames of brood taken from another colony. During the month I added two more frames of brood, and the rest of the hive full foundation — Danzenbaker hive — until now the colony is very strong in bees, thousands hatching every day. When the queen arrived, there appeared a small dent on the back between the wing-sockets, perhaps as large as a pinhead, and $\frac{1}{30}$ of an inch deep. The cause of this dent does not seem to be very clear, nor does it affect her laying qualities or her offspring in the least.

To-day I opened the hive to show the queen to a visitor, and the first frame lifted out contained a beautiful large queen, and upon close examination the dent was not vis-

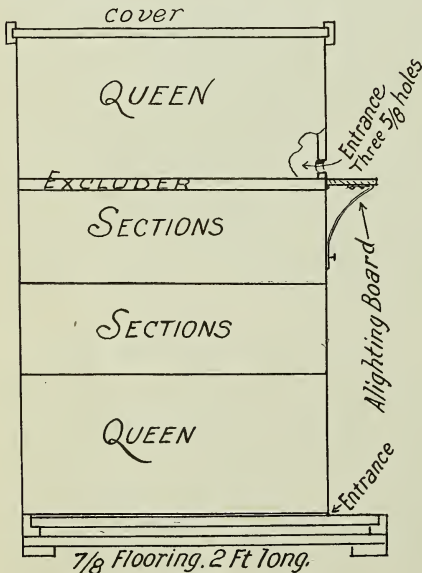
ible. While we were looking at and admiring her my attention was attracted to another part of the frame, when, lo! there was the old original queen on the same frame and same side of the comb, but the newly discovered queen was the larger by all odds. I then looked through the hive for queen-cells, and found *one* hatched out. Do you think the bees are trying to supersede the other queen, or what?

Granby, Conn. E. H. SHATTUCK.

[In these cases it is evident the bees had in view the supersedure of the old queen. The dent in her body probably incapacitated her to an appreciable extent, and hence the presence of a new and vigorous queen.—ED.]

A SUCCESSFUL PLAN FOR WINTERING TWO QUEENS IN A HIVE.

In reference to the two-queen system of managing bees, I will say that I divide the hives with a thin division-board, bee-tight, from top to bottom. Two nuclei will then winter just as well as a full colony in either an eight or ten frame hive. In this way we have the two queens in the spring; and if a queen is needed for another colony, one queen can be removed and the division-board taken out. I am enthusiastic in recommending a divided hive for wintering bees. I take two colonies and put them in two divided bodies, one on top of the other, so that each colony occupies half of both bodies. In this way the heat of both colonies is in one hive.



It always has been next to impossible for me to get my colonies built up in time for the white-clover honey-flow. Now when the flow begins I put the two colonies, each with its queen, in two undivided bodies, both of which are on the same bottom-board. Two section-supers and an excluder are between

the two colonies. Besides the regular entrance there is an entrance above the supers, as shown in the diagram. The bees keep right on rearing brood; and when they get too numerous for two hives and three or four supers I remove the top colony to another stand.

I recommend this system only for wintering and for building up in time for the honey-flow. Last winter was the first time I tried it.

Royal, Ill.

B. D. HALL.

NAILS KEPT IN CIGAR-BOXES.

I think I have quite an improvement over Dr. Miller's nail-box as illustrated and described in the Dec. 15th issue. I use ordinary cigar-boxes, nailing the lids securely at one end and half way up the sides, using regular cigar-box nails. Then with a sharp thin-bladed saw I make a cross-cut through the middle of the lid. I then have practically the same box as Dr. Miller's, with added advantages of a lid, keeping out dust, etc.; less trouble to make, and no cost whatever, as the boxes can be secured for nothing at almost any cigar-store, grocery, or drug-store. If it is desirable to hang it up, as Dr. Miller suggests, it is only necessary to tack a small strip along the bottom, leaving a projection with a nail-hole at the top. However, I find them more convenient to lay the box flat on a shelf with a nail, like contents, fastened on the end of the box for a label.

Piqua, Ohio. M. E. MCMANES, M. D.

TOP AND BOTTOM STARTERS FOUND SATISFACTORY IN CALIFORNIA.

I have just read the article by W. A. Fryal, p. 1582, in which it is stated that top and bottom starters in sections did not work satisfactorily in his locality. Now, I live in Alameda Co., not over twenty miles from Oakland as the crow flies. I use top and bottom starters according to Dr. Miller's directions, and the results are all right. I do not think locality has anything to do with his trouble. I think the trouble is with his bees; but I am only an amateur in the business, and write this to let you know that all Alameda Co. bees do not fill their sections in a freakish manner.

Niles, Cal. S C. GIBSON.

SCREENED ENTRANCES TO HIVES IN A CELLAR NOT SATISFACTORY; WHY ONE COLONY HAD DYSENTERY.

I screened the entrances of the hives the first four weeks after I placed them in the cellar; and if I had left them closed I should not have had a live bee to-day. With me a closed entrance is a failure.

I placed my bees in the cellar Nov. 15, all in very good condition, with plenty of natural stores. The first two weeks in the cellar they were very quiet; after that they began to be uneasy, and finally to roar, and the thermometer began to rise, and went up to 60, with a strong smell of dysentery, which I traced to one colony. (The date of my examination was the first week in December.)

That one colony had dysentery in a very bad form. I removed it. I placed ice in the cellar, opened up my ventilators, opened up the entrance, and cooled down the cellar to 40; shut up the cellar, and up to date my thermometer stood at 48 at every examination, with all ventilators open. Now, why was one colony affected and not the rest? It was a colony that swarmed on the 23d of August, and the swarm was put with a weak colony that was queenless.

Estey, Mich. MILO WRIGHT.

[We are unable to answer the question without more particulars.—ED.]

CATCHING STRAY SWARMS.

To trap stray swarms, I secure a number of boxes at the local stores, of different sizes. The covers are cleated, and fastened on with four large screw-eyes to avoid the bother of a screwdriver. In one side of the box is a hole which is covered with a wire-cloth door. Finally, a screw-eye is put into the top back edge of the box with which to hang it up.

With a ladder I go up a tree, drive a nail, hang the box, see that the door is open, shove in some comb honey, and go away. Last spring I caught five swarms in four boxes; and had the season not been so late (after June 10th) I should have captured many more. As it was, I got 14 swarms, from which I put away nine with honey enough in the hives to keep them over winter.

The bee-trees have been pretty well cut out of the little grove adjacent to my home; and as the bees come to the grove, seeing the trees from afar, it is only natural that they should go into a nice, clean, inviting hive.

DR. A. F. BONNEY.

EVAPORATING HONEY IN A VACUUM-PAN AT A TEMPERATURE OF 120 TO 140°.

I have read several articles in GLEANINGS on the evaporation of honey; and as I am a practical sugar-boiler I thought perhaps my experience and ideas might reveal something new in the way of evaporating or candying honey.

Honey can be boiled or evaporated in a vacuum-pan at from 120 to 140° F., and I think without injury to the same, excepting that it may granulate. Cane syrup boiled under a vacuum will granulate in a few days; though whether it would have the same effect on honey I can not say; but even so, if we could evaporate honey and retain its color and flavor, converting it into sugar or candied honey in a few days, I think it would be a paying proposition.

There is a small vacuum-pan at the Louisiana experimental station, New Orleans, where an experiment could be made at very little cost.

W. H. RAGAN.

Siloam Springs, Ark.

PETROLEUM TO PREVENT ROBBING.

I am in the petroleum regions of Kansas, and when there is any robbing going on in my apiary I simply soak some old gunny sacks in the crude oil and wring them out so

no oil will drip, and place them over the hive that is being robbed except the front. Then I close the opening to a small space. The robber bees generally want to try every spot about the hive before they make an attempt to go in at the regular entrance.

Chanute, Kan. JAMES FRAZIER.

TOP AND BOTTOM STARTERS VERY SATISFACTORY.

Last year, 1907, I put starters in 10,000 sections with the top starter from 1½ to 2 in. deep, and bottom starter from ½ to ¾ inches. During the two previous years I used probably 20,000 sections with top starter from 1½ inches to half full. I never had a single case of malformation, every section being straight and evenly filled, with no discrepancy in the cells that I noticed. Two sections that I remember as being left over from previous year had a line of wax at bottom, but with a little projection in the center of about ¼ inch. I put a starter at the top and left the bottom as it was. The finished sections showed a tongue-like formation in the middle, showing that the bees had built up from the little projection of foundation at the bottom. These were the only two bad sections, and even they were straight, as I use separators. I think the same plan of using starters is used all over Colorado.

R. S. BECKTELL.
Grand Valley, Colorado.

THE REASON FOR THE LOW PRICES.

I notice the honey in our stores is just as the bees left it. When inquiring as to the price paid for such honey I find that it is usually about five or six cents below the market price; yet the producer can't afford the subscription price of a bee-journal and learn to clean, grade, and market their section honey. I have a fight here every fall to get a honey market, as these fellows will bring in a super or two (if they have that much), and seem to be afraid of overstocking the market, and are glad to sell their stuff at any price. Of course, our merchants get it cheap, and that establishes the price. The happy-go-lucky farmer has sold his honey, and goes home to return and do the same thing the next fall.

Belleville, Mich.

J. W. URSH.

[Better buy him out or get him to put their honey up in good shape and maintain prices with you. It is to his interest to do so.—ED.]

THE RICH-ALEXANDER PLAN OF PREVENTING SWARMING.

I wish to say a word in regard to the Rich-Alexander plan of non-swarming as given on page 644, May 1, 1907. A year ago I had four colonies equally strong, and I manipulated two of them in accordance with this plan, with the result that I have taken honey from them but no swarms. The other two swarmed—no honey yet, and increased to five colonies. The Rich-Alexander plan for me, after this.

E. L. SCHUMANN.

New York, N. Y.

A CHICKEN THAT LEARNED TO CATCH DRONES BUT NOT WORKERS.

After reading Mr. Franklin G. Fox's article in regard to feeding drones to young chickens, on page 1505 of the Dec. 1st issue, 1907, I felt that I should like to give my experience. Last summer my bees were located near my poultry-house, and the chickens used to run in my bee-yard a great deal. I had one chicken that had learned to kill bees and eat them. It seemed strange to me that it never seemed to get stung. It would walk up to a hive, catch a bee, walk off and beat him on the ground, and then swallow it. After this, it would repeat the performance. It seemed to have certain hives it worked on, and these were pure golden Italians.

I killed the chicken and began to dissect it. I examined his crop very closely, and found it contained 27 drones and not a single worker. This astonished me, because I had expected to find a lot of workers instead of drones.

