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GLEANINGS

IN BEE CULTURE

MARKET QUOTATIONS 659

STRAWS, by Dr. Miller... 663

PICKINGS, by Stenog.....664

CONVERSATIONS WITH DOOLITTLE...665

EDITORIALS.....666

 Honey Season in Eastern Oregon666

 Cuban Honey on the American Market.....667

 Queen-cages for Export use.....667

 " The Witchery of Kodakery "668

 A Colony that never thinks of Swarming 669

GENERAL CORRESPONDENCE..... 670

 Cuba's First and Second Apiaries.....670

 Shallow Hives671

 Another Balled Queen that was Stung.....674

 Preparing Queens for Moving675

 Starters or Full Sheets.....675

 Queen-mating in a Small Cage.....676

 Wiring Frames.....677

 That Big Crop of Honey678

HEADS OF GRAIN 679

 An Ideal Bee Locality in Australia, 679; A Preparation for Hive-covers in Dry Climates, 679; Koebler's Cover-feeder, 679; Cottonwood for Sections, 680; Carpet Grass, 680; Swarms for Shallow Brood-chambers, 681; Tarred Paper for Honey-room, 681; Wintering in the Danzenbaker Hive 682; Is it Poisonous Honey? 682; Mixed Swarms, 682; Not a Fair Crop for Central California, 683; Unripe Honey for the Market, 683; Do Members of the N. B. K. A. adulterate Honey? 684 Forest Cock-roaches Among the Bees, 684.

NOTES OF TRAVEL 688

GARDENING689

SPECIAL NOTICES.....696

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 U.S.A.

Western Edition.

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are headquarters for the State, and furnish local associations who can use as much as a carload at carload prices direct from the factory, or smaller lots from our well-furnished warehouses in Denver, at prices that defy competition for equal quality of goods. We are agents for THE A. I. ROOT COMPANY'S GOODS for Colorado, and want to hear from bee-keepers in need of supplies. We buy honey and wax.

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We desire to call the attention of all bee-keepers in Washington, British Columbia, and adjacent territory, that we're now the Northwestern agents for

THE A. I. ROOT COMPANY,

and are prepared to furnish from stock here, and at other Washington points, any thing required by bee-keepers. Send your specifications early. If we do not have the goods wanted this will enable us to get them in our next carload. Catalogs free.

LILLY, BOGARDUS & CO.,
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Northern-grown Seeds, Trees and Plants,
Poultry and Bee Supplies, Spray Pumps,
Fertilizers and Garden-tools.

Honey Market.

GRADING-RULES.

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

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

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

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

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

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

BUFFALO.—There is hardly any more demand for old comb honey. A little new is coming in and meeting with a fair demand for white comb at 16@17. There is some inquiry for white extracted, and very little offered for sale. Fancy white comb, 16@17; A No. 1 white comb, 15@16; No. 1 white comb, 14@15; No. 2 white comb, 13@14; No. 3 dark comb, 11@12; No. 1 dark comb, 11@13; No. 2 dark comb, 10@11; white clover, extracted, 8@8½; amber extracted, 7@7½; dark extracted, 6@6½. Beeswax, 28@30.

W. C. TOWNSEND,

July 22. 178, 180 Perry St., Buffalo, N. Y.

MILWAUKEE.—This market remains quiet so far as honey is concerned. There is a favorable outlook for a good crop from white clover, as the fields are heavily laden with it. When the impression prevails among consumers that there is plenty, all will expect to get some, so we are looking for a good demand, and can encourage liberal shipments at this time but can not quote firm values. Fancy new comb would sell for 16@18; extracted, new or old, nominal, 7½@8½.

A. V. BISHOP & Co.,

July 18. 119 Buffalo St., Milwaukee, Wis.

CINCINNATI.—The demand for honey continues slow. New comb and extracted begin to be offered largely. Prices show a downward tendency. Extracted, amber, in barrels, 5@5½; alfalfa, 6½; white clover, 7@7½. Comb honey, fancy water white, will bring 14@15. No demand for lower grades. Beeswax, 27@33.

C. H. W. WEBER,

July 20. 2146 8 Central Ave., Cincinnati, Ohio.

CHICAGO.—Some consignments of the crop of 1903 are offered on this market. The comb is, in most cases, No. 1 to Fancy, and the quality is the very best. It is many years since this neighborhood yielded in quantity and quality as now. Demand has not come for it yet, but will within a short time, as it is being told that an abundant harvest is upon us. Prices asked are 13@15. Extracted sells slowly at 6@7 for fancy white; 5@6 for amber. Beeswax, 30.

R. A. BURNETT & Co.,

July 20. 199 South Water St., Chicago, Ill.

PHILADELPHIA.—Extracted honey has been arriving quite freely for a few days, and indications point to a low market, although prices are ruling very firm on account of California having a light crop. We would quote amber, 6½@7½; fancy white, 7@8. No new comb honey in the market. Beeswax firm at 28. We produce honey, but do not handle it on commission.

W. M. A. SELSER,

July 20. 10 Vine St., Philadelphia, Pa.

TOLEDO.—New honey is coming in, and finds ready sale as follows: Fancy white clover in no drip cases, 16; same, No. 1, 15; amber, 14. White clover, in barrels, 6½; amber, in barrels, 5@5½. Beeswax firm at 28@30.

GRIGGS BROTHERS,

July 20. 214 Jackson Ave., Toledo, O.

SAN FRANCISCO.—New comb, white, 14½@15; light amber, 13½. Extracted, water white, 6½; light amber, 6; dark amber, nominal. Beeswax, 32.

ERNEST B. SCHAFFLE,

July 13.

SCHENECTADY, N. Y.—But very little new comb honey has come forward yet, and the price is not established. White clover will probably be a short crop in this section, but that from buckwheat may be large.

CHAS. McCULLOCH,

July 21.

ALBANY.—Honey market is quiet, light demand. Some new Southern comb is arriving, and sells at 15. We look for a good demand and good prices next month. The crop in this section is light.

MACDOUGALL & Co.,

July 20. 375 Broadway, Albany, N. Y.

TORONTO.—The honey crop appears to be good in this locality, although very little honey is being offered. It is not easy now to give any figures. Prices remain about the same, with very little demand. Beeswax, 28@33.

E. GRAINGER & Co.

July 23.

DENVER.—Stock of old comb honey is all cleaned up. A few cases of the new crop have come in, and sold readily at \$3.25 per case. No change in price of extracted honey. Beeswax wanted at 22@26, according to color and cleanliness.

COLORADO HONEY-PRODUCERS' ASSOCIATION,

July 10. 1440 Market St., Denver.

FOR SALE.—New extracted honey, from 7c up. Several sizes of packages. Sample 10c.

I. J. STRINGHAM, 105 Park Place, New York,

FOR SALE.—Comb and extracted clover honey. Extracted, 7½c; comb, 12½c.

W. D. SOPER, Jackson, Mich. R. D. 3.

FOR SALE.—Two hundred 24-section cases fine white-clover comb honey, at Urso, Ill. Best offer gets it.

JOHN A. THORNTON, Lima, Ill.

FOR SALE.—Alfalfa honey. Extracted in 60-lb. cans, and about 20,000 lbs. in comb. Prices on application.

CHEEK & WALLINGER, Las Animas, Colo.

FOR SALE.—Fancy comb and extracted honey; extracted in 60 lb. cans. Prices quoted on application.

WILLIAM MORRIS, Las Animas, Col.

FOR SALE.—10,000 lbs. fancy white-clover honey, mostly comb, in 4½ sections. Extracted in 60-lb. cans.

JOHN HANDEL & SON, Savanna, Ill.

FOR SALE.—Extracted honey. Finest grades for table use. Prices quoted on application. Sample 1y mail, 10 cts. to pay for package and postage.

OREL I. HERSHISER,

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FOR SALE.—New honey. 2000 lbs. mostly alsike clover honey. Put up in 60 lb. tins, 2 in case; new cans and cases; \$9.00 per case f. o. b. cars or boat. Send 6c for sample. Address

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Lock Box 156. East Jordan, Mich.

FOR SALE.—Thirty barrels choice extracted white-clover honey. Can put it up in any style of package desired. Write for prices, mentioning style of package, and quantity wanted. Sample mailed on receipt of three cents in P. O. stamps.

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WANTED.—Beeswax. Will pay spot cash and full market value for beeswax at any time of the year. Write us if you have any to dispose of.

HILDRETH & SEGELKEN,

265-267 Greenwich St., New York.

WANTED.—Beeswax; highest market price paid. Write for price list.

BACH, BECKER & Co., Chicago, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity.

R. A. BURNETT & Co.,

199 South Water St., Chicago, Ill.

WANTED.—To hear from producers of comb honey in California and Nevada. It may sound unreasonable, but we have probably bought, for spot cash, more comb honey than any firm in the United States, during the past three seasons. We can, no doubt, do you some good.

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We will be in the market for honey the coming season in carloads and less than carloads, and would be glad to hear from producers everywhere who they will have to offer.

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The Best Bee-goods in the World

are no better than those we make, and the chances are that they are not so good. If you buy of us **you will not be disappointed.** We **are undersold by no one.** Send for our new catalog and price list and free copy of THE AMERICAN BEE-KEEPER; in its thirteenth year; 50 cents a year; especially for beginners.

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W. M. Gerrish, Epping, New Hampshire, carries a full line of our goods at catalog prices. Order of him and save the freight.

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We Make a Specialty of Prompt Shipments.

If you are in a hurry for supplies send us your order and we will surprise you with our promptness. All goods shipped within 10 hours after receiving the order. Over a million sections and two tons of foundation now on hand. Hundreds of hives, and all other supplies
READY FOR IMMEDIATE SHIPMENT.

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Goods.

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We have a large jobbing trade in comb honey, and can use any-sized shipments up to car lots. We want 5000 cases as early shipment as possible this season and can use all grad-s. Will buy delivered in Buffalo or handle for your account.

Correspond with us before placing your output this season.

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which we exercise in the careful selection from year to year of only the choicest breeding queens has brought the Robey strain of Italians up to the highest standard of excellence as regards their docility, prolificness, and honey-gathering qualities.

This particular strain is the progeny of selections from choice stock of Root's red-clover queens, and Moore's crossed with the very best of our own rearing.

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Our untested queens give excellent satisfaction. They are bred by the best breeders, and are up to standard.

Prices are as follows:

1 Untested Italian Queen.....	\$.75
3 " " " "	\$2.10
6 " " " "	\$4.00

We are sending them almost by return mail.

The Weekly American Bee Journal and one of these fine queens, both for \$1.50. Sample copy of the Bee Journal sent free. Ask for it. You ought to have it every week. It is a great bee-paper—so they say.

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Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of BEE-SUPPLIES. Write for FREE illustrated catalog and price list.

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This foundation is made by a process that produces the superior of any. It is the cleanest and purest. It has the brightest color and sweetest odor. It is the most transparent, because it has the thinnest base. It is tough, clear as crystal, and gives more sheets to the pound than any other make. **Working Wax into Foundation for Cash a Specialty. Beeswax Always Wanted at Highest Price.** Catalog giving full line of supplies, with prices and samples, free on application.

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The Universal Satisfaction Our Queens Do Give.

STERLING, GA., JUNE 20, 1903.—I was showing my father yesterday how my bees, which I bought from you, were outworking every thing in my apiary. Send me 4 Buckeye Red-Clover Queens, and 2 Muth Strain Golden Italians. I will order more after next extracting. THOS. H. KINCADE.

Buckeye Strain Red-Clover Queens. They roll in honey, while the ordinary starve.
Muth Strain Golden Italians. None Superior.
Carniolans. None Better.

Untested.....	\$.75 each,.....6 for \$4.00	Select Untested.....	\$1.00 each,.....6 for 5.00
Tested.....	1.50 each,.....6 for 7.25	Select Tested.....	2.50 each,.....6 for 12.00
	Best Money Can Buy.....		\$3.50 each.

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The Fred W. Muth Co., Front & Walnut, Cincinnati, Ohio.

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The Largest Stock we ever Carried
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Perfect Workmanship and Finest Material.
All parts of our Hives are made to fit Accurately.
No trouble in setting them up.
Our customers say it is a pleasure.
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G. B. LEWIS COMPANY,

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QUEENS NOW READY TO SUPPLY BY RETURN MAIL

Stock which can not be excelled. Each variety bred in separate apiaries, from selected mothers; have proven their qualities as great honey-gatherers.

GOLDEN ITALIANS have no superior, and few equals. Untested, 75 cts.; 6 for \$4.00.
RED-CLOVER QUEENS, which left all records behind in honey-gathering. Unt., \$1; 6, for \$5.
CARNIOLANS—They are so highly recommended, being more gentle than all others. Unt., \$1.

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C. H. W. WEBER, 2146-2148 Central Avenue, CINCINNATI, OHIO.

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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AUG 1, 1903.

No. 15



THAT A. C. MILLER COVER, p. 632, looks like a good thing.

I HAVE HAD dead mice in hives several times, and they always dry up so dry as to appear inoffensive.

THE PROPOSED AMENDMENTS, p. 624, are good, excepting as to the number of directors. Wouldn't six be better than twelve?