If I had only known that the chicken was destroying drones only, I would not have sold it at any price. The chicken, I suppose, knew the drones by their size and shape.

E. S. HUDSON.

QUEBEC BEE-KEEPERS' ASSOCIATION.

On February 5, in the City Hall of St. Hyacinthe, there was a meeting of a considerable number of bee-keepers of the province of Quebec, for the purpose of forming a bee-keepers' association. The chair was occupied by Mr. C. Péloquin, M. C. A., of St. Hyacinthe, as president of the meeting, and A. O. Comiré, M. D., as secretary.

In a few words Mr. Péloquin explained the purpose of the meeting, and upon his proposition the following resolutions were adopted:

That an association known as the Quebec Bee-keepers' Association shall be formed in the province of Quebec, and shall be composed of those interested in bee-keeping, who become enrolled as members by paying the annual membership fee of one dollar to the secretary of the association.

That the direction of the association shall be composed of nine members.

That the following persons shall be the directors:

Chas. Péloquin, of St. Hyacinthe; Hector Béland, of Louisville; Théodule Cloutier, of L'Islet; Napoléon Gaudet, of St. Simon; F. W. Jones, of Bedford; J. A. Camirand, of Sherbrooke; Dr. J. L. Comiré, of Yamaska; Michel Dufault, of St. Joseph of Sorel; Onésiphore Fontaine, of St. Guillaume.

That the president shall be Mr. C. Péloquin, of St. Hyacinthe, and the secretary A. O. Comiré, M. D., of St. Francois du Lac.

That the Hon. Jules Allard, Minister of Agriculture, shall be asked to bring before the government, at the next session, a law providing for the legal formation of bee-keepers' associations in the province of Quebec, and another law providing for the suppression of foul brood among bees.

SECRETARY.

IS IT ADVISABLE TO MAKE A COLONY QUEENLESS 24 OR 48 HOURS PRIOR TO THE INTRODUCTION OF A NEW QUEEN?

How long would you advise me to take the old queen away before introducing the new one?

C. W. BARR.

Florence, Kansas.

[It is our rule to take out the old queen, and cage the new one to be introduced, at the same operation. There is nothing gained in waiting 24 or 48 hours, according to our experience. If a longer time elapses, the problem of introducing is considerably complicated, for the reason that the bees get into the notion of raising their own queen, start building cells, and when these are once started they are inclined to act unkindly toward the new mother to be introduced.

It very often happens that a customer will remove a queen from his hive and then send on to a queen-breeder asking to have a queen sent by return mail, which he intends to introduce to the hive just made queenless. Perhaps the queen-breeder is unable to fill the order promptly. A delay ensues, during which cells are started, and by the time the new queen-mother arrives she is quite likely to be maltreated, if not killed outright.

Never remove a queen from a hive until you are sure that you will have another at least within 24 hours. There is no objection to keeping the hive queenless for that length of time prior to the introduction of a new one; but such queenlessness should not continue for a longer period.—ED.]

BEE ACCOUNT FOR 1907.

April.		
16 stands bees, April 17.....	\$	80 00
Supplies carried over.....	12	10
New supplies.....	26	10
Queen.....	2	00
June.		
283½ lbs. honey at 15.....	\$	42 55
3¾ lbs. beeswax.....		1 00
July.		
174 lbs. honey at 15.....		26 10
September.		
240½ lbs. honey at 15.....		36 05
175 lbs. for home use.....		26 25
December.		
24 stands bees.....		120 00
	\$120 20	\$251 95
		120 20
Balance in my favor.....	\$131.75	\$131 75

In this account I have not counted what I gave away and what we used up to Dec. 1, and we have used no little amount, for there are eight of us.

Underwood, Ind. RALEIGH THOMPSON.

A CORRECTION.

The directions for making the spacing-blocks, in my article on page 432, April 1, should read, "A fraction less in thickness than *half the width* of the section."

Meridian, Ida., April 14. G. J. YODER.



OUR HOMES

by A. I. ROOT

Trust in the Lord, and do good; so shalt thou dwell in the land, and verily thou shalt be fed.—PSALM 37:3.

Quite a few periodicals are sent me on socialism; and, to tell the truth, I am flooded with periodicals devoted to almost every *ism* under the sun, it would seem, and therefore it is impossible for me to do more than to glance over them. Perhaps I should say that, as I grow older, I find it beyond my strength to read books and papers as I used to do. For some years I have felt it a sort of duty to look over at least *one* daily paper.

I do not want to miss the good things that are coming so constantly in regard to the victories of the Lord Jesus Christ over the sin of intemperance; but I have just been thinking that I shall have to give up reading even the daily—at least as much as I have been doing. Not only my health, but my very life depends on being out in the open air many hours of the day. I make this suggestion to you, dear friends, because I want you to know that I can not read books and periodicals as I used to do. Now, with all this prelude I want to say that, in glancing over the periodical called *The Study of Socialism*, my eye caught the following sentence:

“Whenever one man gets a dollar that he has not earned, it is a sure thing that some other man has earned a dollar that he did not get.”

I want to say *amen* to that statement, and make an application of it in regard to this matter of selling secrets, or, if you choose, selling a much advertised book for five or ten times what it is actually worth. Perhaps I might say a hundred times. And this whole business of taking a dollar, more or less, for some information that can be printed on a small piece of paper, is robbing somebody, probably, of a hard-earned dollar. Our text tells us to trust in the Lord, and do good; but a man is *not* trusting the Lord nor *doing good* when he takes money for “secrets,” especially the sort of secrets where one signs a contract not to let his neighbor have the secret nor let him see the book.

There is another way of getting money that really *does* do your neighbor good; and that other way is what I am going to talk about to day. Yes, I am going to have another chicken story. While in Elmira, N. Y., last week I called on a bee-keeper of years gone by. He was very glad to see me, and before I left he introduced me to his wife, who is a bright and interesting woman. Her eyes twinkled when she heard my name, and it was a pleasure to see me. Then she added that she wanted to find a little fault with my last Home paper. I began to be trou-

bled right away; but when she explained that her only objection was that it had *nothing in it about chickens*, I felt better. However, her good husband (Mr. F. F. Conklin, who is a railroad engineer), so strongly indorsed my temperance talk that I felt as if I had not gone very far amiss, take it all together, after all. And, by the way, there are so many of the women-folks who have been asking for more “chicken stories” that I do not know but I am warranted in taking a little space for that subject—a subject dear to my heart, even if this is a bee journal.

I want to say something more about my visit to friend Philo's in Elmira. His only son is named Ernest—E. R. Philo; and although the father has been a “chicken crank” all the days of his life, as well as a bee-keeper, his son did not seem to take much of a shine to either bees or chickens. His great craze from boyhood up was printing. In fact, while quite a boy he got a little printing-press, like the one I started with, perhaps, before we published GLEANINGS. Well, this boy could think of nothing, day or night, but nice clean printing; so after his father got to doing so much with chickens that he needed some sort of communication with the great outside world, his boy started a poultry-paper. But for some years, owing, probably, to the great number of other poultry journals (somebody has told me there are close on to one hundred of them in the United States), they did not succeed in working up a very large subscription list. I think that, about a year ago, 1500 subscribers was pretty nearly the sum total. The boy is now just about 21, bright and wideawake, with a pretty good physical frame for hard work. Well, that list of 1500 names has, during the last year, run up to over 12,000. I do not know how it came about—probably largely on account of the father's development of new things for poultrymen during the past year.

While talking with friend Philo about his “fireless” brooder I asked him several questions about the traffic in baby chickens one day old. Later I noticed an advertisement in the poultry journals of several establishments near my own home that do nothing but ship chickens as soon as they are hatched. I sent for their circulars, and yesterday, April 14, paid a visit to three of them. The first one I called on was owned by Jos. A. Bloom & Co., Chatfield, O., and I was delighted to find the whole establishment under the care of a young man not much older in appearance than Ernest Philo—may be 25 years old. A new building has been put up since January, and this building contains 48 incubators of 200-egg capacity each, all in full blast, and he and his younger brother were very busy in making *more* incubators. Instead of paying a big price to the incubator factories they just make their own, and they claim that these home-made ones will do as good or better work than any they can buy. Just think of it! A couple of *boys* practically making incubators that actually give splendid results! As a matter of course, they have sent for samples of almost every

thing advertised to help along the poultry business. But a great part of them are practically of no account. For instance, I noticed a \$2.00 egg-tester that I had been thinking of sending for. Mr. Bloom said he did not find it a bit better for *his use* than the common 25-cent ones. Of course, there is a great deal in getting used to a new machine or apparatus.

The next call I made was at the Old Honesty hatchery, of New Washington, O. They have a room similar to the one just mentioned, containing 82 incubators of 200 eggs each. These incubator rooms or cellars are partly under ground in order to secure a uniform temperature. The upper story is used as a workshop. I wish to congratulate these men in both places on having their rooms, incubators, and every thing else kept so neat, clean, and businesslike. The arrangement I had made to meet a special train was of such a nature that I did not have as much time as I really wished in order to look over the different establishments.

My third and last call was at M. Uhl & Co.'s, New Washington, O. These folks have been in the business for about eight years. Last season they sold 82,000 chickens, but did not succeed even then in filling orders. Their shipping-day is Tuesday, and I suppose their incubators are started so as to have chickens come out, say on Monday. On Tuesday the chicks would be dried off enough to put into little pasteboard boxes holding not less than 25, which can be sent by express even in cold weather. As small number as ten can be sent safely after May 1. Twenty-five chickens in a box weigh only 4 lbs. You see they are lighter than eggs. I presume some arrangement is made with the express companies so there shall be no delay. The day I was there, Tuesday, they had sent out about 6000 chickens. I had a box of 25 of different kinds that I brought home to experiment with in my home-made "fireless" brooder. The prices run from 7 to 15 cents. The Leghorns are usually the cheapest. They also make a special low rate on all the "odds and ends" that are left. I supposed at first that they had poultry-yards of sufficient capacity to produce their own eggs for hatching; but I learned that this was next to impossible. They get their eggs from farmers and others in their vicinity who produce them for this particular purpose, the proprietors of the hatchery probably furnishing the stock. I judge this to be so, because they have some very choice high-priced stock. All the parties engaged in the business told me that they had very few losses. The package of chickens is opened in the presence of the express agent, and he certifies to the number of dead, if any. The shipper then replaces these with another shipment or makes some satisfactory arrangement, if the number lost is small. A shipment made from New Washington, O., to Tampa, Florida, occupying four days, was received in very good order, and the chicks did not seem to be much the worse for having lived four days without food or water. In fact, I believe the general

decision is now that chicks are better off without any thing to eat for at least 48 hours after they break the shell. Of course, it is important that the purchaser be on hand at the express office to take charge of the chicks just as soon as they are received.