BRO. DOOLITTLE might have added, p. 622, that the advocates of feeding back make a point of having the right bees for the work—blacks, I think, being preferred.

I'M SURPRISED TO SEE, p. 635, that bees will not work down upon foundation in a story placed under the brood-nest. In this locality they do. If I mistake not, Simmins' non-swarmer plan consists in keeping foundation always below the brood-nest.

"QUEEN-RIGHT" is the word we've always needed to express that a colony was not queenless but had a good laying queen; and Fr. Greiner is the man bright enough to transplant it from the German into the English language. He thus uses it in the *American Bee-keeper*. Sehr gut, Herr G.!

IN SOME CASES, Mr. Editor, you had bees nearly abandon work in the upper super and begin work in the empty super below, p. 620. Bees are queer things. I've had them do nearly the opposite—utterly neglect the under super and finish work in the upper. But that was late in the season.

A FEW BASSWOODS on the place were full of blossoms, and very fragrant, but I never saw a bee on them. Could it be possible there was no nectar present? or were the bees too busy on white clover? Neither did

I find more than a scattering bee on sweet clover till after the middle of July, although there was abundant bloom many days before.

O. O. POPPLETON writes that we are mistaken in saying there is no cure for paralysis. He is very positive he has cured it with sulphur. Diseased colonies yielded to the treatment every time, while those side by side untreated remained diseased. Mr. Poppleton is a man whose word counts.

FURIOUS SWARMING at Medina is mentioned, p. 623, and it's the worst here I ever knew. Young queens, shaken swarms, and every thing else, seem crazy to swarm. It has generally been considered that, when bees get to storing in quantity, they were less inclined to swarm; but this year it seems just the opposite—the heaviest storing and the most swarming I ever knew. And withal the bees are cross beyond understanding, right while the flood of nectar is on.

IF I UNDERSTAND the matter rightly, there's to be a meeting of bee-keepers at Los Angeles, Aug. 18—20, and a number will leave Chicago for that place Wednesday, Aug. 12, 10 P. M., stopping over Sunday at Grand Canyon, reaching Los Angeles Tuesday, 18, 8 A. M. That's quite a time to be on the way; and when I get tired enjoying the scenery I can rest myself fighting with a certain editor from Medina. The worst thing about it is to get the bees to agree to be good for so long a time while I'm away.

I DON'T KNOW what's the best arrangement of supers on hives; but at present we have settled upon this order: An empty super is put next the brood-nest; next above this the super nearest completion, then the next nearest completion, and so on, the one least advanced being on top. If it seems possible that more room may be needed, an additional empty super is put above all. Next time around this upper super generally has the foundation drawn, but no honey in it—sometimes a little honey, and sometimes the foundation not drawn at all.

I HAD FIFTY zinc hive-covers made to order, double, with air-space, and having now had them in use about a year I find them good. The Medina folks, however, made an improvement not in the specification, and it doesn't work well. Instead of simply nailing the zinc on at the sides they nailed wooden strips over it. That's worse than nothing, for the shrinking and swelling of the wood throws the zinc above the wood, and it can't get back into place. I have torn off the strips and nailed on the zinc, and now they're all right. If wooden strips are nailed on at all (as when paper or cloth is used), the cover should be made enough narrower so that the entire width, strips and all, shall just equal the width of the hive, and the strips should come down flush with the lower surface of the cover.

IMMEDIATE INTRODUCTION of queens seems a desirable thing, and I think I've come pretty near to it. Some one (who was it?) said a queen was better received when well wet. I carried the thing further, in some cases drowning the queen till she curled up, apparently dead. I put it to this severe test: I made a full colony exchange queens with a nucleus, putting the queen directly from one hive to the other without any delay except the two or three minutes to drown the queen. Each queen went to work laying. I did the same thing in two other cases, and the queens were received all right in the full colonies; but when I looked next in the nuclei the queens were missing. Possibly the thing may be made always reliable by learning a few kinks—whether to use warm or cold water, how long to drown them, etc. Does the drowning injure the queens? I don't know. It doesn't seem to.

EVERY FOUR OR FIVE DAYS we overhaul the supers on the hives, taking off those that are finished, and giving empty sections where needed. The empty super is put below all the others; and as few have less than 4, and many 5 and 6 supers, it's a good deal of work to lift them all off for the sake of putting the empty one under. So in one of the rounds a week or so ago, partly because it was easier and partly for the experiment, we lifted off no supers, but just put an empty super on top wherever the upper super appeared pretty full. That one experiment was enough. When we made the next round, four or five days later, we found work not pushed so very hard in the added super; but in the other supers wax and burr-combs plastered everywhere in wasteful profusion, built on to the separators and between the supers, spoiling the appearance of some of the sections besides a waste of wax that might have paid for the extra work. If only two supers had been on the hive, so that the upper empty super would have been nearer the brood-nest, likely the bees would have begun work in it more promptly, but the burr-comb business would have been worse.



ROCKY MOUNTAIN BEE JOURNAL.

In speaking of this exchange, Mr. Chas. Adams says, "It is getting to be quite a good paper." Hardly. It has been that from the first, so far as bee-keeping is concerned. Mr. Morehouse has a new assistant at the editorial helm. At last accounts he had no first name. More house room will be needed, probably.

Under the name of "idiotic drive!" Mr. Morehouse quotes the following from the *Denver Times*:

The morning was spent in an informal discussion on the training and education of bees. It is a well-known fact that bees may be fed so as to produce any flavored honey that may be desired. In fact, they appear to enjoy producing peculiar combinations. According to the president of the society, they have been known to flavor their product with skunk oil. The great difficulty with these experiments was in the naturally energetic bee growing so lazy under forced feeding that he refused to hustle for his master. The discussion was consequently on the best ethical training for a bee.

The writer does not think it is beyond the confines of charity to say that, as the result of long observation, he concludes the great herd of reporters for our leading dailies are remarkable for only one characteristic—opaque ignorance of practical matters; or perhaps they are so devoid of conscience as to prefer a garment of falsehood if it be decked with a few spangles of truth to make it plausible to the uninformed. How did that idea about "skunk oil" originate? Probably the reporter heard skunk cabbage spoken of as one of the earliest sources of pollen; and, never having before heard of that plant, substituted skunk oil in its place. And yet such writers have more to do in educating the people than all the schoolteachers and ministers in the land. Why will people believe a manifest absurdity sooner than a self-evident truth? I am glad that Mr. Morehouse knows how to head his criticisms with suitable language.

BRITISH BEE JOURNAL.

The unending views of British apiaries in the *British Bee Journal* are a source of pleasure to its readers. The odd-shaped hives, the strange appearance of the buildings, the dense foliage, and the fine appearance of the men and women whose faces appear in the half-tones, make up a fine study for the American reader.

From July 15 to Sept. 19, 24 bee shows are advertised to take place in England. That speaks volumes for the interest taken

in the production of honey, and for the perfect organization of bee-keepers in that island. Some of these shows are in connection with agricultural exhibitions. The dense population of England, equal to half the United States squeezed into the one State of Illinois, renders the production of any article of food of great interest.



Concerning the spread of foul brood keeping pace with the introduction of frame hives, Mr. L. S. Crawshaw says:

It is seriously argued that disease is more rampant now than in the old skep days, owing to its more ready propagation by contagion, and the loss of the check undoubtedly exercised upon it by the annual destruction of combs. But are these the full facts? What complete knowledge have we of the range of the disease in skeps? How was it ever possible to judge of this accurately, or to estimate it at this day? Is the testimony of the skeppist upon the point reliable? Most emphatically not! Ask to-day one of this school—whether the possessor of frame hives or not—if he has foul brood, and he will most likely assure and reassure the negative, while an examination may show his back garden to be a hotbed of the disease. Does he know it? Probably not, and here is half the trouble, for his bee-keeping is built upon a foundation of ignorance and superstition which the skep hive does much to foster and protect. "But the disease has spread." That may be possible, only do not mistake better statistics for increase of the complaint. It may have spread. It must, in the nature of things, do so; but it remains to be proved that the spread is greater than would otherwise have been, and that it is still spreading more rapidly in spite of all associated effort to reduce it.



IRISH BEE JOURNAL.

Concerning foul brood a writer says:

"We know that the microbes causing foul brood retain their vitality in honey for some time, but just how long we do not know. That the spores of *Bacillus mesentericus* will germinate after being steeped in honey for over a year, I have very great doubts; and if a few years' immersion in concentrated honey is fatal to them, we have a clue to the reason why bees store, and keep in store, large quantities of honey. . . . If the microbes causing foul brood could be exterminated there would be no bee-keeping—the bees would not store honey enough to make it an object."



BEEES DESTROYED BY MOTH-WORMS.

"Good morning, Mr. Doolittle. I am a beginner at bee-keeping, and come down from Maine to have a little talk with you about moth worms. You know what I mean?"

"Yes, Mr. Jones, I know the larva of the wax-moth when I see one. But what did you wish to know about these larvæ?"

"Going out among my bees the other morning I saw two worms at the front of one hive and five at another. I told a neighbor of this, and he said I would have to look out for these worms or they would destroy my bees, as he used to lose more or

less by them years ago when he kept bees. Will these worms destroy bees?"

"A good colony of bees is never destroyed by the larva of the wax-moth in this locality, and I doubt if such is the case in Maine or any other part of the world. Such expressions as your neighbor gave voice to shows his ignorance, as no person would make the assertion that he had lost bees from moth-worms unless he was ignorant or careless, or both."

"Why do you say careless?"

"Because the carelessness of people making such assertions is shown in that they do not discover that their bees are gone till the combs are destroyed by worms; and they also show their ignorance, because, if well posted in all that is going on inside the hive, at all times, they would know better. In most localities where bees can live, if the combs are not occupied with bees, and have not been exposed to a degree of cold as low as zero, when warm weather comes in the summer we always find the larvæ of the wax-moth upon these combs, and more abundant on those which have pollen in them, or have had many generations of brood reared in them. When once under headway it takes but a short time for these larvæ to reduce the combs in a whole hive to a mass of webs."

"Can not the worms do this while the bees are on the combs?"

"No. The worms, or larvæ, can not come into full possession of these combs so long as there are bees upon them, although we find here and there a larva which may have eluded the vigilance of the bees by getting in the septum of the comb, under the brood, or by being under the capping, over the heads of the immature bees. But even here they are secure for no certain length of time; for before they reach maturity they are ferreted out and cast from the hive like those you saw at the entrance of your hives. The Italian bees keep these worms out much better than the hybrids or blacks. Which do you keep?"

"I have only black bees; but if the Italians will keep these worms away I shall have some. Will a small colony of Italians protect their combs from these worms?"

"Yes. I have known only a mere handful of these bees to protect a whole hive of combs fully, the worms being kept in subjection so long as a few score remained."

"Then you think my neighbor's died from some other cause than worms, do you?"

"Yes. If from any cause a colony becomes hopelessly queenless, the bees all died of old age in from fifty to sixty days from the time the last bee emerges from its cell, if in summer; and as soon as the bees are gone there is no restraint on the worms, thus giving them full sway, and in a short time the combs are ruined."

"Why should bees ever become hopelessly queenless?"

"If from any cause the queen dies while there are no eggs or larvæ in the combs,

the bees in that colony have no means of rearing another queen, so are hopelessly queenless from then on. The most common cause for bees becoming thus hopelessly queenless is when, after swarming, the young queen flies out to meet the drone, she becomes lost by entering the wrong hive; or being caught by birds, or otherwise she fails to return. All brood was sealed at about the time this queen emerged from the cell, so that, with her loss, there is no chance for that colony to live unless the apiarist finds it out in time and comes to the rescue. And from my own experience, and the testimony of scores of others, more colonies become hopelessly queenless in this way than by all others combined. Now do you think that colonies having thus lost their queen were destroyed by worms?"

"It would not look that way."

"Certainly they were not. The colony was destroyed by the loss of the queen at mating time, and the moths came in as an effect. Thus we see that to talk of worms destroying colonies of bees is fallacious."

"Well, how are we to know in the matter of the loss of a queen?"

"If we have an eye to business we shall see from outside observation that something is wrong with the colony long before the moths can take possession of the combs, even if we do no general manipulation of hives; and as soon as we see that something is wrong with any colony it is our business as bee-keepers to open the hive and find out what that wrong is, in time to save the colony."

"If you found a colony that had lost its queen at this time of the year, or at any other, so it was hopelessly queenless, what would you do?"

"The finding of any colony without brood in any form, during the spring and summer months, gives assurance that said colony is hopelessly queenless. But this is not always the case, as they may be tolerating an old worn-out queen, or, what is more frequently the case, a virgin queen, which, through crippled wings, or some other defect, is unable to fly out to meet the drones. In this way a colony may be hopeless, but not queenless—hopeless, as we know, but it does not so appear to them, and therefore they will love and cherish this apology for a queen till all die of old age, not even accepting a good queen given them by the apiarist."

"Is there no way of finding out whether they have such an apology for a queen or not?"

"Yes, usually. This is done by giving the suspected colony a frame of brood in which there are eggs and young larvæ. If they have no queen of any kind they will nearly always go to constructing queen-cells on this brood; and when they do this you may be very positive that they were hopeless as well as queenless, and that they will accept any queen you give them. And should you not have a queen to give them at once, this frame of brood will help

them to hold out till you can give them a queen; and it is always the proper thing to do, on finding any colony without brood in any shape in the hive."

"I must be going now. I wish to thank you for what you have told me, for I shall have little fear of the worms after this."



WHITE CLOVER IN WISCONSIN.

I HAVE been making a flying trip up through Eastern Wisconsin. White clover, I think I never saw so much of it in my life. The fields are covered with it in great white masses in the pastures and along the roadsides. Basswoods were blooming well. The bee-keepers of Wisconsin should be "in clover" this year.

SWEET CLOVER.

THERE seems to be a great abundance of sweet clover this year—more so than usual. It is spreading in our locality to such an extent that our local residents—people who never travel much, but who ought to know better—are telling how "A. I. Root once scattered this clover all over the county for his bees." It does no good to refute this nonsense, for they won't believe it; but the fact that sweet clover is spreading all over the United States goes to show that there must have been a good many A. I. Roots scattering seed or else the whole story is a hoax, as it certainly is.

THE HONEY SEASON IN EASTERN OREGON AND WASHINGTON.

THE following report, for the reason given, came too late for our previous issue, but we are glad to put it before our readers at this time:

Inquiries for condition of honey crop, which we made on receipt of your request, did not reach us in time for your July 15th issue. We have just received word from Eastern Oregon and Washington. It is a little early to make any kind of estimate of what the honey crop will be in Eastern Washington, but probably below the average. In Eastern Oregon the weather has been damp, with high winds; and as it is now so late in the season, dry weather is to be expected, so that the general opinion of bee-men in that section is that the crop will not be more than half the average. However, as we said before, this section, or the whole Pacific Northwest, has no honey to offer on the market, as they do not produce one-half the amount consumed. PORTLAND SEED CO.

Portland, Oregon, July 16.

ANSWERING QUESTIONS.

SINCE I have increased the Heads of Grain department—that is, inserting more questions and answers, my volume of correspondence has increased enormously. I

find it is impossible to publish more than a small portion of the questions that come in to us; and the rest, in the case of regular patrons or subscribers, are answered privately. Now, I have something to do besides answering letters; but I am perfectly willing to respond to all inquiries. But our friends will save me a great deal of time if they will make their questions brief, write on only *one side* of the sheet, and number the pages. Long letters are apt to be delayed, and perhaps never answered. It takes time and brains to dig a question or two out of a long rambling letter. Get down to the meat of your inquiry at once, leaving out all unimportant details.

CUBAN HONEY ON THE AMERICAN MARKETS.

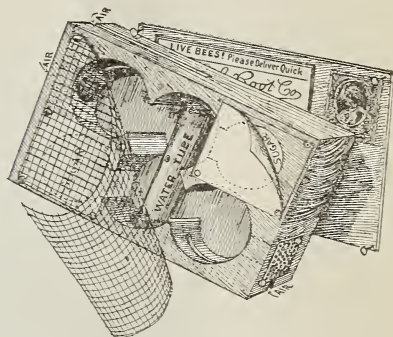
THERE have been fears expressed several times that Cuban honey might have a serious effect on the American market for American honey. The great bulk of this West-Indian product, as I have before stated, goes to Europe, because it is of such poor quality, mixed with dirt, dead bees, mashed brood, and comb, that it would hardly pass muster, even for manufacturing purposes, in this country. Where the manufacturers (bake-shops and confectioners) have had one shipment they want no more of it at any price. But the modern American bee-keepers in Cuba are putting up a better grade of honey, and many are working toward comb honey, and are putting out a very fine quality of it.

It is this that has created a *furor* (and needlessly so) among the American bee-keepers; but the fact of it is, it comes to our markets *at just the time when they are bare of the American product*, and to a certain extent it helps to discourage adulteration; for it has been noted that, when real honey is scarce, the dealers are inclined to put in honey pieced out with glucose. If Cuban honey produced by American bee-keepers will have a tendency to keep adulteration away, the bee-keepers in this country can and should welcome the product of our brothers who are located on Cuban soil. So far a first quality of Cuban comb honey brings about the same prices as the first quality of American honey; and so long as that condition prevails, no one need fear Cuban competition very much. If the Cuban honey were thrown on our markets at just the time when American honey was being taken from the hives, the condition would be very different; but because it comes when our markets are bare of first quality, or nearly so, and because Cuban comb honey is of fine quality, the price will be maintained at the American level.

CAGES FOR SENDING QUEENS TO FOREIGN COUNTRIES.

ALONG last fall, J. P. Moore, who has been furnishing us breeding-stock, incidentally remarked that he was sending about 95 per cent of his queens through

alive to foreign countries. Desiring to get further particulars on the style of the cage, and how he was able to accomplish it, we wrote him, and in November of last year, in response, he sent a sample of the cage, with a letter for publication. We had an illustration made, but held the matter until it would be seasonable, and now present both the cage and the letter to our readers:



EXPORT CAGE WITH MOORE'S WATER-BOTTLE.

Mr. Root:—I send you a provisioned cage (except the water) such as I use for mailing queens to countries like Jamaica, with good results as reported. Fill the tin tube with water by means of an oil-can with a very small nozzle and spring bottom, to force the water into the tube, and your cage is ready for the queen and bees. For mailing queens to England, I have been using two of these cages fastened together face to face without any wire cloth. One tube was filled with honey, and the other with water. The queens and escorts were reported in the finest of order when received.

The candy is made of powdered sugar and honey, with the addition of a little glycerine, to prevent it from drying out and becoming hard. It is made as follows:

To seven cups of powdered sugar add one cup of nice well-ripened honey; knead thoroughly, and make into three or four balls. Let it stand a few days; then break the balls up and pour a little glycerine over the mass, and work in more powdered sugar. Make into balls as before, and let stand a day or two, when it is ready for use if you have added enough sugar and not too much. If the balls flatten down, the candy is too soft, and must have more sugar; but if they retain their shape, and have a moist appearance, the candy is just right. When just right, it is soft and pliable, and retains its shape when made into balls.

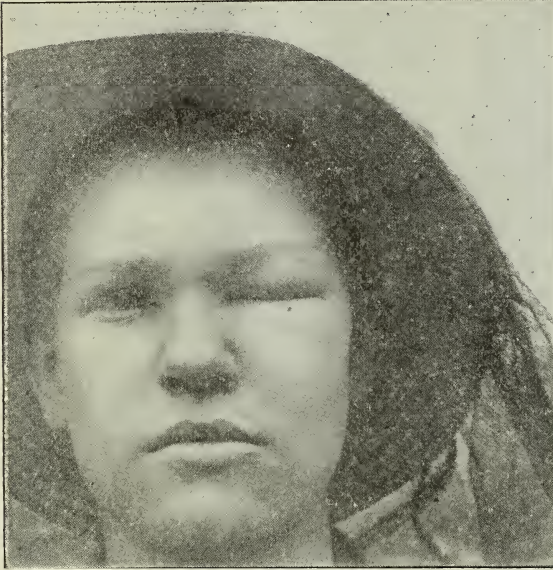
The cage was made by H. G. Quirin, of Parkertown, O., but the tin tubes are of my own make. The corks are put in—one in each end—and then dipped in melted wax to make them water-tight. To fill with honey, put the cork in one end of the tube and clip in wax; then pour hot honey into the other end by means of a very small funnel, until nearly full; insert cork and dip in wax.

J. P. MOORE.
Morgan, Ky., Nov. 12.

The one here shown is a regular Benton six-hole cage. Through the center holes there is a tin tube. Years ago we had something of this kind in our cages that we sent out, and our decision was at the time that it was a good thing, but later experiments for short distances, in comparison with cages having *no* tubes, convinced us, at least, there was no advantage in having the water-bottle. But Mr. Moore's experiments would seem to indicate, in view of the success he has attained, that we had better supply the cages with water for export at least.

"THE WITCHERY OF KODAKERY" AND THE
ITCHERY OF BEE-STINGERY.

As our readers are aware, picture-taking has been one of my pastimes; but of late years it has come to be a part of my regular business and work. I never go out on



THE EFFECT OF A BEE-STING NEAR ONE EYE.

bee-keeping tours without having one or more kodaks loaded ready for any subject that may take my fancy; and even at home I keep one or two instruments all prepared ready for any special thing that may arise; for we never know what the bees will do or what we shall have on hand at any particular moment.

A few days ago Mr. Phillips, our head apiarist, came into the office and remarked that one of our bee keeping students had got stung on the eye, and suggested I had better go down and "kodak" him. I did so, of course obtaining his consent. On another occasion the same student received a sting on the lip, and again the kodak was brought to play. The two pictures are reproduced before you.

The young man in question is learning the business, and so far he has found that the ways of a bee keeper are not all honey-eyed sweetness. Hard work, hot sun, and now and then a sting, with a swollen face, are a part of his "experience." So far he has been "initiated" in the manner shown in the pictures a number of times; but he hopes ere long to get along without the swelling.

Perhaps some may question the propriety of putting in a picture showing the distorted features of a person suffering from an accident or bee-sting. I obtained the free consent of the young man to use the pictures

because I wished to illustrate the effect of stings, as some of our readers, and probably a good many of them, do not know how badly a face may be swollen from just one sting. These pictures are reproduced, not because they are the worst cases of swelling we have had, but because they are an average among those who are just getting inoculated with the poison; for it is well known that, after one has been stung a certain number of times, he becomes to a great extent immune to bee-stings. While the pain is just as acute, the swelling and consequent fever do not appear—at least to only a very moderate extent.

A few days after these pictures were taken, Mr. Phillips said he had a fine nice swarm hanging from one of the grapevines, and remarked that it would make a pretty picture. Two years ago I offered a prize for the best picture of a young lady holding a swarm of bees. Desiring to see what I could do in this line myself, by dint of coaxing I got one of the young women in our office to put on a bee-veil and bee-gloves, and take her position before the swarm, as if about to hive it. She did so. The kodak clicked, and the result is before you. A companion picture to this has been sent to one of our magazine writers,

and it is possible it will appear in due time.



EFFECT OF ONE BEE-STING ON THE LIP.

We have other interesting subjects which we will present from time to time, of actual scenes taken in the yard while the work was in progress. These particular pic-

tures are to be used in the ABC of Bee Culture, the two first under the head of "Stings," and the last under the head of "Swarms."

"A COLONY THAT NEVER THINKS OF SWARMING;" A CONFESSION.

SOME little time ago Dr. Miller and I had a little tilt over the first part of this subject. I was taking the ground that the new shaken-swarm plan was going to do away with many of our difficulties. While Dr. Miller admitted that shaking was effective, and could be made very useful, yet he still expressed a hope that we might some day breed a race of bees that would go on storing honey without swarming, the same as poultry-men have bred several varieties of hens that are non-sitters. I argued that the gain would be only trifling, because a colony could be shaken at the convenience

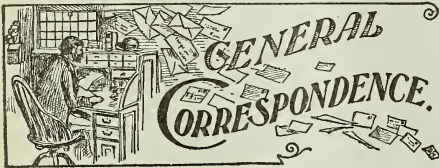
of the apiarist, and thus all desire to swarm be taken away from them in advance. Well, now, for the confession. The events of the last few days have completely converted me to Dr. Miller's view of the matter. While I still have as much faith in the shaken method as I ever had, and while not one of the swarms we shook this season has essayed to go out again, yet a colony that will *stay* on its old brood-combs in its old brood-nest, and allow all its brood to hatch, is to be preferred because of the saving in the labor.

At the Harrington yard we shook perhaps a third of our colonies—perhaps the strongest ones. The remainder we left just as they were. When the honey-flow came on it was apparent that the shaking had set them back a little. They had, temporarily, at least, been deprived of their brood, and it takes a day or so right in the hon-



BEE-KEEPING FOR WOMEN.

ey-flow for the bees to recover themselves again to begin work. Then the brood, after it hatches, requires to be shaken again at the old entrance; and this causes another interruption, and possibly the loss of a queen. If the brood is not shaken back with the swarm after it hatches, then the shaken swarm will, before the season is entirely over, begin to feel the need of the young blood that would recuperate their fast-waning strength when it is most (if ever) needed in the whole season. But Dr. Miller's ideal colony that *never thinks* of swarming will at least keep right on working—keep all of its brood, save all the fuss and bother of shaking frames with starters in, the building of drone comb, and with all its reserve strength will go on magnificently producing honey. But the never-think swarm I think is still largely a will-o'-the-wisp, and so we shall have to content ourselves with shaking for the time being, and occasionally shinning up trees to bring back runaway swarms.



CUBA'S FIRST AND SECOND APIARIES.

A Few Mistakes Corrected; that Mammoth Steam-driven Extractor.

BY H. C. OSBURN.