I said in the outset that there is another way of getting money that does your neighbor good. These two boys, with their honest enthusiasm, one for printing and the other for raising chickens, have no idea in their heads of any thing else than earning their money in a way that *will* benefit their neighbors and bless mankind. They may not be exactly trusting in the Lord. I did not see them long enough to find out about that; but I rather think they are; and their hard honest work, especially the particular work of striving to please their customers, is a sort of Christianity that even some church-members do not possess. The chicken boy and the printer boy both have to satisfy their customers in order to prosper. These boys and these people I have described are doing good. We see *that* by the letters they give in their catalogs. And they are going to be *fed*, and *clothed* too; and every boy and man who is doing an honest day's work every day of his life is a credit not only to his country but to the great Father as well. You may be quite sure that these boys have no bad habits. They are so busy they do not have any desire, even if they had the time.

Now, friends, this new rural industry is not only interesting to me because I have made a study of chickens, especially of late, but because it illustrates how things are changing, and what wonderful strides are being made in almost every thing used on the farm as well as in the great cities. T. B. Terry was one of the first to exhort farmers to choose some special line of farming. He decided to be a potato-grower, and bend all his energies to the task of growing more potatoes, and better ones, than had previously been seen. Thousands and thousands have had success far beyond what the farmer did who tried to grow every thing usually secured by a farmer. Bee-keepers will remember when almost every farmer had a few hives; but nowadays the bee-men mostly have large apiaries and make it their sole business. But even the bee-keepers, like poultrymen, are dividing up into specialists. The man who makes the production of honey his special line does not often have queens to offer for sale. The queen-breeder makes it *his* special business. One man produces extracted honey, and another one produces comb honey; and, if I remember correctly, the number of those who work for both comb and extracted honey is growing less every year. There has been talk about having bee-keepers, in localities where it would be expensive to ship honey, make a business of producing *beeswax* and nothing else. I do not know that this has, as yet, been realized. In the poultry business we have egg-farmers where they raise eggs for the table, and nothing else. Then we have broiler-farms; but I am told that these two do not go very well together.

They need a different strain of fowls for broilers (or capons) from those for eggs only. In these large establishments they grow special breeds for special purposes, where they have single male fowls worth a thousand dollars or more—that is, they *claim* they are worth that, but it looks to me, however, as if these very high-priced fowls come pretty near the line of what the socialist paper said about the man who got a dollar that he had not earned.

Last, but not least, it looks as if somebody who is an expert, and has his heart and soul in the business, is in the future *going to hatch the chickens*. For instance, a busy man or woman can not very well afford to fuss with a single incubator. If they do it for fun or pastime, all well and good; but when one is in the business he can almost as well run a dozen incubators placed in a proper cellar as to have just one. I thought at one time that sitting hens might be safer and simpler than incubators; but during the last two or three attempts at setting my hens, they broke so many eggs, especially where I undertook to give them twenty or more, that I began to think I preferred the incubator. Another thing, one of my hens made a very good hatch out in the woods down in Florida, in a grassy thicket, where you could hardly crawl through. I could catch the sitting hen; but the chicks hid in the grass and bothered me so much that I almost concluded I did not want to set another hen.

They claim they can furnish hatched chickens at just about double the price you would have to pay for eggs of the same kind; and I judge there is but very little difficulty in raising the chickens by our best modern methods after they are once hatched. If this were not so, the customers of former years would not be patronizing these same establishments year after year.

Now, what lessons are we to learn in regard to this new development and the new condition of things that is coming up all around us? Some of us older people often get into a way of speaking about the "good old times when we were young." Yes, we may get the idea into our heads that the world is going to be "civilized out of existence," as I have mentioned, unless something is done about it. But I think that, when we come to look the situation fairly in the face, we shall recognize the hand of a loving Father in it all. Please say to yourself when you are tempted to complain at modern innovations, "Lord, help us to learn the lesson thou art striving to teach us;" and then go on smilingly, trying to see the good side and overlook the objectionable features of the new ways of doing things that are coming up all around us. And let us finally decide, in the language of our text, to "trust in the Lord, and do good;" and have faith to believe that we *shall* be "fed" and clothed.

DAY-OLD CHICKS, AND "FIRELESS" BROODERS.

At friend Uhl's I saw a very bright young woman handling the chicks and otherwise

helping in the incubator-room; and it occurred to me that this is emphatically a woman's work. Who can handle chicks, especially "baby" chicks, to better advantage than women or girls?* And, by the way, that I may know how fast this new industry is spreading I wish all those who make it a business, who are taking GLEANINGS, would give me their names on a card. I believe it is an industry that should be encouraged. I will give the names of all free of charge. Just one thing more: Will all those who have tested the fireless or lampless brooder please give me a postal-card report as to how far they have succeeded? I have had 25 chicks two days in the home-made "fireless;" but last night, when there was a rather heavy freeze and a strong north wind, I put them in the house over night. Perhaps I did not need to; but I had not quite courage enough to leave them *entirely* without any aid from artificial heat.



CELERY CULTURE IN MANATEE CO., FLORIDA.

On pages 556 and 557 I give you some halftones showing Mr. Lattimer's five-acre celery-farm described in our last issue. On p. 160 of GLEANINGS for Feb. 1 I also gave a brief account of Mr. A. F. Wyman's irrigation with the overhead sprinkler system. Mr. Wyman also includes celery in his plant of 35 acres. It was my good fortune to meet both of these progressive men at Bradentown a few days ago. While congratulating them on the success of their respective celery-farms I suggested that Mr. Lattimer's two big artesian wells accomplished the irrigation at probably less expense than Mr. Wyman's expensive sprinkling outfit. The latter gentleman, however, took me up at once and said, "No, no, Mr. Root, you have got it entirely wrong. It does not cost me nearly as much to irrigate my celery with the appliance I now have as it does friend Lattimer, and I think Mr. L. will agree with me."

When I visited the Lattimer plant I told you the water looked as if it was almost knee-deep in some furrows between the plants; and with furrow irrigation I am told it is often necessary to give the celery too much

* My good friend Uhl is a very pleasant sort of man, and some of the expressions in his catalog are quite refreshing. For instance, in his directions how to handle chicks after you get them at the express office he says:

As soon as you receive the chicks put them in a warm place, in a good brooder or with hens. Do not let them stand around and holler. It is very important to feed only a little at first, as they are likely to eat or drink too much.

After I got my chicks home, and they got a little too cold, I could well appreciate his warning, "Do not let them stand around and holler."

water in some places in order to get the water to the spots that have not enough. Perhaps a careful grading and a right slope of land would remedy this somewhat. With the overhead sprinkling, however, the water can be put just where it is needed, and nowhere else; and, if I am correct, the amount of water required is much less than where it comes in the furrows. Where the soil is very porous, as it is almost all over Florida, quite a large portion of the water in the furrows will go down below the wants of the plants; whereas with the overhead sprinkling, none of it, practically, soaks away where it is not wanted. The principal advantage of the Skinner sprinkling system is, if I am correct, that the man who runs the engine can direct the water to any point and in any amount; whereas with the furrow system it requires several men to direct the water and get it where it is needed most and not use too much. The ground should be thoroughly underdrained with tiles with either system, in order to get rid of the overplus of water either from excessive rains or irrigation.

Considerable is done in some regions in Florida in the way of sub-irrigation by running the water into tiles. Now, some of the soils in Florida, especially in the drained swamps that are so suitable for celery, sometimes break up in clods as the ground does here in Ohio, and there is no way to break up these clods and get the ground friable except to wait for what we call a "summer shower." With the sprinkler system these clods can be moistened just enough to let the harrow pulverize them thoroughly; and in setting out plants you can have not only the soil but the *air* also moistened up by the sprinklers until the plants have taken root and can stand the hot sun.

I visited the Wyman plant several times. There is, all together, about 35 acres under this overhead irrigation; and I tell you it is a wonderful sight to see a veritable summer shower, cooling the air and refreshing the plants at the close of a hot summer day. The sprinkling is mostly done toward sundown, and from that time on until midnight or later. Where the water is limited, there is not nearly so much loss by evaporation as when the sprinkling is done in the daytime. When you look off toward the work of the sprinklers, and see it at just the right angle, just as the sun is going down, it is one of the most beautiful sights I ever beheld. The pressure is such from the engine that each tiny stream of water goes up in the air perhaps 12 or 15 feet; and when the pipes are turned to throw the water the greatest distance, the course of the stream is something like that of a rainbow; and the sight of ten thousand streams of water (I think there must be pretty nearly that number) curling up in the air at regular distances, each tiny raindrop flashing in the sunshine, was enough to make me want to sail my hat up in the air and shout in regular boy fashion.

Just one thing more that recommends the sprinkling system. They claim that, when a

frosty night comes, by turning on the water they can largely obviate the danger and damage from frost. This was tried once during the winter; but at the time we had the frost (at least in some localities) there was an exceedingly cold north wind; and a cold wind seems to hurt some tender stuff almost as much as a frost. I believe, however, that the water made the damage to the growing stuff much less than it would have been without it. I feel quite certain that it may protect many plants from injury from frost, because I have seen the sprinklers at work when they seemed to throw a spray that produced a filmy mist that floated over the garden like a cloud. Both farms were shipping celery at the time I left, and, so far as I could learn, the quality was first-class, without any particular difference resulting from the respective methods of irrigation.

Temperance.

TAKING COURAGE WHEN YOUR ENEMY TELLS LIES ABOUT YOU.

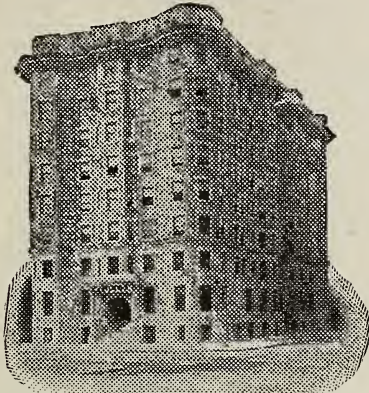
I have always admired the *Sunday School Times*, but more than ever since they are backing so strenuously the temperance wave now sweeping over the land. I have for some time noted the outrageous falsehoods which the brewers and liquor-dealers are using, and I was wondering if the people generally would not soon begin to detect the glaring untruth and refuse to be influenced by their stories. Now see how the *Times* presents the whole matter:

WHY THE ENEMY GETS DESPERATE.