I beg permission to correct, through GLEANINGS, a few mistakes I notice (Mar. 1, 1903), in reference to the apiary my father established at Punta Brava in the late fall of 1883. As your guide was no other than that able bee-man, Mr. W. W. Somerford, it seems strange to me that I should have to correct his mistakes. A. J. King came to Cuba in the spring of 1881 with 100 nuclei of bees for J. N. P. Casanova & Brothers. At the same time, he advertised for a man who understood handling bees to accompany him to Cuba. At this time my father was working for some bee-man in New York, and, being of a roaming disposition, the novelty of the thing induced him to answer the advertisement in person, at their office in New York; and so it came to pass that, after all the purchases were made for a complete apiary, they set sail for Cuba. In the spring of 1881, arriving here with but small loss, the bees were at once shipped by rail to Casanova's large farm at San Miguel de Jaruco. Here the first modern apiary in Cuba was established, and it grew so fast, and prospered so well, that from this small beginning an apiary of over 600 hives developed in two

years, and a large crop of honey was taken the second season; but I have not the figures at hand, much as I should like to reproduce them.

The mosquitos, fleas, and isolation, coupled with the extreme heat here in the summer, soon had a bad effect on Mr. King's temper; and whenever he would wish to walk it off beneath Cuba's blue skies, this mud, composed of 99 parts of "stickum," complicated the bill, so it was not many months before he decided "the game was not worth the tallow," and, turning every thing over to A. W. Osburn, took his departure for the States, never to return, to my knowledge. After making two good crops, and equipping the apiary with modern necessities throughout, it was indeed a model apiary, nestling at the foot of tall mountains, vine-entwined and flower-laden. Kept as clean as a kitchen floor, it received its full share of admiration from many wealthy visitors who were often astonished at the magnitude to which the little bees can develop an industry. There is always an ebb time in our lives, no matter how perfectly we write our life's history. So the climax came one early morn, and for reasons not necessary to mention in this place my father returned to Havana. A few months after his departure, I believe it was, "the man who talks" blew over from Texas and eventually dropped anchor at this pioneer apiary. For a few months from now on the history of this place is varied by many different bee-men, including in its last days of declining glory the able bee-man, Mr. Fred Somerford. There was some 700 feet of running shed covered by the palm thatch. In the same spot Mr. J. H. Ellis now has a booming apiary of 300 swarms (in the last war every vestige of this once beautiful and modern apiary was consumed by fire, as was also the beautiful summer home of the proprietors. So ends the history of this forerunner of an industry that is fast assuming vast proportions.

APIARY NO. 2.

There is an old adage that tells us to "look before we leap." Have you ever thought how true this is? If more of us would heed the teaching of those four simple words, how much better it would be for us! On arriving at Havana the bleeding wound was soon healed by a flattering offer to establish another grand bee-ranch, this time for a nobleman with a full purse, and the string always ready to pull. No expense was to be shared or spared in making this the ideal bee paradise of the island. So with this object in view Mr. Maurice M. Dussaq and Mr. A. W. Osburn began looking for a suitable location, with the result that, after much travel, the farm "Santa Cruz" was selected. At that time, 1883, pineapples were not grown to any extent on the island. Santa Cruz lies about half way between Arara Aranas and Punta Brava, on the government stone road from Havana to Guanajay. At this time this was a fine location for bees, being near

Havana, and on a good road, all surrounding country being untilled pasture lands. The start was made in the late fall of 1883, and at once some native bees were purchased. From a start of 43 native colonies, we developed in three years the finest apiary in the world, so far as we were able to ascertain. About 650 running feet of tile shed, 12 feet wide, was built to cover them, besides an extracting-house, 30×20 feet. No expense was spared, and every time any thing was asked for, double the amount was usually sent, and \$3000, Spanish gold, was spent before a pound of honey was sold. The crops were considered big at that time, running from 45,000 lbs. to 60,000.

The climax in the history of this fine ranch was not reached until the fall of 1894 and spring of 1895, when it earned for itself the name of being the largest and finest apiary in Cuba (on the modern scale). This same season's crop broke all prevailing records up to that time, when two men and a boy took 73,000 lbs. from 6000 hives in five months, with the assistance of the steam-extractor. Our crop the previous winter had been good; and Mr. Dussag, becoming tired of the business, offered it to my father on very easy terms, and he accepted the offer.

We now arrive at the birth of the steam-extractor. Having become tired of the slow process and hard work necessary to take 1000 lbs of honey a day by a hand machine, notwithstanding this was a Jumbo six-frame non-reversible machine, built (if I remember correctly) to order by A. I. Root, and shown in GLEANINGS for 1893, he began studying on the problem of power and larger machines, at the same time looking up a man who could build it after his ideas; and after a great deal of correspondence the machine was finally shipped. It cost about \$300, and the dimensions are as follows: Circumference, 36 feet.; depth, 4 ft.; revolutions per minute, 250; comb capacity, 21. The reel is independent of the can. There is no center in the bottom of the can. The three-inch center-shaft stands in a heavy seat bolted fast to the floor, the top also being secured by bolting the seat to 6×6 pieces. There are 22 or 44 3-ft. arms, one inch square, steel, secured by heavy clamps bolted together. This machine was driven at first by a three-horse-power boiler; but as it took 100 lbs. of steam to start it, after the first season's use this boiler was sold, and another, an eight-horse-power boiler and engine, installed in its place. This extractor weighs 1300 lbs. We could never get enough honey to test it thoroughly; but suffice it to say, the best we ever did with it was 2500 lbs. in four hours, one man to run the engine, one to tend the machine, and a boy of 17 to uncapp the combs; but it will be some time before even this record is broken.

This acme of perfection and skill as a whole is to-day an eye-sore to those of us who remember it before the war. In the summer of 1895 it was again sold back to

the original owners, and this fact alone shielded it from the Spanish torch, while the insurgent torch gave it a free pass, as they knew the owners to be American. A notice, however, guarded the gate—"French property! no trespassing, please."

This apiary is the one Mr. A. I. Root has reference to in his March 1st issue, this year. Great as has been the growth of bee-keeping in Cuba in the last 23 years, it is as yet in its infancy; and vast trackless wildernesses of vine and shrub lie to-day beneath the shadow of stately mountains, secluded valleys, and rippling streams, each and every one of a thousand different varieties, yielding its tons of nectar yearly, only to be evaporated by the hot sun or fed upon by myriads of butterflies and ants. Thousands upon thousands of acres of trackless mountain-sides, upon whose fertile soil the sun has never shone, may be found here; the depredation of man has never marred nature's handiwork. It lies to-day unclaimed. Tropical flora through which the shy deer feeds unmolested, and the shrill note of the quail echoes, and innumerable specimens of the feathery tribes proclaim the extent of these wastes. The hum of the bee is often heard, however, as it gathers from each flower its load of sweetness, and, hastening off to some far-away cliff, it deposits it in some dark hole in the rocks, secure from robbers of all kinds. To the experienced eye this panorama reveals the great possibilities of Cuba as a bee-keeper's paradise; also the abundant provisions of nature for the maintenance of more if he be wise enough to reap the harvest she has laid before him.

Such is the history of this industry, and the possibilities of this enterprise founded on a modern scale 23 years ago by the writer's father.

[I remember well that big extractor, for it was built in our own machine-shop. The reel was a mammoth affair. But my own impression is that, with a modern eight-frame reversible extractor, driven by power, one could do as much work with less power, or at least keep ahead of the uncapper. With a hand machine (an eight-frame reversible) I myself kept up with one man uncapping, in California, for two or three hours; and if power had been attached I could have done the work much easier. As it was, I worked like a horse.—ED.]

SHALLOW HIVES.

Their Advantages Compared with Deeper Ones ; an Interesting Discussion of the Whole Matter.

BY W. K. MORRISON.

The lamented Rambler was a firm believer in a shallow hive, somewhat after the Heddon pattern; and only a short while ago he mentioned his preference for a brood-chamber about 7 inches in depth. He was not the only one who believed in shallow

hives; and perhaps if the editor were to poll a vote he would find a very large percentage of the bee-keeping fraternity in favor of shallow chambers, more especially those who are interested in the production of comb honey. Dr. Tinker has long advocated his shallow Nonpareil hive; and one of the oldest hives extant is the Bingham, which is, in truth, an extremely shallow one; and in England the standard frame is shallow compared with the Langstroth or Quinby. The controversy over the large or small hives will probably never end. I for one don't wish to add fuel to the smoldering fires of this disagreement; but having made many experiments along this line I wish to suggest how this dispute can be avoided, particularly by those who wish to follow the golden mean.

In my experiments I tried all depths between 4 and 13½ inches, and all spacings between 1⅝ to 1⅞; and the hives were of every conceivable shape—some of no shape. It is not necessary for me to go into detail regarding these experiments. One of the main points in any experiment is the possibility of carrying its teachings into practical execution; and with this end in view I finally decided on a six-frame as the best, for what I consider very weighty reasons.

1. The probability of making the brood-chamber, the extracting-super, and the comb-honey super all of one size, and perfectly interchangeable. Men of large experience will agree with me this is a vital point, and well worth sacrificing something to secure.

2. The desirability of securing a chamber which will *compel* the bees to build comb honey whenever nectar is coming in, without resorting to fussy methods which consume time. The shallow chamber accomplishes this as nothing else will. At the same time, the super should be large enough to accommodate, say, 48 or 50 1-lb. sections so as to avoid the expense and labor incident to the use of two supers.

3. The value of a frame that can be readily handled without fear of comb-breaking. For example, in shaking bees off the comb it is much easier to jar them off a shallow comb than a deeper one; and in the case of shallow-framed chambers it is possible to handle hives rather than frames; and where one man has 300 or 400 hives to manage, this is an extremely important point. Some of our modern hives are regular back-breakers to an extensive bee-keeper, even if they may not seem so to the small apiarist.

First, I will tell why 6⅝ inches was chosen as a good depth.

I arrived, at the end of my experiments, to the conclusion that a hive 20 inches long, 20 inches wide, and 20 high, would satisfy all requirements; and, curiously enough, the lamented Langstroth, in his later years, advocated a hive just the same size. His hive was 20 inches long, 20 high, and 17 wide; but in his later years he advocated a hive containing 12 to 14 frames, and I believe he was right in this.

To divide such a hive in two is all right for extracted honey, but hardly so for comb; besides, the chambers are rather heavy when full of honey. For this reason many have resorted to the eight-frame hive.

Dadant, I believe, was right in advocating large brood-chambers; but most beekeepers dislike the heavy hives and unwieldy frames. I often wonder why so clever a man did not see that two shallow chambers would answer just as well, and avoid the objections. However, Mr. Dadant and I agree as regards the size of a complete hive. The editor of GLEANINGS also seems to agree with me, for some time ago he was trying to solve the question by using two regular eight-frame hives as a brood-chamber. The objection to this arrangement is found in the height; in fact, the hive is ill proportioned. It is vastly easier to get the queen to use two shallow chambers. Also, in the making of shaken swarms it is much easier to shake the bees from a shallow frame. Fancy shaking bees from a Quinby frame! and I for one don't like brushing.

The chief objection to shallow chambers has been that one chamber is too small for a lively colony, and two chambers are necessary for only a short period each season. The case simmers itself down to this: Any one chamber must be as large in *capacity* as a regular eight-frame chamber. One of the results of my experiments was, I found the best distance to space the frames is 1¼ inches from center to center. Even 1⅝ is sufficient; but 1¼ is just right for worker comb, while 1⅝ is the correct spacing for drone comb; and that is the reason why bees in a natural state adopt the wider spacing.

Those who do not wish to adopt a wider hive than the ten-frame can, therefore, get eleven frames spaced 1¼; and it is easy to secure twelve frames if the sides are reduced to ½-inch stuff, and the super widened to 16¼ inches, which does not entail much of a change. A deep super can use a taller section—in this instance, 6 inches in height; and this is how 48 to 50 sections can be accommodated—no small gain, surely. In the capacity for brood-rearing, or for honey-getting, my shallow chamber equals an eight-frame chamber, at the very least.

The way to use such a hive is easy. During the winter or off season one chamber is used; but when the swarming season arrives, the second chamber with drawn combs is added *from below*. This is a damper to the swarming fever. Later on, when the upper half has become pretty well filled with honey, it is removed and then a super of sections is put on. Here we have a shaken swarm without the shaking—at least, the only shaking is in shaking the bees out of the upper chamber.

Of course, there are other ways of using this hive, which will readily occur to the experienced; but this particular method is suited to hot climates. Where extracted

honey only is wanted in hot countries, the chambers should be always added *from below*, to prevent congestion of the brood-chamber. For out-apiaries such a hive is very suitable, since shaken swarms can be made with the greatest ease without risk or too much trouble. The whole theory of management is simply this—to work up the colony to a high pitch in two chambers; then when the honey comes on in full blast, remove one chamber and put the section-super in place. *This stops swarming* very effectually; and, as a consequence, very plump well-filled sections.

For a poor locality, only two chambers are required; and I will throw out the hint that dequeening, and contraction of the brood-chamber, are quite unnecessary with this hive. The *bete noire* of a comb-honey apiarist is the habit the bees have of storing honey in the brood-chamber. The shallow hive holds this in check. Where only two chambers are used, there will be a fair amount of swarming; but where three are used, the apiarist holds the whip hand.

There are several points to be borne in mind. One is this: That one chamber must be large enough to accommodate a fair-sized colony—say the same capacity as the eight or ten frame, which requires from 12 to 14 shallow frames spaced $1\frac{1}{4}$ inches apart; otherwise there is too much work.

There are also other considerations. For example, it is easy enough to make such a hive of half-inch stuff, which effects quite a saving, both in weight and first cost. I have also gone a step further, with the idea of having all parts alike, by doing away with all slats, holders, and separators, the *sole* difference between the comb-honey compartment and the extracted being that the one contains frames while the other contains sections.

I do not know that every one will grasp the significance of this; but a glance at the latest A. I. Root catalog will show the multiplicity of arrangements for accommodating bees.

Another thing is the reduction in cost and weight. One of my supers costs *less* than the ordinary one, and yet holds twice as much. The work also is much reduced. The tendency of the present time is to conduct bee-keeping on a much larger scale than formerly, and to reduce the price of honey to the consumer. I am well aware that good results can be secured by using our present hives; but we can progress; and in the production of comb honey, as it is done at present, there is too much work and expense. The fussing with contraction, dequeening, baits, separators, cleaning slats, etc., consumes too much of the profit; and rather than do it the Texas people have gone back to bulk honey.

There is also to be considered the enhanced price of hive material, with no corresponding increase in the price of comb honey. I am not "talking through my hat" when I say these savings can be effected, having proved the pudding by eat-

ing. Neither is there any thing very revolutionary about it. It is simply improving existing arrangements.

I have gone over this ground to some extent before, but not so fully, and it is matter that will bear repetition. One critic said that the queen lurked between the bottom-bar of the shallow frame and the comb. Such a criticism is worthless, for the reason that all combs, whether shallow or deep, should be securely attached to the bottom-bar. For one thing, space is too precious in a brood-chamber to waste it in that way. Another is the loss of strength; and in the case of a shallow frame, wiring is unnecessary *if the comb is attached to the bottom-bar*.

Another important point, and one not often appreciated, is this: With a comb built securely to the bottom-bar, the bees can be shaken off from it with one vigorous shake. But just try it with a comb not so fastened, and it will take five or six shakes to do as well. In finding a queen the same time is lost looking for her. There is no place for her to hide on a well-built comb. The man who does not fasten his combs to the bottom-bar also requires one more frame in his brood-chambers.

Another criticism made was that starters being used the bees would lodge pollen in the sections, etc. But why use starters at all? Starters in brood-frames are obnoxious to me, and personally I don't want an inch of drone comb in any brood-chamber; and the most up-to-date and most successful bee-masters in the world do the same, I think.

One of the most important *secrets* in the production of comb honey is to have no drone comb in the brood-chamber, so that, when sections are put out, the bees rush up intending to construct drone comb. That is why some folks succeed so well and others don't. They use to the utmost valuable inventions of this sort. In a particularly difficult locality I should use worker foundation in the brood-chamber, and drone foundation in the comb-honey super. And even in very good localities it is a good plan to put drone foundation in all sections next to the sides of the super. This reduces the number of unfinished sections; it also reduces the business of moving sections from the outside to the center, and *vice versa*. In other words, it reduces the number of manipulations. It is by such plans as these the apiarist is able to care for a very large apiary.

Screws on the sides for compression are also very good things, reducing work considerably, both in the manipulation of frames and in the cleaning of sections. They add considerably to the cost of a hive, more particularly if they are made of iron. If screws are used, springs are also requisite; but they are a great comfort where any kind of closed or half-closed frames are in use.

Própolis has no terrors for a man who uses pressure to bring the frame close to-

gether. With such a frame as the Hoffman, screws secure accurate spacing, even in the presence of large amounts of propolis; but, what is more important, the frames can be so constructed as to make the hive practically a double-walled affair, and this is a considerable gain.

Some years ago Mr. A. I. Root and I freely discussed this matter of reducing the cost of hives by simplifying the construction of them, and we both agreed that it could be done. In fact, some twenty years ago he essayed to make some hives on this plan, and he freely illustrated his idea in GLEANINGS. So you see the idea is nothing new.

[Some eighteen or nineteen years ago this question was discussed *pro* and *con* in the bee-journals, and a good many of the arguments that were then advanced are now put forward by you.

There is no denying it, there are some very decided advantages in the use of shallow brood-chambers; and father Langstroth, after his visit to Mr. Heddon (the chief advocate of this kind of hive at the time), came back very enthusiastic, prepared to admit that the principle of a divisible brood-chamber was one that would receive more favor in the future than it was receiving at that time. If we could get at the facts, we should probably be surprised at the number who are to-day using divisible hives in some form or other. As it is, it is only occasionally that one will mention the fact that he is using it.

You do not give details of the kind of frame you would use, although you imply, when you refer to compression by means of thumbscrews, that you would use closed-end frames.

You favor a hive $6\frac{2}{3}$ inches deep. If the depth of the brood-chamber is such as will take the regular standard sections on the market, as well as brood frames, then it could not be deeper than $5\frac{3}{4}$. A section 5 inches deep is about as deep as we can go without making it large and ill proportioned. Experience shows that it is not practical to make a box that holds more than a pound of honey; and a 2-lb. section is out of the question. In the matter of the size that the section may be to the weight, 4×5 is about as large as we dare go. A 5×6 section, for example, if holding a pound, would be too thin: if it held over a pound it would be too heavy.

You originally favored a brood-chamber that would take a section 5 inches deep. You now recommend a $6\frac{2}{3}$ -inch; and while that would not be objectionable for a brood-chamber, it would be too deep for a super. Perhaps you have abandoned the idea of having the super and brood-chamber one and the same depth.

Mr. Danzenbaker, in adopting his shallow hive, made it $7\frac{1}{2}$ inches deep, with a super $5\frac{3}{4}$, as he concluded it was not practicable to make the super also answer for a brood-chamber. He tried that once, and

abandoned it. He also tried making hives of $\frac{1}{2}$ and $\frac{3}{8}$ lumber, and abandoned that also. Considering how lumber shrinks and checks, I do not believe it is practicable to make a hive of much thinner lumber than $\frac{1}{2}$. A half-inch thickness is out of the question, for one has to pay a great deal more proportionally for this thickness than if he takes a standard thickness of boards. One-inch lumber will make two $\frac{3}{8}$ boards planed on both sides; but you can not make a half-inch planed board out of an inch board without planing down and wasting a great deal, or without slabbing off a board too thin for other uses.—Ed.]

ANOTHER BALLED QUEEN THAT WAS STUNG IN HER BODY.

BY MARTIN L. NEWMAN.

I have read in GLEANINGS a number of articles on the question as to whether or not bees sting a queen when they ball her. To-day while I was hunting for a queen I had one balled. The result was a dead queen (or nearly so). I inclose her in tin and forward her to you for inspection. I think that you will find the sting in her throat. She is a young queen, and had filled only three or four inches square with eggs on each side of one frame. I removed the old hive from the stand, placed it on a box, having already prepared for the job by placing an empty hive with entrance-guard near at hand. I began by removing the cover, then the follower, then a frame, and shaking the bees in front of the hive with guard on. I had so removed all the frames, and given the hive-body a shake also, but did not see the queen. As I had seen the eggs I knew she was present somewhere, so I turned to get the bottom-board. When I discovered the ball I reached for the smoker, gave them a few whiffs, but they were determined on mischief. I never saw bees apparently so mad. Each one seemed bent on murder. When I did succeed in rescuing her she was almost dead, and I saw what I took to be the sting of a bee in her throat, so I thought she would be a good subject for you to examine. I took her to the house immediately, and wrapped her up (though not entirely lifeless). She deposited seven eggs in my hand and three on the desk before I folded her up.

Woodside, Cal.

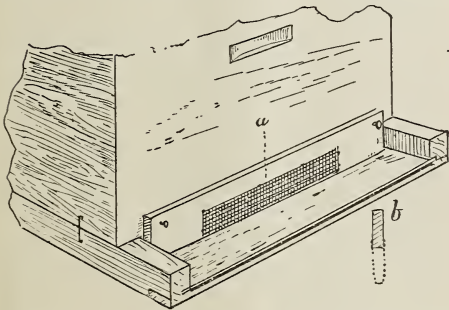
[This is another of the several reports we have had that a balled queen is often stung to death, notwithstanding our good Dr. Miller says that such queens are not stung in the ball. As our correspondent says, the queen sent for my inspection has the sting inserted clear up to the poison-bag, on the under side of the thorax, near the head. She appears to have "got it in the neck."—Ed.]

PREPARING BEES FOR MOVING.

Entrance-Screens.

BY WILMON NEWELL.

Mr. Root:—I notice with interest your suggestions on page 430 for rapidly and conveniently preparing bees for moving. It seems to me that one thing more should be added to that outfit. Instead of tacking wire screen directly over the entrances, we have used for some time a device made as follows: A piece of 1-inch pine is cut about 4 inches wide, and long enough to fit snugly between the projecting cleats of the bottom-board. If the bottom-board is of the old style, without projecting cleats, then the 1-inch piece is cut exactly as long as the hive is wide. In this piece a notch is now cut, about 1½ inches deep by 12 in length, and over it is tacked a piece of wire cloth in such a shape as to fold over the open side of the notch. This device is used for closing the hives, by merely inserting it and driving a couple of 8d nails through it into the hive-body. Its appearance is shown in the rough sketch enclosed. A



cross-section of the device is shown in lower right-hand corner — cross-section taken at the point marked *a*. When ready to release the bees, a screwdriver (the same one that removes your crate-staples) is thrust under the device, given a turn and a pry, and the thing is off. It can be used repeatedly, saves many minutes of time, and there are no tacks to pull out of the hive, nor sharp ends of wire to stick your fingers.

I am much interested in your comments on smokers in the same issue (May 15). I am strictly in favor of a large hot-blast smoker. If properly managed, the smoke can be kept cool, and sufficient fuel is contained in the large smoker to last for some time.

We use as fuel very dry rotten wood; and when the smoker is filled we place over the rotten wood a small piece of burlap wrung out of water. This wet burlap cools the smoke, insures a heavy volume, prevents the wood from blazing, and prevents the escape of sparks when it is necessary to use the smoker rapidly and continuously.

It is also convenient at times to know how to light a smoker in a strong wind. To do this we lay a handful of excelsior, or a

piece of thin paper (such as comes with foundation), on the ground, and cover it with a piece of burlap about six inches square. A match is now lighted, and thrust into the paper or excelsior, which ignites at once; and the harder the wind, the harder it burns, igniting the burlap. The burning burlap is now picked up on a stick or screwdriver, and dropped into the smoker, and the wood or other fuel placed on top of it.

I can hardly agree with your plan of holding the smoker with thumb next to the barrel. It works first rate when there is but little wind; but when our Texas breezes get to moving, you have to hold the smoker with *both* hands and push on it in the bargain. At times the wind blows hard enough to blow the bees from the combs when the latter are taken from the hive, and then it is necessary to get the smoke down *between* the frames, as well as over the tops of them. Nor will it do to wait for the wind to go down, for it sometimes blows a week at a stretch, without intermission. I have found no way to handle the smoker satisfactorily except with fingers next to the barrel.

WILMON NEWELL.

College Station, Texas, June 1.

[We have for years used entrance-screens exactly as you describe; but our artist failed to show them in the illustrations for the simple reason that we did not explain to him their general form and structure.

Excelsior fuel does very well, but a combination of dry rotten wood and excelsior is more satisfactory. Dry hard wood, sound maple, stovewood cut into short lengths, is very good; but the smoke is less pungent than that from rotten wood or some material more spongy.

Every one has his own way of handling smokers. I grant that for many purposes one finds it necessary to use the fingers next to the fire-cup. He has a little more powerful leverage over the bellows when handling the smoker in that way.—ED.]

STARTERS OR FULL SHEETS.

A Quicker Method of Clipping; Loss of Bees from Poisoning.

BY GEORGE W. STRANGWAY.

When I made the trial with full sheets, as mentioned on page 387, the wires were run perpendicularly in the frames. I think Dr. Miller is somewhat extreme in what he says on page 424: "But hundreds of us have made many trials on a large scale, without any failure." What has the doctor to say with regard to Mr. Doolittle's chat, page 426? But, really, wouldn't that worry if you did accordingly?

Yes, after all I believe Dr. M. and E. R. are as near right as need be with regard to full sheets. I believe a person starting with the full intention of making a pro-

fession of bee-keeping should use the wired frames and full sheets. But for the haphazard bee-keeper, the less he spends in the start, the less he will lose in the end; for there are only certain ones that seem to have the tact for bee-keeping. It is just the same with any other calling.

I wish to say a few words with regard to clipping queens' wings. One day in the apple-blossom season of the present year I started with the object of clipping the wings of anywhere under 50 queens. I commenced by catching the queen up by the wings with one hand, and then passing her to the other, or the left; then with the right hand free I caught up the scissors and off would go her wing. But between having to manage the frame with the bees adhering, and the scissors and the queen, I found it difficult, for I didn't always get things to come just right, and, consequently, had the experience of seeing one of the queens twist her leg off; but she is still doing good service.