When the Devil can use truth effectively he does so. He is shrewd enough to resort to lies only as a desperate measure; therefore when he begins lying, those on the other side ought to feel much encouraged. There is great cause for encouragement just now in the ranks of the temperance workers. For example, the Associated Prohibition Press notes that on March 2 a special despatch to the leading papers throughout the United States stated that the United States Pure-food Expert (Dr. H. W. Wiley) had declared in an address the evening before that the man who "never takes a drink of whisky is a mollycoddle," and had advised young men to drink. In a statement given out March 5, Dr. Wiley vigorously denies the words attributed to him, and remarks, "I believe the general effect of alcohol on mankind is wholly bad. I further said that I was in theory a prohibitionist; but there were difficulties in the way of prohibition, and that the better plan would be to abolish the saloons. I did not suggest or advise our young men to drink liquor of any kind, but said it was very bad." Again, it is noted that on March 3 the *Milwaukee Sentinel* quoted the Rev. Henry Coleman, a leading prohibition worker of Milwaukee, as saying, "Prohibition does not prohibit, and you will always find that there is more liquor drunk in prohibition districts than there was before prohibition was enforced." Upon the basis of this alleged quotation the *Sentinel* preached a sermon in favor of free whisky. The next day the *Sentinel* published an absolute denial of the alleged statement from the Rev. Mr. Coleman himself. These things would not occur if the liquor interests were having an easy time of it.

Dr. Wiley has been the friend of bee-keepers, and we are all deeply interested in seeing him quoted correctly before the people.

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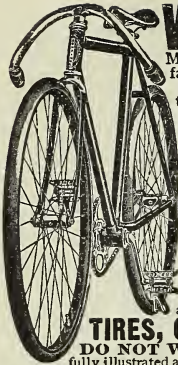
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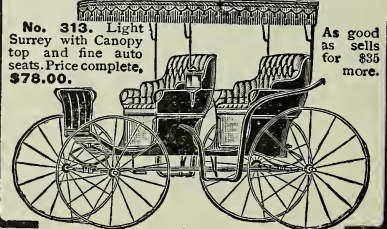
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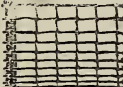
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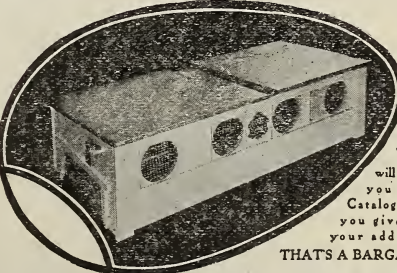
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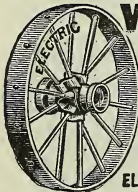
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Queens

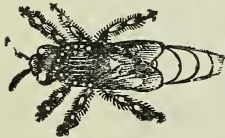
and bees, and nothing but Italians. An improved superior strain is what QUIRIN-THE-QUEEN-BREEDER raises. Our stock is northern-bred and hardy. We just visited our outyards (all wintered on summer stands), and not a colony is dead to date (March 18). Some hives have lost scarcely a bee, so it appears. BROTHER BEE-KEEPER, how do you like such stock for hardiness? A party up in Maine got 50 nuclei of us several years ago. We just received a letter from him. He is after more of our bees, because last season he got 2200 pounds of honey which sold for 22 cts. per pound. Our stock is well known throughout the United States. Some of the largest yields reported can be traced to our stock. Over 20 years a breeder. Free circular and testimonials. Price of stock as below.

Prices of Queens before July.	1	6	12
Select queens	\$1 00	\$5 00	\$ 9 00
Tested queens	1 50	8 00	15 00
Select tested queens	2 00	10 00	18 00
Breeders	4 00		
Golden five-band breeders	6 00		
Two-comb nuclei, no queen	2 50	14 00	25 00
Three-comb nuclei, no queen	3 50	20 00	35 00
Full colonies on eight frames	6 00	30 00	

ADD the price of whatever grade of queen is wanted, with nuclei or colonies; nuclei ready about May 1st to 10th; can furnish bees on Danzenbaker or L. frames; pure mating and safe arrival guaranteed. We employ 400 to 500 swarms in queen-rearing, and expect to keep 500 to 1000 queens on hand ready to mail. Our Northern-bred bees are hardy, yet gentle; they will give you results. Address all orders to

QUIRIN-THE-QUEEN-BREEDER, Bellevue, Ohio

ITALIAN QUEENS



Fine young prolific 3 and 5 banded Italian queen, untested, only 75c; extra-fine queen, \$1; tested, \$1.25. Full colonies in 8-fr. hive, with queen, \$5.50; 3-fr. nucleus, with queen, \$2.75. Safe arrival guaranteed. Directions to introduce go with queen. Price list free.

J. L. FAJEN, ALMA, MO.

Queens from Southwest Florida

From very best stock, furnished by The A. I. Root Co.; reared on the island where A. I. Root was formerly located. Prompt shipments and correspondence solicited. I. T. SHUMARD, Osprey, Manatee Co., Fla.

Queens FOR 1908.

"Finest Golden bred in America. Send for my latest circular and prices — and be convinced."
DANIEL WURTH, PITKIN, ARK.

GOLDEN ITALIAN QUEENS, Six for \$5.

Safe arrival and satisfaction guaranteed. 18 years' experience. Circular. **\$1**
J. B. CASE, Port Orange, Fla.

GOLDEN-ALL-OVER and RED-CLOVER ITALIAN QUEENS

My stock is the result of years of careful selection, and is equal to any in the country. The prices are only such as to insure long-lived, prolific queens, whose workers will be hardy and good honey-gatherers. Write for 1908 circular. PRICES.

	1	6	12
Untested	\$1.00	\$5.00	\$9.00
Select untested	1.25	6.50	12.00
Tested, \$1.75 each; select tested, \$2.00 each.			

I am booking orders now, delivery after May 25.
Wm. A. Shuff, 4426 Osage Ave., Philadelphia, Pa.

Taylor's Strain of Italians is the Best

Long tongues and goldens are the best of honey-gatherers; 19 years a specialty, breeding for the best honey-gatherers. Untested, 75 cts. each, or \$8.00 a dozen; tested, \$1.00 each, or \$10.00 a dozen; select tested, \$1.50 each. Breeders, the very best, from \$3.00 to \$5.00 each. We sell nuclei in full colonies. Bees in separate yards. Safe arrival guaranteed. Send all orders to

J. W. TAYLOR & SON, Beeville, Bee Co., Texas.

Italian Bees and Queens

from Root's red-clover stock of golden Italian queens. Untested, 75 cts. each; six, \$3.75. Select untested, \$1.00 each; six \$5.00. Tested, \$1.50 each; six, \$8.00. Select tested, \$2.00. Two frame nuclei, with untested queen, \$2.25. Orders filled in rotation. Send all orders to E. A. SIMMONS, GREENVILLE ALA

NOT CHEAP QUEENS, BUT QUEENS CHEAP

500 Best Strain Italian Queens Ready to Mail March 1st. Untested queens in lots as follows: 1, 75 cts.; 6, \$4.20; 12, \$ 7.80. Tested queens in lots as follows: 1, \$1.00; 6, \$5.70; 12, \$10.80. Breeders' queens in lots as follows: 1, \$5.00; 3, \$12.00. Nuclei with untd queen: 1-fr. \$1.75; 2-fr. \$2.25; full colonies, \$4.75. Nuclei with tested queen: 1-fr. \$2; 2-fr. \$2.50; full colonies, \$5. Also dealer in bee-keepers' supplies. Root's goods. Ask for cat'g. W. J. LITTLEFIELD, LITTLE ROCK ARK.

The Time To Place Your Order for **QUEENS**

for spring delivery is here. Order now (with partial payment if not convenient to send all) and state when you want delivery. When ready for the queens, send the remainder. By so doing I shall be able to handle your order without the usual delays incident to the rush orders when the season is on.

Untested, in May and June,	1	6	12
Untested, after July 1	\$1.00	\$5.50	\$10.00
	.75	4.00	7.50

Selects, 25 cents extra. Tested, May and June, \$1.50; after July 1, \$1.25. Nuclei and full colonies ready May 1. Catalog for 1908 free. Send for one.

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

Westwood Red-clover Queens

Are the bees that got the honey in 1907. Better try them for 1908. Nuclei and full colonies a specialty. Price list on application.

HENRY SHAFFER, 2860 Harrison Ave., Sta. L, Cincinnati, O.

PHARR'S GOLDENS

took first prize at three exhibits in 1907. We also breed Carniolans, three-banded Italians, and Caucasians, bred in separate yards and from the best breeders obtainable; guarantee safe delivery and fair treatment. Untested, \$1; tested, \$1.25. Address New Century Queen-rearing Co., Berclair, Tex. John W. Pharr, Prop.

W. H. Laws

is again on hand for the coming season with a larger stock of queens than ever before. He sold 400 queens to a New Mexico producer last May who wrote, "Your stock is far ahead of those Eastern queens I have been buying," and has placed his order for 1000 more of the Law queens to be delivered in May and June coming.

Others write that, if they had purchased all Laws queens, their crop of honey would have been doubled. Testimonials enough to fill this book. If you are going to improve your stock, had you not better investigate?

Single queen, \$1.00; dozen, \$10 00; breeders, the best, each, \$5.00. **W. H. LAWS, Beeville, Bee Co., Texas.**

ITALIAN QUEENS BY RETURN MAIL OR MONEY REFUNDED.

Warranted, \$1.00 each, six for \$5.00; tested, \$1.50 each. Circular free.

D. J. BLOCHER, PEARL CITY, ILL.

FOR SALE=Queens

of my famous Red-clover stock. Untested, 50 cts. each; select untested, 75 cts. each; tested, \$1 each. Nuclei, \$1 per frame. Golden queens, same price. **H A ROSS, 1709 Upper Second St., Evansville, Ind.**

How are Your Bees?

Any Queenless Colonies?

If so, send for a queen at once. We can furnish by return mail fine tested queens, reared last fall, wintered in four-frame nuclei, three-band Italians, none better, \$1.00 each. Satisfaction guaranteed. Send for price list.

J. W. K. SHAW & CO.,
Iberia Parish. Loreauville, La.

Queens Queens

of the

FINEST POSSIBLE BREEDING

BRED BY

F. J. WARDELL,
UHRICHSVILLE, OHIO, U. S. A.

After many years' experience as head queen-breeder for The A. I. Root Co., I am now breeding bees at the above address. My stock is equal to any now advertised, and my long experience enables me to judge very accurately the value of any strain. Mine is the celebrated red-clover stock, which has given so much satisfaction to thousands of buyers for a number of years past. If you desire something very select for breeding purposes, write to me, stating your wants, and the same will be supplied. I have no cheap or inferior queens to sell. My prices for the season are as follows:

	May to June.
Untested queen	\$1.25
Select untested queen	1.50
Tested queen	2.50
Select tested queen	3.50
Breeding queens	6.00
Select breeding queens	9.00
Extra select	1 year old, 12.00

No untested queens sent before May 15; but to secure your queens early in the season it is necessary to order now. Absolutely, all orders filled in rotation.

5000 QUEENS

of the famous 3-banded LONG-TONGUE RED-CLOVER STRAIN OF ITALIAN BEES is what I want to sell this season.

My bees GATHER HONEY if there is any to get; ARE LITTLE inclined to swarm and sting; they please such people as The A. I. Root Co., R. F. Holtermann, W. Z. Hutchinson, Morley Pettit, etc., and if they don't please you, send in your kick.

Queens of all grades now ready.

	1	6	12
Untested queens	\$1.00	\$5.00	\$9.00
Select untested queens	1.25	6.00	11.00
Tested queens	1.50	8.00	15.00
Select tested queens	2.00	11.00	20.00
Breeders	\$5.00 to \$7.00.		

W. O. VICTOR (Queen Specialist), Hondo, Tex.

New Goods New Quarters

ONLY ONE THING WANTED

New Customers

THAT'S YOU

Geo. S. Graffam & Bro., Office 47 Main St., Bangor, Me.

Honey-cases for Sale. Price 30 cts. per case. Two cans to the case. Both cans and cases in A-1 condition. For lots of 100 or more write us for price. **Michigan White-Clover Honey Co., Detroit, Mich.**

BARGAINS IN BEE-FIXTURES.

We offer at reduced prices quite a list of goods located at various points, and chiefly of styles not at present listed in our catalog. You may find here something which you can use to advantage. Orders may be sent direct to Medina, or in some cases direct to the dealer or branch house where the goods are on hand. In ordering, be sure to mention that you saw it in "Bargain Notice" in GLEANINGS.

THE A. I. ROOT CO., Medina, O.

EXTRACTORS.

At Apopka, Orange Co., Fla., one six-frame Cowan extractor for L. frame, which has been used in all about 30 days; was sold five years ago, and is the old-style chain reversing type; sold new for \$30.00. We offer this for \$17.00, free on board at shipping-point.

At Medina, O., three eight-frame Root Automatic extractors which have been to Cuba and returned; have been somewhat rusted and corroded by salt air; well cleaned up, and in good condition. With ordinary hand-power gear we will sell at \$32.00 each; regular price \$40.00. With power gear and belt complete, without engine, \$36.00; regular price, \$45.00.

No. 4 Novice extractors at Mechanic Falls, Me.; also at Chicago, Ill.; also Des Moines, Iowa; new stock, but an over supply, offered at \$7.75 each; regular price, \$8.50.

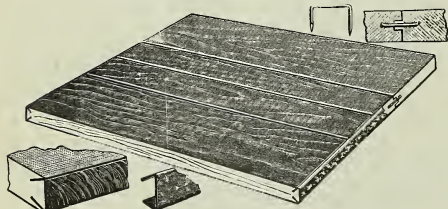
No. 15 Cowan extractor at Mechanic Falls, Me.; new machines in good condition as put out three years ago; offered at \$11.00 each.

DADANT UNCAPPING-CAN at St. Louis, Mo., and in New York city; offered at \$7.75 each; new stock in good condition, somewhat shop-worn.

GERMAN WAX-PRESS at St. Louis, Mo., and in New York city; also at Medina, O. These are not of the latest pattern, but good machines in good condition; offered at \$9.00 each; regular price, \$12.00.

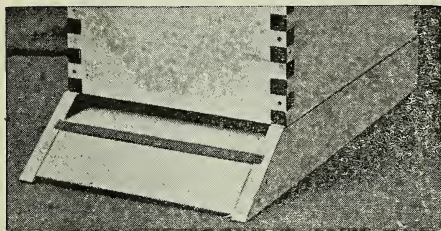
BOARDMAN SOLAR WAX-EXTRACTOR at Des Moines, Iowa, and at New York city, in good condition at \$6.00; Regular price, \$7.50. Also at New York a Doolittle solar wax-extractor at \$3.25.

PARTS OF HIVES.



DANZ. NAILLESS COVERS, made of three pieces, tongued and put together with paint in joints and crate-staples over joint at each end, then a galvanized channel steel cleat at each end; the same style as our metal-bound super-cover, only made of $\frac{1}{8}$ -in. lumber. Special price to close out, 20 cts. for 8-frame; 22 cts. 10-frame, which is $\frac{1}{2}$ regular price.

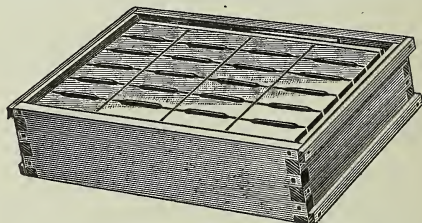
The A. I. Root Co., Syracuse, N. Y., 30 D-8 and 63 D-10
The A. I. Root Co., Philadelphia, Pa. 70 D-8 and 500 D-10
The A. I. Root Co., Medina, O. . . . 200 D-8 and 300 D-10



COMBINED BOTTOM AND HIVE-STAND. This is a very convenient and serviceable hive-bottom which sold at the same price as the hive-cover, or was

included instead of the regular bottom at 5 cts. per hive extra; can be had from the following places in 8 or 10 frame size as listed, at the price of the regular bottom, in lots of 5 or more, 20 cts. each, 8-frame; 22 cts. each, 10 frame.

M. H. Hunt & Son, Redford, Mich., 30 C-8 and 20 10
The A. I. Root Co., Syracuse, N. Y., 30 C-8 and 100 C-10
The A. I. Root Co., Philadelphia, Pa., 100 C-8 and 10 C-10
The A. I. Root Co., Chicago, Ill., . . . 80 C-8 and 80 C-10
The A. I. Root Co., Medina, O. . . . 100 C-8 and 100 C-10
John Nebel & Son, High Hill, Mo., 50 C-8



DOVETAILED T SUPER for producing honey in 4 $\frac{1}{4}$ sections supported on T tins. These are mostly provided with T fences for the 4 $\frac{1}{4}$ x1 $\frac{1}{2}$ plain section.

Buck & Wilson, Augusta, Kans., 25 4TP-8; price 50 cts. each for the lot, or 60 cts. each in lots of 5.

The A. I. Root Co., Chicago, Ill., 50 2TP-8.

The A. I. Root Co., Philadelphia, Pa., 25 2TP-8 and 10 Hilton Dov. T supers, which are the same with thumb-screws in one side.

The A. I. Root Co., St. Paul, Minn., 10 2TP-8 and 10 2TS-8 Hilton Dov. T supers.

Price 35 cts. each in lots of 5 or over.

THICK-TOP STAPLE-SPACED FRAMES, L size, with $\frac{1}{4}$ x $\frac{1}{2}$ -inch end-bars, at \$2.25 per 100, or \$10.00 per box of 500.

The A. I. Root Co., Philadelphia, Pa., 4000 frames.

The A. I. Root Company, Chicago, Ill., 2500 frames.

At both points are also some of the same style, jamb-board depth, at 25 cts. per 100 extra.

ALL-WOOD FRAMES, regular style, with The A. I. Root Co., Philadelphia, Pa., 4000; price \$1.80 per 100, or \$7.50 per case of 500.

HOFFMAN FRAMES with square-edge end-bars, otherwise regular; price \$2.50 per 100.

Blanck & Hawk Supply Co., St. Louis, Mo., 300 frames.
The A. I. Root Co., Philadelphia, Pa. . . . 1700 frames.

CHAFF DIVISION-BOARDS, regular pattern; price in flat, 10 cts. each; nailed, 20 cts. each, in lots of 10 or more.

Blanck & Hawk, St. Louis, Mo., 50 nailed at 20 cts. ea.
The A. I. Root Co., Philadelphia, Pa. 200 " at 20 cts. ea.
W. S. Powder, Indianapolis, Ind., 60 nailed at 20 cts. ea.
M. H. Hunt & Son, Redford, Mich., 75 in flat, 10 cts. ea.

TEN-FRAME DOVE-TAILED HIVE-BODIES with molded-top Hoffman frames; no division-board; listed as 5-10.

With The A. I. Root Co., New York city, 300, offered in regular crates of 5 at 60 cts. each, or \$3.00 per crate; lots of 50 or more at 50 cts.

The A. I. Root Co., St. Paul, Minn., have a lot of Danz. hives and supers; also ten-frame Dovetailed hives, nailed and painted, second hand in good condition, which they will sell at a special price. Correspond direct with them.

STANDARD ROOT SMOKERS. We have here at Medina something less than 100 of these smokers, which have been to Cuba and returned. They are somewhat rusted but may be made serviceable by one not too particular for appearances. Will sell them at 50 cts. each, or \$5.00 per dozen; by mail, 25 cts. each extra.

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.—A young bee-keeper who wants to learn the business, and is willing to work anywhere.
W. L. COGGSHALL, Groton, N. Y.

Post Cards.

Temperance Post-cards, 20 gems containing inspiring temperance quotations, illustrated, for 15c; 40 for 25c; 100 for 60c. Premium coupon and seed catalog free with every order. A.T. COOK, Hyde Park, N. Y.

Plants.

Beautify your homes with our plants. Twelve all different geraniums, \$1.00; salvia, 40c per doz.; asters, pansies, and verbenas, 25c per doz.; coleus, 40c per doz. Fine plants. Express and postage charged to purchaser. List free.

HAMMERSCHMIDT & CLARK, Dept. A, Medina, O.

Rugs.

Be sure to send for our circular before you have your old carpet made into rugs. A postal will bring it.
SANITARY RUG CO., Delaware, O.

Poultry Offers.

Pekin duck eggs 13, \$1. J. M. ACKLEY, Hematite, Mo.

FOR SALE.—White Wyandottes best breeding, 15 eggs, 75 cts.; 30, \$1.25. J. F. MICHAEL, Winchester, Ind.

Fine R. C. R. I. Reds, W. Wyandottes, and Barred R.; 15, \$1.50; Muscovy duck eggs, 12, 90c. C. FAJEN, Alma, Mo.

FOR SALE.—Thoroughbred Toulouse goose eggs, 15, \$3; Guinea, 15, \$1.25. M. L. CALDWELL, Otsego, Mich.

FOR SALE.—Eggs from my select S. C. W. Leghorns, B. P. Rocks, \$1 per 15. C. R. GUERNSEY, E. Cobleskill, N. Y.

FOR SALE.—Choice Silver-spangled Hamburg eggs, \$1.50 for 15. ELIAS FOX, Hillsboro, Wis.