Now all of a sudden the thought struck me to put my finger or thumb of the left hand on her feet as she was moving slowly around; so when I would find the frame with her on I would place one end on the remaining ones that were in the hive, lean the other end against my body, place my thumb or finger on her feet, which are spread out as she walks about, and with the right hand free she is clipped instantly. I found this plan complete, and went through the remaining number in short order without hurting any.

I have lost a great number of bees this season by poisoning. I believe they were reduced by fully a third. I attribute it to poisoning gooseberries, currant-bushes, and small plum-trees, as they seemed to disappear just at that time. Some colonies were terribly reduced—in fact, left useless for the season. I might have passed this over but for your article in the June 15th issue.

Elora, Ont., Can., June 22.

[Your method of clipping will, no doubt, work satisfactorily for the veteran who is not at all nervous; but it strikes me I should prefer to take a little more time, and work in a way I am sure would not maim the queen or cause a flurry among the bees by holding the queen down and causing her to "squeal," perhaps, while being so held. The method I described in our issue for May 15, page 429, would require but a little more time.

When the roll is called of the losses from poisoning during spraying time, we shall find that thousands and thousands of bees—yes, millions of them—have been destroyed, all because of the ignorance or indifference, or both, of the fruit-grower. For the purpose of gathering statistics and facts, I wish our subscribers who have lost bees during spraying time would give us a brief statement of the facts so that we can publish them in pamphlet form, and thus

prove to the fruit-growers that spraying during the *wrong* time does actually kill our property—the bees. The majority of neighbors would be inclined to be considerate of the rights of their neighbor bee-keepers if they can only have incontrovertible facts. Now, then, let us have the "evidence," even if the statements come in by the hundreds. I have already collected a few, and these will be placed with the rest, ready for distribution next season, or this season as soon as material is gathered.—Ed.]

QUEEN-MATING ATTEMPTED IN A SMALL CAGE.

Some Experiments That Just Failed of Success.

BY FRED BECHLY.

On page 94 is an article on fertilizing queens in confinement, and at the close of the article you make the remark that you would turn your brother Huber loose in the apiary to make some experiments next season. Allow me to give my experience I have had in that direction, and you may thereby overcome some of the failures I have had.

I think it was in 1887 that Mr. McLean made those experiments, and the following season I made some similar ones, but on a smaller scale. I built a tent four feet square and four feet high. It was made in six pieces—simply six frames, five covered with muslin, and the top covered with wire netting. This tent was fastened together with hooks when wanted, and taken down in the evening when the drones quit flying.

Three sides, outside the tent, were occupied by nuclei, placed so that the tent would just fit snug against them. The nuclei were made of ten-frame L. hives, with two frames to each, one with brood and one with honey, and a division-board next to the combs. The rest of the hive was left empty, the entrance closed with queen-excluder. The bees were put on the side next to the tent. A 1¼-inch auger-hole was made in the hive near the bottom, and closed with a cork until wanted; the tent was fastened against those hives with a button, and the cork removed when wanted. I gave those bees plenty of drones from other hives not reared in the nuclei.

In the afternoon I would go and watch them. The drones and some workers would come out, and fly with all their force against the wire netting, and fall down stunned on the bottom of the tent, and fly up and repeat the same thing over again until I spread a cloth over the top, when they would circle around the tent quite freely. I did not see any hesitation about the queens coming out. I saw one queen come out four times in one afternoon. The first time she came out she took the location, the same as they do outside. I saw the queen and the drone come together frequently, but no mating took place.

About three days later one of the queens was laying, and I felt like shouting. On the

fourth day, late in the afternoon, I found one of the queens outside, trying to get through the excluder back into the hive, so I had to come to the conclusion that the laying queen also had forced her way through the excluder and become fertilized in the usual way. But I believe if Mr. McLean had used muslin instead of netting he might have been more successful in a larger tent; and with drones reared in a hive, and allowed to fly only in a tent, he might have done still better. In making my experiments I would use only the largest queens, so as to be sure they could not go through the excluder.

Muslin will give all the light needed; and if the entrance of the nuclei is shaded a little I think there would be no trouble in getting the queens to fly in a tent. I don't take much stock in fertilizing queens in bottles.

FRED BECHLY.

Searsboro, Ia.

[There are possibilities in using a small cage; and, as I have before stated, as soon as my brother is at liberty the matter will be given a thorough test.

Like yourself, I do not take very much stock in the bottle method of fertilizing queens.—Ed.]

WIRING FRAMES.

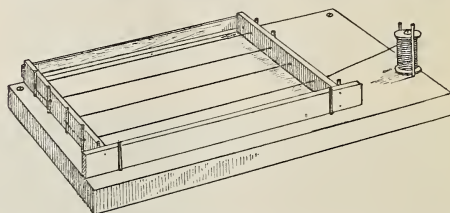
BY FR. GREINER.

It almost seems like an imposition upon the GLEANINGS family to dish up the subject of wiring frames again. But when I see so much stress laid on tension in the form of staples and zig-zag nails, and this approved by the editor in his footnote, I am fully convinced that the machines our friends have presented in GLEANINGS are faulty; that they do not work right for rapid manipulations and for the comfort of the operator.

There is no need of any tension, but it is an actual detriment, a hindrance in drawing the wire through the frame. I imagine that the object of this said tension is for the purpose of keeping the wire from uncoiling, to keep coils from slipping off the spool and getting kinked and tangled up, etc., which it will do if the end of the wire has its liberty, and no provisions are made to prevent it. But we need no tension for that. The simplest way to obviate all this trouble is to arrange the spool as shown in the illustration. A screw, $\frac{3}{8}$ inch longer than the spool, holds the latter in its place, and allows it to revolve freely *without any tension* save the little that is caused by the natural friction of the spool whirling on the board and rubbing against the screw. A couple of headless 10d wire nails are driven in the board, one on each side, close to the spool, but not to hug it. These prevent all loosening or uncoiling of the wire, which can be cut off two inches from the spool, and the end will remain right there ready to be drawn out again.

The frame, if threaded with four wires, is held by eleven pins. These are also headless 10d wire nails, about two inches long, and the cut end somewhat rounded off. They are driven into the board to fit exactly the outside of the frame; and when the latter is placed in position it is held practically immovable, better than a vise could do, for all the pulling of the wire, one way or the other, will not draw it out of shape.

But some of the pins (six in this case) have another mission, which I consider by far the most essential point (my invention). It will be noticed that each loop has on the inside, close to each hole in the end-bar, one of these pins. This prevents the wire from cutting into the wood when threading



the frame, and allows it to be drawn back and forth with very little effort. The resistance or friction of the wire in passing over the pins is so slight that, when the frame is all threaded, the wire can be drawn out again by simply turning the spool backward with the hand.

The wiring-board is operated in horizontal position, fastened to the bench by a couple of small screws or nails in the upper corners.

The tightening of the wire is an operation by itself; but as I have already taken up too much space I will not discuss it here. Until this part of the work (the tightening) is done, the terminus is drawn over the end-bar, as shown at the right upper corner, to keep it from slipping back. The other end is fastened in the same way, after it is cut off.

[I did not know that I had approved the various methods for wiring any more than simply to place them before our readers, and let them stand on their own merits. Some methods were shown that we do not use, and which we do not consider practicable.

You have left out the missing link in that you do not state how much you loosen or tighten the wires, although we infer that, after lifting the frame off the board, you take out the slack occasioned by the nails and fasten the wire. Our own experience has shown that, in the case of horizontal wiring the strands must not be drawn too tight. Wire drawn tight enough to sound like a fiddle-string will cause buckling of the foundation. Just how tight to draw the wires is hard to explain on a printed page; but it should be so there will be no looseness, and so that the comb will be held firmly

when built off from foundation. There is apt to be a very slight sag to foundation—not enough, however, to cause an elongation of cells. When the wire is drawn just right it will accommodate the slight sag and leave the resultant comb like a good clean flat board. The plan we use for wiring is essentially the same as that used by Mr. Cogshall as illustrated on page 485.—Ed.]

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THAT BIG CROP OF HONEY.

Working Double-decker Colonies; the Effect of Wide Entrances.

BY GEORGE B. HOWE.

I promised you that I would tell you how I produced that four tons of honey from 70 colonies, spring count. In the first place, I had all young queens. I do not believe in keeping queens after they are two years

Last spring and early summer we had cold rainy weather. I used to go down in the yard and close the entrance according to the strength of the colony, on cold nights. Sometimes it would keep so cold that I would not open them up for two or three days. I have found that those with large entrances, especially on cold nights, did not breed as rapidly. When they are making comb honey in very hot weather they need a good deal of ventilation from the *bottom*. I have tried raising the hive in the heat of the day, and then lowering it toward evening as it begins to get cooler. I use shade-boards, and I never raise the cover to ventilate unless it is a powerful colony, as they can not cap when there is a draft through the hive. If you do raise the cover, always lower it at night. Work with the bees, for they always want their ventilation at the bottom. Give them plenty of section room. As soon as they get one super well



APIARY OF GEO. W. HOWE.

old, for my experience has been that it does not pay. My method is to keep the bees from swarming if I can. I believe in double-deckers. I find that it works the best to add the extra brood-chamber when they need it. When the queen gets her hive full of eggs and brood, and needs more room, I do not wait for them to get the swarming fever, but raise up the hive and put another under it with drawn combs. I find that drawn combs are far ahead of foundation to keep them from swarming. I do not claim that they will not swarm, nor are all queens good enough for double-deckers, so an apiarist would be foolish to try to use a double-decker with a poor queen. With Dr. Miller, I am still looking for a strain of non-swarming bees. To produce comb honey we must have strong colonies, and keep them so without a desire to swarm. Proper ventilation goes a long way toward this.

started I raise it up and give them another. I have found that they work all right in three supers; but when you get up to four or five they cap slowly in the upper supers.

I sent you a photo of my yard last night. In order to get the most of the hives in I was obliged to get so far away that it brought some berry-bushes and grass between the camera and hives. I did not get a very good picture, and will try again some time.

Black River, N. Y.

[The readers who have followed me for a number of years back can not help failing to note that I have been an advocate of double-decker colonies. They are less inclined to swarm; and if the honey-flow is short or moderate, they are the only colonies in the yard that will make much of a showing. As the years go on, I note there

are more and more who see the importance of powerful colonies for the production of honey. They are easier to take care of, because they are less inclined to swarm; and when the honey-flow does come they are ready.—ED.]



AN IDEAL BEE LOCALITY IN AUSTRALIA.

I believe this southwest part of Western Australia would break the world's record for honey, and I should like to see one of your progressive bee-keepers give it a trial. The only trouble would be that they would break the market if they got one or two thousand hives in full swing. At my place here the bees have had abundant nectar for the last two months. I am near the coast, on poor sandy soil, and there are trees and scrub in blossom nearly the whole year, and the winter is so mild that the bees are kept in only by rain, and work practically the whole year. I started keeping a proper record of honey last April (12 months). At that date I had 11 colonies, Italian and hybrid, and increased to 21 at swarming (September and October), besides losing two or three good swarms, and I find the bees have made over two tons of honey in one year. Considering I am a "new chum" at the work, and am situated within 200 yards of an estuary two miles wide, which means only a half-circle for the bees, the record is very good. I feel sure a practical man could have secured fully another ton, as I left the combs to be sealed right to the bottom-bars; and although I had the hives three high, they were crowded in the brood-chamber, and I had a lot of bother with swarming. Counting the 21 hives, it makes an average of 213 lbs. per colony; but is it not the custom to average the spring count? If so, the yield would take beating per colony. Two or three of the colonies made very little, as I lost the swarm, and had after-swarms, and many of the troubles that beginners have.

F. JOSEPH B. CLIFTON.

Upton House, Australia.

A PREPARATION FOR HIVE-COVERS IN DRY CLIMATES.

I should like to call your attention to an improvement I have on a hive-cover. I started with the cover known as the "Brodbeck," made out of "shakes" (California), with $\frac{3}{8}$ -inch strips between the two layers of shakes. So far, so good; but how to get rid of the cracks or joints between the six-inch shakes was a problem. I tried rubber-

paper, tarred paper, building paper, none giving satisfaction. Next I tried canvas with oil paint on top and bottom; but the canvas would not stick on the wood well. I now came across what is called asbestine, a cold-water paint. I put a thick layer of this paint on the wood, and, while it was yet wet, spread over it a thin muslin, patted it down well, and on that another layer of this same paint, closing all pores in the muslin. Now let it dry well; drive tacks around the edges, and then paint it with white-lead oil paint, and the cover is done—the lightest non-warpable cover yet made.

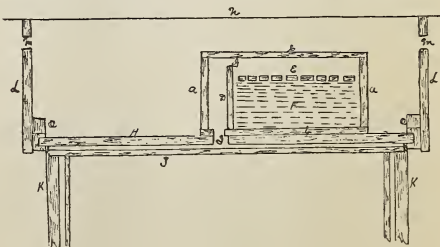
I have had one in use two years. It is as straight now as it was when I made it. I have made since, 150 of this kind, and I will make all my covers that way, as it is cover and shade board at the same time, and just suitable for our dry climate. If you wish I will show you one when you come to Los Angeles in August. M. R. KUEHNE.

Pomona, Cal., July 11.

KOEBLER'S COVER FEEDER.

We have for many years used a feeder in our apiaries in Wisconsin that I think has a few points of superiority over any of the feeders on the market. The feeder is a rectangular box with a division-board near one end, which is a bee-space lower than the end-boards. In the smaller division an inch hole is in the bottom of the feeder, and in the larger division the honey or sugar syrup is put, on which is a floating board perforated with $\frac{1}{8}$ -inch holes. This floating board is small enough so that it will readily sink as the fluid goes down. The feeder is so set on the hive-cover that the hole in the bottom of the feeder is on the hole in the hive-cover.

In the cut, which represents a longitudinal section of a hive with a feeder on, *a* are the end boards of the feeder; *b*, bottom; *c*, cover of feeder; *d*, division-board; *e*, floating board; *g*, bee-space over division-board; *f*, sugar syrup or honey; *h*, hive-cover; *i*, hole in hive-cover; *j*, top-bar of frame; *k*,



end-boards of hive; *l*, gable ends of weather cover; *m*, $1\frac{1}{2}$ -inch ventilator holes; *n*, galvanized-iron roof; *o*, strips of wood on gable ends to lay on cover.

Now for its advantages. First, you can use it when it is too cold to use another; the bees will work in this feeder when they will not go in the entrance feeder; and if you use a feeder where you will have to use a super, as the Dr. Miller feeder, you are

very liable to chill the brood; and even if that will not be the case your bees will have a larger space to heat up, besides the heat that is lost in opening the hive, so they will expend energy which is more valuable for other purposes at that time of the year.

Second, ease and rapidity of feeding. It is as easy to feed with it as with an entrance feeder, and much more easy to wash, while it is much easier to feed with it than when you must use a super to feed. We have the feeders in quart, half-gallon, and gallon sizes, so we can give a colony enough in one feed. The bees will empty a feeder out in about 24 hours. This makes feeding very rapid work.

Third, the feed is voluntary; and if the feeder is well made it is impossible for bees or hive to get soiled with honey.

Fourth, if a weather-cover is used it will not attract robbers as some feeders do.

Now, some of you will say, "But I would not have a hole in the cover." Well, let me say that I would want the holes in the covers, and a good cork in each, even if there were no such a thing as feeders. If you have a two-inch hole with a good cork in it, long enough so that you can take hold with ease, you will find it handy to introduce queens from shipping-cages. All you have to do is to remove the wire so that a part of the candy is free; lay the cage on the hole with the candy side down, and set a bowl over the cage, and you will find the hole very handy. If you want to look into the hive without disturbing the colony, through that hole you can see if a super is full, etc.

In some climates it would be advisable to use a weather-cover over the other cover. Our weather-covers are about four inches over the cover on the sides, and six in the middle. For the cover we use galvanized iron. We formerly used roofing tin; but in the long run galvanized iron is cheaper. In each gable we have a 1½-inch ventilator-hole, as marked in cut. I think that, if such weather-covers were more used, it would do away with the cover trouble that we hear so much about. HUGO KOEHLER.

Marshallville, O., Apr. 16.

COTTONWOOD FOR SECTIONS.

In reply to yours of a recent date, I will say that the wahoo here grow to about 3 ft. in diameter, but usually run from about 12 to 30 inches. They grow in nearly all swamps here, and also on the hills to some extent, from one to as many in some places as six or eight to the acre in woodland. There are a few of them that have a black heart—average about one to six trees; but most of them are all sap, either white or of a pinkish shade. They continue to bloom about June 20, and last for about two weeks, and have always produced some honey except during rainy seasons, when the bees had no opportunity to gather the honey. There may be 400 or 500 trees within a mile of my house. A sample of

bloom is sent. I noticed some pieces of timber that were split out last October and November, but they seem to be white yet after taking off the outside. My opinion was that the wood would remain white if cut any time when sap was down, or any time after leaves shed.

Have you ever tried cottonwood for sections? I should like to know for certain whether timber cut here any time will stain or not in dry weather. W. C. NAFTEE.

Naftee, Ala., May 27, 1903.

[Cottonwood *might* answer, but it would cost here about the same price as basswood, and would not be as tough.—ED.]

CARPET GRASS—THE USE OF A SPRAY-PUMP IN THE APIARY.

Noting the interest that was manifested in the carpet grass of California, we secured, last January, from J. H. Erich, of Nicolaus, Cal., roots of this plant, and set them out here. They grew readily; but now that it is in bloom, we find it is exactly identical with the *Lippia nodiflora*, which occurs along every sandy bank and water-course in Central Texas. Its growth can hardly be designated as luxuriant; and as to the blossoms, the bees will not go near them when nectar is available from any other source. As a honey-producer in this locality it is absolutely worthless. Even in the dry summer of 1902, when nothing else was in bloom, only an occasional bee could be found visiting the lippia-blossoms, and no increase in the amount of honey in the hives could be detected whatever.

A small spray-pump is one of the most convenient appliances we have found for use about the apiary. The one we have used for several months is a small one with a capacity of about three gallons. It is run by compressed air. In the central part of the reservoir is an air-pump which forces air into the water-chamber, and the resulting pressure will keep up a good spray for several minutes. The entire thing is light and compact, and can be readily picked up and carried wherever needed. As a "settler" for swarms it is a dandy, as it will throw either a fine or coarse spray as desired; or by removing the nozzle it will throw a small stream to a height of twenty feet. It is also just the thing to quiet robbers. A strong spray directed on the attacked colony knocks the robbers right and left; and by the time they get dried off again they have lost all notion of robbing. A few repetitions of the treatment at intervals of ten minutes will stop the most obstinate case of robbing, especially if a few drops of carbolic acid be placed in the water.

For filling combs with syrup for feeding, the sprayer is filled with the syrup, the empty comb set up over a pail or pan, and the syrup thrown on to it with a fine spray. The small drops readily enter the cells, allowing the air to escape, and the result is a neatly filled comb with very little muss.

For washing the inside of the extractor, uncapping-can, or the inside of honey-cans, we take off the nozzle so that the sprayer will throw a small strong stream, stick the pipe into the article to be washed, and thus thoroughly rinse every crack and corner. The same little machine can, of course, be used as a fire-extinguisher in emergencies; and the man with a well-equipped honey-house would be unwise not to make some provision for such accidents.

WILMON NEWELL.

College Station, Texas, June 1.

[Some years ago we used a spray-pump for throwing water on swarms while in the air, and it was very effective in driving them from one point to another and in forcing them to cluster. On several occasions when swarms were disposed to "light out" to the woods we succeeded in heading them off by spraying those in front. We found we could drive them almost like a flock of sheep. After wetting them down we increased their avoirdupois and interfered with their flying, with the result that they would very soon cluster on some convenient tree or bush.

We never tried spraying to stop robbing, but I am inclined to think it might be used effectively.—ED.]

PREPARING SHEETS OF WAX FOR THE FOUNDATION-MILL; AN EXCELLENT PLAN.

Formerly, in making foundation I always dreaded the job of dipping the sheets. It was slow, and not satisfactory. The most trouble was to get them of the same thickness, and most of them would cause trouble by turning sidewise in the mill. Now I do differently; and if it takes more "elbow grease" it is a great satisfaction to roll out foundation by the yard without any hitch. I proceed thus: I strain my melted wax in a large pan or box, with plenty of water in the bottom, to the thickness of $\frac{1}{4}$ to $\frac{1}{2}$ inch. When cold I cut it in strips as wide as the foundation desired. These sheets of wax will be of an even thickness; and when I am ready to run them through the mill I set them in the sun or warm water till they are pliable and soft. I keep the rollers cool with plenty of cold water, and have no more trouble. A. LEYVRAZ.

Francis, Fla., June 8.

[Your plan of preparing the sheets will give more even thickness of wax, but the process will be much slower.—ED.]

SWARMS FOR SHALLOW BROOD-CHAMBER.

I notice E. N. Woodward's article, p. 484, and your comment. Let me give you a leaf from my own experience. My father kept bees, using the old-fashioned box gum. With the first L. frame hives he used he had Woodward's experience exactly. His bees wanted no new-fangled contrivance. Those old gums are a thing of the past; but I have been experimenting with the Danzenbaker hive, and, behold,

my bees are going through the same antics. A swarm that will have nothing to do with a Danzenbaker hive will settle down in a L. frame as contentedly as you please. Doesn't it look as though the trouble is simply a different style of hive from what the bees have been accustomed to? I shall continue hiving my best swarms in the Danzenbaker hives, for I am having the best success for honey with them after they get settled. It takes a little more care, that is all.

CHAS. L. SIMMONS.

Strong City, Kan., June 12.

[I still believe that this apparent preference on the part of swarms is only accidental. We have been and are now hiving shaken swarms in deep and shallow frames, and can not see that the bees dislike one more than the other. Another season may afford you an experience directly opposite. In a word, the *shape* of the hive has little or no effect on swarms. So far as the bees are concerned they would as soon have one as the other. But the shape of the hive has every thing to do in the matter of *convenience* of the operator, and a good deal to do with the marketability of the honey produced.—ED.]

IS TARRED PAPER OBJECTIONABLE FOR USE IN A HONEY-ROOM?

I have prepared a small room to keep my honey in, and in order to keep out the ants and bees I have lined it with building-paper. Now I am afraid the smell will give the honey a bad taste. What do you think about it? Is there something to kill the smell of the paper used? If gas tar is used, will the smell hurt the honey?

Cockeysville, Md. GEO. W. CANOLES.

[The slight odor from tarred paper we do not think would in any wise hurt the flavor of comb honey. One of our honey-rooms has been lined with this material for years, and we have never had any trouble whatever.—ED.]

EXCELSIOR SMOKER FUEL, AND HOW TO PREPARE.

Referring to my last letter and to your answer of the 16th, I would say that you would find smokers easier lighted and handled by sending out directions for lighting about as follows:

Common packing excelsior, easily found back of nearly every village store, makes one of the best fuels for smokers. Take a small roll about the size of a walnut, then light it. Then drop it into the smoker, give it a few puffs, then roll up more excelsior into balls about as big as will cram into the smoker, giving it an occasional puff, and this fuel will last for hours, especially in the larger smokers.

The excelsior is quite easily obtained, is splendid, if for no other purpose than simply starting the fire, after which any fuel suitable to the location or convenience of the user can be used.

B. C. HALL.

Elmwood, Ill.

WINTERING IN THE DANZENBAKER SHALLOW HIVE IN NORTHERN MICHIGAN.

I wish A. I. R. would tell us how his two colonies of bees in the Danz. hive wintered in Bingham. I have always considered the Danz. hive too shallow to winter successfully in this latitude, especially on summer stands.

A. A. HARDY.

Boon, Mich.

[Friend H., if you want my personal opinion in regard to the matter, I would say, stick to the L. frame. Since I began bee-keeping, every little while somebody gives his reasons for thinking the L. frame is not the best shape or size, and more or less follow him; but in due course of time the new kind is dropped, and we get back to the standard L. There are not only more bees in the world on this size of frame than all other sizes together, but I am not sure but there are *ten times* as many. Perhaps I am not posted, and up to the times; but I very much doubt whether there is advantage enough in a shallower frame to pay to use another than the L. In answer to your question, one of my colonies wintered perfectly out of doors on its summer stand, with no protection except filling the super (where the honey was stored last year) with forest-leaves. The other one was wintered in the potato-cellar I described on p. 559, June 15. They both wintered well. I have not been able to notice any difference. As the cellar under the barn was pretty cold, perhaps the consumption of honey was about the same as in the hive that remained outdoors.—A. I. R.]

IS IT POISONOUS HONEY? IF SO, WHAT?

I have about 80 colonies that are making us a great deal of fine honey. I began selling it here, and the people commenced to get sick and send for the doctor. They claim the honey was poison; in fact, it made my wife sick, and I began to think the doctor would call at my house. Of course we don't eat any more, and I do not want to sell it to my neighbors, and I am afraid to ship it. I want you, Bro. Root, and the readers of GLEANINGS, to tell me what to do with my honey. You know I hate to lose all of it.

L. L. KNIGHT.

Glennville, Ga.

[From what you write it would seem as if the bees gathered nectar from some poisonous plant. The only ones of this country that are known to produce poisonous honey are the mountain laurel of Virginia and the yellow jessamine of Georgia. I should presume that this latter is growing in your vicinity, and is causing sickness among your friends and patrons such as you describe. The symptoms tally very closely with those that have been previously reported, and I would, therefore, suggest that you ascertain whether there is a yellow bell-shaped flower by the name of yellow jessamine growing in your vicinity. If so, I think you may rest assured that your trouble is from that source. Any of our subscribers who live in

the vicinity who can offer any information are requested to tell us of their experience.—Ed.]

MIXED SWARMS.