FOR SALE.—Standard-bred snow-white Rock eggs, 15 \$1.00; 50, \$3.00; 100, \$5.00. Satisfaction or money back.
Geo. W. COOK, Spring Hill, Kan.

FOR SALE.—W. P. Rocks, Fishel and Empire strain. I have twenty select females headed by two extra-fine roosters. Eggs, \$2.00 per twenty.
W. M. PARRISH, Rt. 8, Lawrence, Kan.

FOR SALE.—Eggs for hatching from choice stock of the "Best Fowls on Earth" (Rose Comb Rhode Island Reds), \$1.00 per 15. BURDETT HASSETT, Box 45, Reliance, Va.

FOR SALE.—Eggs for hatching, S. C. Brown, Buff, and White Leghorns; Buff and White Rocks; Buff Wyandottes and S. S. Hamburgs, \$2.00 per 15; \$3.50 per 30.
PETER H. LEVEY, Preston, Minn.

EGGS FOR HATCHING.—White Holland turkeys, Rose Comb Brown and White Leghorns; S. C. Black Langshans and Minorcas; Barred and White Rocks; White Wyandottes; Pekin and Rouen ducks. Catalog for stamp. JEWETT ALLEN, Walnut Grove, Minn.

Fifteen S. C. B. Leghorn eggs given free with every order for six or more queens if mentioned with the order. See ad., page 481. Regular price for eggs, \$1.00 per 15; \$1.25 per 30; positively by return express.

J. E. HAND, Birmingham, O.

For Sale.

FOR SALE.—Vermont bee-keepers should have my 1908 price list.
C. J. LAMB, East Calais, Vt.

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.

Beautiful long-haired Persian and Angora cats and kittens; solid whites and various colors; none better. Send stamp for written reply.
KENSINGTON CATTERY, Marion, Ohio.

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.—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.

FOR SALE.—Best Wisconsin sections, per 1000, \$4.00; 2000, \$7.75; 3000, \$11.10; No. 2, 50 cts. less. Discount on Root's and Danz. hives and other supplies. Fifteen eggs, B. P. Rocks and Wyandotte, \$1.00; Pekin ducks, 11 eggs, \$1.50.
H. S. DUBY, St. Anne, Ill.

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

FOR SALE.—Two hundred 8-frame dovetailed hives (Root's make), 200 5-gal. honey-cans in cases (new) at Lovelock, Nevada. Address C. K. ERCANBRACK, Watsonville, Cal.

FOR SALE.—Well-established queen-rearing business, widely advertised for two years; large circle of steady customers; best testimonials; orders at hand; best location and climate; no speculation. Reason for selling, departure for Europe. Write immediately to
A. E. TITOFF, Ioamosa, Cal.

Real Estate for Bee-keepers.

FOR SALE.—Three village lots with a three-room house, small barn and henhouse, and 100 colonies of bees in two-story dovetailed comb-honey hives, extractor and all fixtures; good location; satisfactory reasons for selling. Write for particulars if interested.
S. LAMONT, Jarretts, Minn.

FOR SALE.—Small farm and apiary in Crawford Co., Mo. Write for description. W. T. KING, Leasburg, Mo.

FOR SALE.—Good bee and fruit ranch. Price \$4500; 200 acres of land; 20 acres tillable; 500 apple-trees from 2 years old to 10; 200 English walnuts; 50 peach-trees; good small house, and barn. The rest of the ranch is mountain covered with live oak—say 4000 cords of wood. One of the best sage-brush locations in central California; 200 stands of good bees in patent hives on full foundation; extractor-tanks, honey-house; only 12 miles from San Luis Obispo, Cal. This place is well watered with plenty of good spring water, and a snap if taken soon.
OTIS RAMAGE,
San Luis Obispo, Cal.

Wants and Exchange.

WANTED.—Several pairs of gray squirrels. State price. JOHN RICK, 434 Oley St., Reading, Pa.

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

WANTED.—60 colonies of bees or a large apiary to work on shares. ARTHUR LAING, Acton, Ont., Can.

WANTED.—Bees. Give description and price at first writing. F. B. CAVANAGH, Flint, Mich.

WANTED.—Refuse from the wax-extractor, or slumgum. State quantity and price.

OREL L. HERSHISER,
301 Huntington Ave., Buffalo, N. Y.

Bees and Queens.

FOR SALE.—Italian and Carniolan queens, untested, 75 cts.; tested, \$1.00. GEO. E. KRAMER, Valencia, Pa.

Early queens, 70 cts.; after May 15, 60 cts.; also bee-supplies. List free. A. RATTRAY, Almont, Mich.

FOR SALE.—52 colonies of bees in good improved hives. ALBERT ELDER, Box 102, Dansville, N. Y.

FOR SALE.—Untested golden Italian queens; good queens; safe arrival. One, 60 cts.; three or more, 50 cts. each. D. T. GASTER, Rt. 2, Randleman, N. C.

FOR SALE.—Fifty colonies of Italian bees, 8-frame Dovetailed hives, straight combs, no disease; \$5.00 per hive. P. H. DAVIS, Camden Place, Minneapolis, Minn.

FOR SALE.—Fifteen mismated and hybrid queens, Italians, cheap at 35 cts. each, by May 1 by return mail. L. WERNER, Rt. 2, box 94, Edwardsville, Ill.

FOR SALE.—35 colonies of Italian bees in fine condition and in modern hives. Address
A. J. WARNER, Elmira, N. Y.

FOR SALE.—150 colonies of bees in uniform hives, free from disease. Also 150 empty hives.
S. E. TENNANT, Schoharie, N. Y.

Save money by getting full colonies and nuclei; also one pound of bees and queens of same strains, bred in Medina apiary, from Mechanic Falls branch.
J. B. MASON, Mechanic Falls, Me.

FOR SALE.—400 colonies Italian bees in 8 or 10 frame Dovetailed hives with Hoffman frames, at \$6.00 per colony. In lots of 10, \$5.00 per colony.
F. A. GRAY, Redwood Falls, Minn.

FOR SALE.—Selected young Italian queens, bred for superiority in honey production instead of color. Single queen, 75 cts.; 6 for \$4 00; one dozen for \$7.50. Also Golden all over, Cyprians, Carniolans and Banats.
JULIUS HOPPEL, 414 Up. 4th St., Evansville, Ind.

FOR SALE.—45 colonies of bees in 8-frame Hilton chaff-hives; straight combs, built on wire.
ALBERT FIEN, Falmouth, Mich.

FOR SALE.—Thirty colonies of bees; mostly young queens of 1907; about half from J. P. Moore; have produced an average of 180 lbs. of honey per colony for 1905 and '6. Complete outfit of supers, extracting-combs, extractors, etc. G. H. EVANS, Napanee, Ont., Can.

FOR SALE.—40 colonies Italian bees in new 10-frame Dov'd hives; combs built on full sheets of wired fdn.; Hoffman frames; Danz. super with each. All are painted two coats white. \$100 for the lot, purchaser to prepare them for shipment. J. B. RATCLIFFE, Amboy, Minn.

FOR SALE.—After May 15, Italian, Carniolan, Caucasian queens, untested, 75 cts.; 12, \$8.50; virgins, 40 cts.; 12, \$4.50. Nuclei, after June 10, 1, 2, 3 frames, including queens, \$2, \$3, \$4. Orders booked now.
EDWARD REDDOUT, Baldwinville, N. Y.

MOORE'S strain, and golden Italian queens, untested, \$1.00; 6, \$5.00; 12, \$9.00. Carniolan, Banat, and Caucasian queens, select, \$1.25; 6, \$6.00; 12, \$10.00. Tested, any kind, \$1.50; 6, \$8.00. Choice breeders, \$3.50. Circular free. W. H. RAILS, Orange, Cal.

Honey and Wax For Sale.

FOR SALE.—302 lbs. of No. 1 white-clover comb honey in 4¼ plain sections, no-drip cases; 17 cts. a pound.
E. D. TOWNSEND, Remus, Mecosta Co., Mich.

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

FOR SALE.—Fancy orange-blossom in 60-lb. cans, 8¼ cts.; water-white sage in 60-lb. cans, 8 cts.; light-amber in 60-lb. cans, 7¼ cts.; dark-amber in 60-lb. cans, 7½ cts.
E. R. PAUL & Co., Milwaukee, Wis.

FOR SALE.—Fancy white comb honey; also extracted basswood, white clover, alfalfa, and amber honey in barrels or 60-lb. cans.
ROBT. A. HOLEKAMP & SON,
4263 Virginia Avenue, St. Louis, Mo.

FOR SALE.—White comb honey, No. 1, average 23 lbs. to the case of 24 sections, \$3.25 per case; amber, \$2.50. Fancy white extracted in 60-lb. cans, 10¼c; amber, 9¼c.
HAROLD HORNOR, Jenkintown, Pa.

FOR SALE.—Choice extracted honey for table use—thick, well-ripened, delicious flavor; color, light amber; remained on hives for months after being sealed over. Price 8 cts. per lb. in 60-lb. cans, two to case. Sample 10 cts.
J. P. MOORE, queen-breeder, Morgan, Ky.

Honey and Wax Wanted.

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

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

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, Neb.

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

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

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

BEE-SUPPLIES.—Send list of wants for low prices and best goods to E. T. ABBOTT, St. Joseph, Mo.

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.

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

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

SWARTHMORE Golden-all-over, Caucasian, Banat, Carniolan, Cyprrian queens. E. L. PRATT, Swarthmore, Pa. Queen-rearing outfits and books: new 40-p. catalog free

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

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., O.

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.

ANGEL is breeding his Golden beauties and bright three-banded Italian queens, but will not offer any for sale this season, on account of not being at home at all times of the season. SAMUEL M. ANGEL, Evansville, Ind.

Improved Italian queens now ready. Nuclei and colonies May 1 to 10. Over twenty years a breeder; 500 colonies to draw on. Free circular 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 and Carniolans, \$1.25 each. Write for circular, order goldens from Ben G. Davis; others from John M. Davis, Spring Hill, Tenn.

The Hand System

TO satisfy a number of customers we are now making hives to suit the above system, just as the inventor himself uses them. These are not listed in our regular spring catalog, and are not kept in stock at any of our agencies. All orders will be filled from Medina. If ordered early enough, however, they can be forwarded to any one of our branches for redistribution. If you are going to try a few of these hives the coming season, we earnestly urge you to order early before the rush season comes on.

PRICE LIST OF HAND DIVISIONAL HIVE AND PARTS.

We have had numerous calls for divisional hives just as Mr. Hand uses them. We will not list them in our catalog for the coming season, but will make them up to supply on special order, to those who desire to try them, at prices in table below. The outside dimensions being nearly the same as the regular Dovetailed hive, the regular covers and bottoms may be used.

Each section is 19½ in. long, 5½ in. deep outside; upper portion of side removable with clamps to hold it in place. Sections used are 4¼x4¼x1½ plain, split three sides. Furnished in both eight and ten frame size.	Designating or Short Name	Nailed and Painted Each	In Flat		
			Each	Five	Weight of 5
Hand brood or extracting section, including the frames, springs, clamps, and nails; no foundation	Hand 8-8	\$ 65	\$ 50	\$ 2 25	35
Hand brood or extracting section, including the frames, springs, clamps, and 1-inch foundation starters.....	Hand 8-10	70	55	2 50	40
Hand brood or extracting section, including the frames, springs, clamps, and 1-inch foundation starters.....	Hand 9-8	75	60	2 50	35
Hand brood or extracting section, including the frames, springs, clamps, and full sheets comb foundation.....	Hand 9-10	80	65	2 75	40
Hand brood or extracting section, including the frames, springs, clamps, and full sheets comb foundation.....	Hand 0-8	1 30	85	4 00	38
Hand comb-honey section, including section-frames, and fences; no sections or foundation starters	Hand 0-10	1 40	95	4 50	43
Hand comb-honey section, including section-frames, and fences; no sections or foundation starters	Hand 2-8	75	60	2 75	30
Hand comb-honey section, including section-frames, fences, sections, and full sheets foundation	Hand 2-10	80	65	3 00	35
Hand four-section hive including two brood and two comb-honey sections; no sections or foundation starters ...	Hand 1-8	1 45	1 00	4 75	35
Hand four-section hive including two brood and two comb-honey sections with sections and full sheets foundation	Hand 1-10	1 55	1 10	5 25	40
Hand sectional super, no inside fixtures, including clamps, nails, and flat tins.....	HandCE8832-8	3 50	2 65	12 00	180
	HandCE8822-10	3 75	2 90	13 25	190
	HandCE0011-8	6 30	4 25	20 00	200
	HandCE0011-10	6 75	4 70	22 25	210
	Hand Super-8	40	30	1 25	22
	Hand Super-10	43	32	1 35	24

Hand brood-frames, 4¼x17½x1½; ends, 1¼x¾; top, 1½x¾; bottom, ½x¾ ... \$2.00 per 100 in flat; \$18.00 per 1000
 Hand section-frames, 4¼x17½x1½; ends and top, 1½x¾; bottom, 1¼x¾..... 2.50 " " 22.00 "
 Hand fences, 4¼x17½, P style 1.75 " " 16.00 "

The A. I. Root Company, Medina, Ohio



The reports of wintering of the bees over the country are generally good. New York State has sent in some unfavorable reports. Along about the middle of March there was not an unfavorable report; but the expected warm weather was somewhat delayed. It has now, April 24, come, and the bees will probably make good for lost time.

MAPLE SYRUP.

We have a good supply of very choice maple syrup which we can supply at \$1.00 per gal.; 6 gal. at 95c; 20 gal. or over, 90c. Will be pleased to hear from those interested. Maple sugar is not so plentiful, and we can not offer this at less than 15c per lb. for best; 13c fair to choice.

CARTONS FOR OUNCE CAKES OF BEESWAX.

We can supply cartons for one-ounce cakes of beeswax, printed with name and address blank, at 35 cts. per 100; 250 for 80 cts.; 500 for \$1.50; 1000 for \$2.75; by mail, 15 cts. per 100 extra. These prices will also include the large carton to contain 32 of the small ones. The complete package weighs 2 lbs., and, when filled, sells to the dealer at \$1.00. They retail the cakes at 5 cts. each. Retinned molds for molding ounce cakes cost 35 cts. per dozen; by mail, 40 cts.; for two-ounce cakes, 40 cts.; by mail, 50. We do not have cartons to fit the two-ounce cakes. To print your name and address on the cartons will add, 250 or less, 50 cts.; 500, 75 cts.; 1000, \$1.00.

DR. MILLER SPLINTS.

We have often had calls for wood splints for use with foundation in brood-frames to prevent sagging, as used and recommended by Dr. C. C. Miller. We have usually made them by sawing them out, and wasted more than three-fourths of the wood in sawdust. We have hit upon a plan of slicing them, thereby saving all the wood, and cheapening the process as well. We can furnish them $3\frac{1}{2}$ inches long for L. frames at 50 cts. per 1000 by mail; 40 cts. shipped with other goods. Small lots at 10 cts. per 100 postpaid. Other lengths can be furnished as well. If shorter, same price in 1000 lots. If longer, add fifty per cent up to 12 inches long.

SECOND-HAND FOUNDATION-MILLS.

We have to offer the following second-hand foundation-mills in good condition. We shall be pleased to hear from any one interested. To such we can send a small sample of comb foundation representing the kind of work produced by the particular machine you enquire about.

No. 079.—6x2 $\frac{1}{2}$ -inch hex. cell thin-super mill, in very good condition. Price \$12.00.

No. 078.—6x2 $\frac{1}{2}$ -inch hex. cell thin-super mill, in good condition. Price \$12.00.

No. 086.—6x2 $\frac{1}{2}$ -inch hex. cell extra-thin-super mill, in good condition. Price \$12.00.

No. 075.—2 x 9 hex., very old style, on frame with wood base; in fair condition. Price \$10.00.

No. 085.—2 $\frac{1}{2}$ x 6 hex. thin-super mill, in good condition. Price \$12.00.

No. 086.—2 $\frac{1}{2}$ x 6 hex. extra-thin-super mill in extra-good condition. Price \$15.00.

No. 096.—2 $\frac{1}{2}$ x10 hex. light-brood mill; almost new; in fine condition. Price \$20.00.

No. 097.—2 $\frac{1}{2}$ x 10 hex. light-brood mill; in fine condition. Price \$18.00.

No. 077.—10x2 inch-medium brood round cell, old-style frame, in good condition. Price \$14.00.

No. 092.—6x2 $\frac{1}{2}$ -inch hex. cell extra-thin-super mill, in fine condition. Price \$15.00.

No. 2275.—6x2 $\frac{1}{2}$ -inch hex. cell extra-thin-super mill, in good condition. Price \$13.00.

SIMPLEX HONEY-JARS.



The factory has assured us that we may again secure this popular honey-jar in several sizes, including the one holding one pound of honey. We have ordered a fresh supply, and expect to have them in stock this next month. They will be packed in reshipping-cases of two dozen each, and the price will be \$1.10 per case; 6 cases, \$6.30.

NO. 25 HONEY-JARS.

During the past year we have had an unusual amount of trouble with breakage of this jar, even in the reshipping-cases packed with corrugated paper. The breakage occurred either in the porcelain cap or the top rim of the jar where the cap rests. We find we can get this same jar with lacquered tin cap without the center being cut out. This cap is lined with waxed paper wad, which seals tight on the top edge of the jar. This style of cap not only does away with breakage almost entirely, but enables us to furnish the jar at a lower price. We are not yet supplied with the new stock, but expect to have them this month at the following price. They will be packed as usual, two dozen in reshipping partitioned cases. No. 25 jars, tin cap lined, 90 cts. per case; 6 cases, \$5.10. We can still furnish from stock the usual style of No. 25 with porcelain caps at \$1.10 per case; 6 cases, \$6.30.

A BARGAIN IN DANZ. SUPERS AND SHIPPING-CASES.

We offer at a special bargain 120 Danzenbaker ten-frame supers, nailed and painted, filled with section-holders, Hyde-Scholl "M" fences, sections with full sheets of foundation. They have been used, but are nearly new and in good condition. Such supers new are listed in our catalog at \$1.75 each, yet we offer this lot crated and on board cars at Floresville, Texas, at 50 cts. each for the lot, and will throw in 1000 4x5 sections to make good any in the lot which may be broken or missing. In lots of not less than ten the price would be 60 cts. each; 50 at 55 cts. each as they are crated and loaded on cars. There are also 400 shipping-cases to hold 20 4x5 sections in the crates as shipped from the factory, which we would sell at \$5.00 per crate of 50, or \$9.00 per 100 for the lot—that is, \$140 cash for goods worth new at carload prices over \$340. This surely is a bargain for any one desiring to produce fancy comb honey with equipment that can not be excelled for the purpose. They are not in the right locality for comb-honey production, but should work excellently in some other locality. Send your orders here to Medina.

Special Notices by A. I. Root.

PHILO'S POULTRY-HOUSE FOR THOSE WHO LIVE IN TOWNS AND CITIES.

We expected to give a picture of this structure in the present issue, but the cut came a little too late. Now you may all look forward to something that is exceedingly interesting and unique in our next issue, in the line of poultry-keeping in town and cities.

THE FIRELESS BROODER UP TO DATE.

It is no more than fair that I should state that I have lost six chicks out of my twenty-five in the fireless brooder, up to date, April 24. But I must also confess that I did not follow Philo's directions given in his book. When he had quite a freeze outdoors I felt sorry for them, and put them near the steam-pipes in the greenhouse. Of course, they got up close to the hot pipes, and I thought they would be all right. The rest of them are now, however, running all over outdoors, under the cherry-trees that are now in full bloom, and they seem to be doing finely. I am inclined to think I "killed them with kindness," for I had no loss at all in Florida (or almost none) except some that were killed by accident.

SPROUTED GRAINS FOR POULTRY AND OTHER DOMESTIC ANIMALS, BY PROF. FORBES, OF THE DEPARTMENT OF NUTRITION, OHIO EXPERIMENT STATION, WOOSTER.

I take pleasure in submitting the following, from our Ohio Experiment Station, in regard to the food value of sprouted grains—see page 512. Of course, we shall have to wait for some accurate experiments before coming to a conclusion in regard to the matter. But it would seem from the above that sprouted grains are a benefit in giving the animals variety, even if they do not result in a great saving in the expense of grain feed. We are in hopes there may be at least some truth in the claim that there is a great saving in the amount of grain fed in this way to the poultry.

WOOSTER, O., April 17, 1908.

Mr. Root.—Your inquiry regarding sprouted grain has been referred to me for reply. There has recently been organized here at Wooster a department of nutrition for the study of just such problems as the one you suggest. I have been interested for several years in just the point you raise, but have not had opportunity to work it out. I intend to take it up at an early date, however. Several years ago there was a firm at the stock-yards in Chicago which sold a germinator for use with grain intended for feeding, and they maintained a continuous demonstration of the appliance, using several kinds of animals, mostly old "skates" of one sort and another, such as do not usually get any valuable feed. They had no difficulty in getting these old animals rolling fat. They put out an extravagant and ignorant booklet advertising the germinator, but went out of business some time ago. I wrote a number of letters a couple of years ago trying to get hold of one of their germinators, but could get no trace of them.

There is surely an increased digestibility with sprouting, and there is also a change of phosphorus from various forms to lecithin, a compound characteristic of structures in which intense vital activity has been provided for, and which physiologists consider to be of great nutritive value. I have no definite information on the subject of food value, but would judge that the improvement might pay for the handling where grain is expensive. I shall go into the matter at an early date.

E. B. FORBES.

SAVING CHICKENS THAT WOULD OTHERWISE HAVE DIED IN THE SHELL.

Quite a good deal of interest seems called forth in regard to this new discovery. It is not exactly *new*, however, because many people practice more or less helping chickens out of the shell toward the close of the hatch. I believe the manufacturers of incubators claim it does not pay. There can be no objection, however, to experimenting with eggs that are not hatched before the 23d day. Philo thinks that many chicks fail to break the shell for lack of air—probably because the shell is too heavy, and may be because the pores are more or less closed. He recommends making an opening with the point of a knife into the air cell. Ehis gives the chick air, and as a matter of course, more strength. Then if the egg is wrapped in a wet cloth to soften the shell, the chicken will ordinarily succeed in getting out. If it does not, you can carefully break away more of the shell. Two years ago I saved several chickens that did not seem to have the strength to get out after they had pierced the shell. After the incubator is opened, the glutinous matter dries down so as to fetter the chicks, seemingly. I have soaked chicken and all in quite warm water, washed them up clean, put them back in the incubator, wrapped them in a wet cloth, and succeeded, I believe, almost every time. One of the boys who was running the baby-chicken establishments I have mentioned said he had also saved chicks in this way; but it took so much time to fuss with them that it was

something of a question whether it paid or not. Where you have nothing else to do I think I would try to save all the eggs in this way where either hen or incubator seems to fail.

Convention Notices.

RESOLUTIONS OF RESPECT.

Whereas, There has passed from this life our able and gifted member, Henry Alley, whose long experience, and genius and skill, caused him to be widely known and recognized as an authority in his art, therefore it is

RESOLVED That in his death the Massachusetts Society of Bee-keepers, and apiculture in general, bear a loss that will be keenly felt; and it is further

RESOLVED That we tender to his family our deep and heartfelt sympathy, and that a copy of these resolutions be sent to them and also placed on our records as a tribute to his memory. X. A. REED, Sec. Belmont, Mass.

A reporter for the coming National convention is one of the things to be looked after with care. Possibly not more than ten per cent of the members can attend the convention; the rest must depend upon a printed report of what was said and done. They pay their money to support the Association, and we owe it to them to give them a complete and accurate report. The best reporter that we have ever employed is Mr. Geo. Angus, of Toronto, Ontario, Canada. He has had a lot of experience in reporting bee conventions, has caught on to the technical terms, and furnishes a report all correctly worded and ready to be handed over to the printer, without correction. I am pleased to be able to announce that we have secured his services for the coming convention at Detroit, and those who find it impossible to attend may comfort themselves in knowing that they can sit at their own firesides and read exactly what was said and done. W. Z. HUTCHINSON, Sec. N. B. K. A.

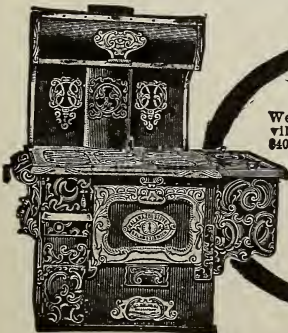
A FULL LINE of Bee-keepers' Supplies. My patent Section-machine at half-price. A new queen-nursery, and queen-rearing outfit. Queens from imported Italians, Caucasians, Carniolans; and Adel queens. Send for catalog and price list. **Chas. Mondeng,** 160 Newton Ave. N., Minneapolis, Minn.

Bee-keepers' Supplies Sold

At the very lowest profit possible. Dovetailed hives, sections, etc.; complete stock, bought in car lots. Subscriptions given with orders. Send for my 32-page catalog, free. **W. D. SOPER, Jackson, Mich.**

EVERGREEN SHADE-TREES.

White Cedar, 3 to 4 ft. .25 cts. each; Spruce, 3 to 4 ft., 25 cts. each; Balsam, 3 to 4 ft. .25 cts. each. Send for price list and get reduced prices on large orders. Address **SCHUH BROS., CATAWBA, WIS.**



'A Kalamazoo Direct to You'

We have more than 100,000 satisfied customers in more than 17,000 cities, villages and towns in the United States who have each saved from \$5 to \$40 by buying a Kalamazoo stove or range on

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direct from our factory at actual factory prices. No stove or range has a higher reputation or gives better satisfaction. You run no risk. You save all dealers' profits. We pay the freight.

Send Postal For Catalog No. 416

and see list of towns where we have satisfied customers.

Kalamazoo Stove Company, Mfrs., Kalamazoo, Mich.

Our patent oven thermometer makes baking and roasting easy.



Mr. Bee-keeper,

Was 1907 a POOR YEAR for you?

It was a GOOD YEAR for users of

DADANTS' FOUNDATION.

One dealer used 14,000 pounds.

Another dealer used 7,250 pounds. Another dealer used 4,500 pounds. Another dealer used 4,500 pounds.
Another dealer used 6,000 pounds. Another dealer used 4,500 pounds. Another dealer used 3,000 pounds.

Thousands of pounds sold to the bee-keeper direct, or worked up for him out of his beeswax.

The DEALER likes DADANT'S FOUNDATION because the bee-keeper likes it.

The bee-keeper likes it because his BEES like it.

The BEES like it because it is exactly like their own comb, so PURE and SWEET and CLEAN.

DADANT'S FOUNDATION is the Standard because it is the BEST.

Wax worked into foundation.

Send for our Supply Catalog.

DADANT & SONS, HAMILTON, ILL.

SUPPLIES FOR BEE-KEEPERS

Every thing you want; all made by us
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The American Bee-keeper (published 17 years), a monthly at 50 cts.
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DEPARTMENT G, :: :: :: :: :: :: :: ::

JAMESTOWN, N. Y.

WONDERFUL

Edison Phonograph Offer

At any time you wish you can have a free concert in your own home—not a concert of one instrument or voice alone, but a concert of band and orchestra music, vocal solos, grand opera as well as comic opera — *anything you like.*

This is the regular Standard Phonograph with the regular horn—a fine outfit—but we furnish besides at only a slight extra expense our **Parlor Grand Equipment.** This we describe fully in our free catalog and circular.

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Mr. Edison says:

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FREE TRIAL!

WHILE this offer lasts we will send to any reader of this paper a Genuine Latest Style Edison Phonograph for **free trial in your own home**—a trial lasting two days to a week. Try the Latest Style Edison in your own home. *Then if you do not want to keep this wonderful instrument, you may send it back to us at our expense and we charge you absolutely nothing for the free trial.* **If you like the instrument** with its marvelous variations of entertainment, including the latest popular songs, side-splitting minstrel dialogues, beautiful operatic airs sung by the greatest artists, its dreamy waltzes and stirring two-steps, its orations and elocutionary recitals, you may keep the instrument and send either cash in full or the smallest monthly payments at the **Surprising Rock-Bottom Prices** on the finest Edison outfits.

\$2 a Month now buys a genuine Edison outfit including one dozen genuine Edison gold moulded records. The finest improved latest style Edison outfit with our **Parlor Grand Equipment** only \$3.50 a month. And at **rock-bottom price**, no matter whether you send cash in full or pay on our easiest terms.

For Cash in full: So many cash purchasers are getting the finest Edison outfits on free trial that we are obliged to announce again that we can allow no discount for cash. We have already given those who buy on easy payments the **lowest possible price** and we must treat all Edison customers alike.

Edison Catalogs FREE

SIGN the Coupon and get our great Edison catalog, quoting the **rock-bottom prices**—on the finest Edison outfits. Remember you get an absolutely free trial and can send either cash in full or **easy monthly payments.**

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Without any obligations on me please send me your Edison catalog free, prepaid.

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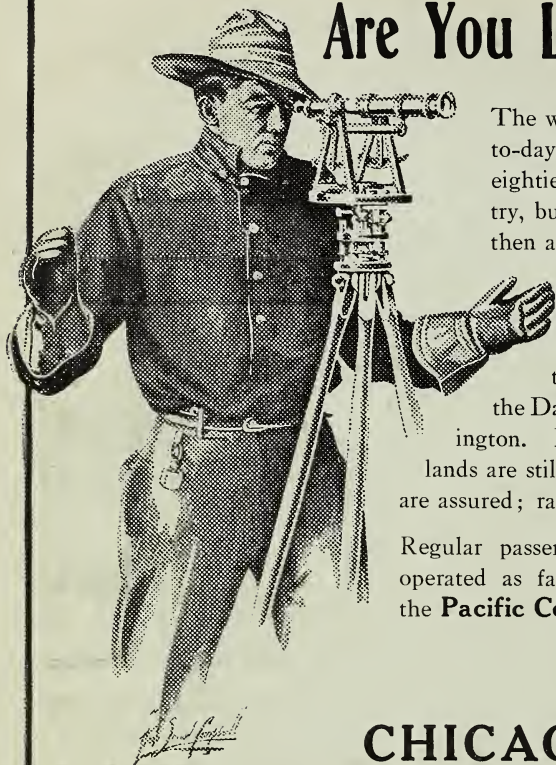
SIGN the Coupon Now!

Name.....

Address.....

Don't bother with a letter; the coupon will do.

Are You Looking Ahead?



The well-to-do farmers and stockmen of to-day got their start in the West in the eighties. They located in a new country, but conditions were not as favorable then as they are to-day.

To-day's opportunities for success and independence are also in the West; they are along the new line to the Pacific Coast in the Dakotas, Montana, Idaho, and Washington. Land there is cheap; homestead lands are still plentiful; good crops and markets are assured; railroad facilities are good.

Regular passenger and freight trains are now operated as far west as Lombard, Montana, on the **Pacific Coast Extension** of the

CHICAGO MILWAUKEE *and* ST. PAUL RAILWAY

On March 17 and April 7 over one thousand homeseekers bought tickets to points on the new line in the Dakotas and Montana. During March four hundred cars of homeseekers' outfits from points east were unloaded at various stations on this new line. These people are looking ahead; they are taking advantage of the opportunities; they will be the well-to-do settlers of the future.

Send for free descriptive books. They will interest the farmer, the stockman, the merchant, the fruit-grower, the workingman, the professional man.

F. A. MILLER,
General Passenger Agent
CHICAGO

E. G. HAYDEN,
Traveling Passenger Agent
426 Superior Ave., N.W. CLEVELAND