While we are on the mixed-swarm theme, for the benefit of the brotherhood I may just as well give the way on which I proceed when I have to face such cases. My queens are not clipped. When two or more swarms come out and get mixed I take as many bodies of hives with frames as there are swarms. These hives, piled up on one bottom-board only, are raised in front; the lower, say 2 in., and the others $\frac{3}{8}$ inch. A sheet covers the whole in the form of an awning. Then the bundle of swarms is dumped at the lower opening. In about an hour, even less, all the colonies are divided, and each one occupies its own hive.

FRANCOIS BENOIT.

Notre Dame-des-Neiges, Canada.

[I should not have supposed that one big swarm made up of several would break up into separate clusters in separate hives as you describe. I can't understand it even now. Perhaps some others of our subscribers have had similar experience, and can explain the reason.—Ed.]

A FIVE-YEAR-OLD QUEEN WHOSE BEES HAVE NEVER SWARMED.

In GLEANINGS for Feb. 15, page 159, W. W. Brockunier states he has a colony whose queen is over three years old, and has not swarmed. I have an Italian queen here whose bees have not cast a swarm for five years — on that point I am certain. She is a dark queen, with one wing clipped, and the inside one on the opposite side. I have been for some years, by careful selection, trying to breed bees that would not swarm, and I think I have reached the goal. The last three years I have been breeding from her, and my average has been about one swarm in 12. Her bees are not the handsomest, but are nicely marked; but I put honey-gathering qualities first. Her hive contains plenty of drones each season, as I allow her a certain amount of drone comb, and her bees are wonders at honey-gathering.

G. D. PARKER.

Crookwell, N. S. W., Apr. 7.

THE LONG DROUTH OF 1791.

I find a report of Mr. J. D. Bixby, of Guilderland Center, N. Y. He says, "This is forty-five days without rain — the *longest rainless* period since 1791." I wish to say that I lived in his section, Oak Hill, Greene Co., N. Y., in 1854, and I believe I make no mistake when I say that no rain fell between May and September that summer. I have heard old men say, who lived in that town, that they did not remember such a drouth as that.

JOHN MCKEON.

Dryden, N. Y., June 10.

[We had such a season here in 1854.—Ed.]

NOT A FAIR CROP FOR CENTRAL CALIFORNIA.

I have just returned from a trip of ten days to San Francisco and Northern California, and I find your letter awaiting me which should have had my attention several days ago. This I regret very much, as I am very anxious that it be known that we shall not have a good crop this season. Up to date we are considerably behind in quantity, and it is now so late that it is impossible for Central California and the Northern part of the State to have even a fair crop. There are sections that are doing well, but as a whole not up to average.

Hanford, Cal., July 13. F. E. BROWN.

[As Mr. Brown is business manager for the Central California Bee-keepers' Association, his statement can be considered reliable as well as authoritative.—Ed.]

A SMALL BEE-KEEPERS' ASSOCIATION ORGANIZED FOR THE PURPOSE OF CONTROLLING THE SPREAD OF FOUL BROOD.

I enclose a clipping from the *Muncy Democrat* giving an account of the organization of the "Muncy Valley Bee-keepers' Association." This Association has been organized for the purpose of trying to stamp out foul brood in this section, as it is very bad in this part of the State. There are no fees to become a member, and the expenses are met by offerings from members. The Association is only a few weeks old, and has some twenty members.

A committee is appointed to examine each member's bees, and the owner of such bees becomes one of the committee. Each member must allow his bees to be examined, and all colonies found foul-broody must be cured or destroyed. This is the only organization of its kind in the State, that I know of.

O. C. FULLER.

Comly, Pa., June 26.

[Your plan is a very good one; but you had better bend your energies toward getting a State foul-brood law that will put the power of the State of Pennsylvania back of you; for the very fellows who ought to join your organization may not, if they have foul brood, and will be the very ones you can not do any thing with unless you can bring the law to bear on them.—Ed.]

WAS IT AN UNUSUAL CASE OF SWARMING?

We have had an experience with bees which is somewhat different from any which the books on this subject relate. On Monday, June 15, one of our colonies swarmed, and we caught it and put it into a new hive; but as the queen did not come out, it seems the swarm left the new hive and went back to the old one. The queen in the hive was clipped. Sunday, the 21st, they swarmed again, and the queen was found in front of the hive. She was placed in the new hive, and the swarm was caught and put into the same hive. This was

about 11 o'clock in the morning, and about 6 at night the swarm was found to have left the hive, although the queen was still there. We are quite certain that the swarm went back to the old hive. The new hive contained brood-frames with foundation, and, so far as the writer knows, every thing was in good shape to receive them.

Can you explain what the trouble was, and how we should handle this matter? As we feared the queen might die if we left her alone in the new hive, we put her back into the old hive. Is it customary to take any of the brood-frames from the old hive and place them in the new one?

EDW. H. SCHWARTZBURG.

Milwaukee, June 22, 1903.

[I do not see any thing very unusual in this case. If there is any set rule about swarms going out and coming back it has many exceptions. There was nothing unusual about their going out and coming back if the queen's wing was clipped; nor was there any thing out of the ordinary in their leaving the new hive, even when they had their old queen with them. They did not like their new quarters for some reason, and decided to swarm out, expecting the queen to follow, which she could not do, of course. We always consider it advisable to put a swarm, in the height of the swarming season, on a frame of unsealed brood. This, probably, will do more than any thing else to hold bees in their new quarters.—Ed.]

UNRIPE HONEY FOR THE MARKET.

A few minutes ago, having a little leisure time, I picked up the issue of July 1st *GLEANINGS* to look over A. I.'s article under "Our Holmes." I had read the same, including the extract from our friend T. B. Terry, with much interest. Having finished it I was turning back the pages when I noticed "Unripe honey for the confectioner and baker, how it may injure the sale of good honey—a vigorous protest by R. A. Burnett." I had glanced at the table of contents when *GLEANINGS* came, or soon after, but did not find it there; and (this being our busy season in fruits and vegetables) I had not again taken it up.

What I now wish to say is, I am more than ever in love (if I may use the term) with A. I. and E. R. Root for their courage and sincerity, as shown by putting this letter to which I have referred into their magazine, and endorsing it as they did with the footnote. I thought after it had been sent to you that perhaps I was cruel to put the matter in such terse form, which virtually amounted to a reprimand so far as A. I. was concerned. If he had not been big enough from the soul standpoint to see it in the light it was meant, and not that of a personal thing, but for the good of the world, this might not have been written; therefore my commendation. You published the letter without change of any kind, although "lightning operators" was al-

most equivalent to naming some of our brothers who had brought disaster upon themselves as well as others who were engaged in the production of extracted honey.

We are creatures of evolution, and it is only the more highly evolved that escape punishment, because they will learn without. When the soul has sufficiently informed itself so that any transgression will result disastrously, it begins to avoid disappointments; and if we wish to evade them in our daily life in producing or vending we must endeavor to produce the best that we can, and do it in love and kindness.

In the second paragraph of my letter of June 6 I begin the second sentence by saying that "I do not know that I have read any thing in a long time which annoyed me more than the publicity given to that method of obtaining a large quantity of honey." I am not so sure but that the best method of curing ills is to give them great publicity, as attention is thus attracted, and the ills can be more readily discerned; hence the hasty thought of your senior member, committed to print, may after all be productive of more good than harm; for greatest of all of the hindrances to the sale of extracted honey that I have met with in over a quarter of a century has been the unripe article. R. A. BURNETT.

Chicago, July 17.

[You do not need to offer any apologies for what you wrote. If we can not endure honest criticism from a large-hearted man like yourself we will quit the bee-journal business. As you say, the probable effect of the articles, yours and A. I. R.'s, will be productive of good.—Ed.]

IS IT POSSIBLE THAT SOME MEMBERS OF THE N. B. K. A. ADULTERATE HONEY?

A great deal is being said about adulterated honey. You say in footnote, page 537, "The N. B. K. A. together with the local State organization is doing much to get laws that will make the adulteration of honey a crime." That may be so, and I guess is all right; but do none of the National adulterate honey?

I bought a lot of honey from a man whom I am satisfied belongs to the National (I have no list), and it was sugar syrup, or some other kind of syrup flavored with cinnamon. When I wrote him that the stuff was here subject to his order, he declared it was "pure honey." I proposed to have it analyzed. If pure I would pay all expenses; if not, he was to pay them. He would not agree to this; but to convince me that it was pure he had me send a sample to _____ who, I suppose, is another member, a specialist, and he pronounces it pure honey.

From this and other facts I am satisfied that honey is adulterated after it gets into the hands of the speculators. The speculator buys no such stuff as that for "pure honey" and pays pure-honey prices. The speculator, who himself is often a bee-keeper, is the man to watch. The man who

sells it to the speculator knows he can not put off on him an adulteration.

Alexandria, Tenn. DAVID WAUFORD.

[If there is a man who is a member of the National who adulterates honey, we do not know who he is. One of the very objects of the Association is to put down adulteration. It would seem truly inconsistent for a member to adulterate honey when he is in fact paying down his good dollars to stop that very kind of business. Referring to the case in point, you say you are "satisfied" that the man in question belongs to the National; but you do not *know* that he does; and in the second place, neither you nor any one else can positively determine whether honey is adulterated or not by the *mere taste*. There are many different flavors of real honey—as many as there are of ordinary confectionery. You imply, if I understand you, that the other member, the specialist who analyzed the honey, either did not know his business or else he was in league with his brother-member the adulterator. I know of only one man in the membership of the National who is competent to analyze honey, and that is W. A. Selser, of Philadelphia. Adulteration has hurt his business as a honey-merchant. He would no more adulterate than he would commit any other crime. If we can not rely on the statement of our chemist, or a member of the National, we are in a bad way. The membership of the Association is made up of a different set of fellows entirely. Your guess-so, think-so evidence would not be entertained in any court for even one minute. Get some real evidence, send another sample of the honey to the U. S. Chemist, Prof. H. W. Wiley, if you can not trust Selser, and we will pay the bill if the honey is adulterated, and help to make it hot for the offending member of the National.—Ed.]

FOREST COCKROACHES AMONG THE BEES.

There is a bug which bothers my bees, and I can not get rid of them. I will send you one to see what I can do to get rid of them. MINERVA MARSHALL.

Nadine, Pa., June 9.

[This was sent to Prof. Benton, of Washington, D. C., who replies:]

The insect belongs to the genus *Phyllo-dromia*, and is one of the forest cockroaches, which are very common in wooded sections, and come about bee-hives chiefly for the warmth generated by the bees. They like to congregate above the quilts, and particularly to deposit egg masses there and rear their young. I really think they do very little damage. Of course, if they have access to honey—that is, combs not well protected by bees, they may eat some, and probably also feed on dead bees to a certain extent. Frequent removal of the covers, and brushing them away, is about the only remedy, since it is only where hives are not opened for many days or weeks that

these insects would collect in great numbers.

FRANK BENTON.

Washington, D. C., June 27.

A CASE WHERE FORMALIN GAS DID NOT KILL ALL OF THE MOTH-LARVÆ.

I have used formalin gas according to the directions on page 537, for disinfecting combs infected with foul brood, and find that, in whatever way I use it, it does not kill *all* the moth-larvæ, but some of the newly hatched bees.

I do not use a cupboard, but stack up the hives and paint the cracks up air-tight. I have the generator connected with the hives with a rubber hose about 18 inches long. Would it be possible for any of the gas to escape through the rubber while heated by the gas passing through it? Do you think the combs would be thoroughly disinfected if any moth-larvæ are still alive? I do not think the gas was weak, for I use half a tea-cupful at a time, and have only four or five hives treated at a time.

Would it not be possible for the formalin gas to destroy only germs, etc., and still leave alive more highly organized forms of life?

CLYDE MILLER.

Cranberry, Pa., June 30.

[I should not suppose that your fumigating-box or hive was tight enough to do very thorough work. A gas that would be strong enough to kill the bacilli of foul brood in sealed cells would, I should suppose, be sure to kill any thing like a moth-miller. Better look over your directions more carefully, for I think you will find you did not get your gas strong enough or the box was not tight enough.—ED.]

LENGTH OF TIME A QUEEN CAN LIVE CAGED; HOW TO GET AT THE DIMENSIONS OF STANDARD HIVES.

I have looked through GLEANINGS, from January, 1901, to the present issue, and also the A B C book, and I have been unable to find any statement as to the approximate maximum limit of time that a queen can be safely kept confined (with very few bees) away from enough nurse bees and a comb for her to lay in. I do remember reading that one queen was on a trip to Australia 37 days. Is that about the maximum? And for such a detention from a comb may she be taken directly from her hardest work at laying? Does it not harm her to stop the egg-laying so suddenly?

I have now only 11 colonies, but 25 hives, all home-made. These hives are exactly in dimension with standard hives, but are made of soap-boxes and meat-boxes. The information I wish is, where in the A B C are exact dimensions of all standard hives given? I think that the book ought to contain, besides its working drawings, the inside details mentioned, so that bee-men may have all their information in their bee-encyclopedia. Without having a ten-frame hive to copy, I obtained the inside width with

much difficulty; and I am even now not sure I am right. The only hint I could get was a statement by the editor that a half-inch plus the width of ten frames for ten-frame hives was allowed, and this was found in answer to an inquirer last summer in GLEANINGS. How about those twelve and sixteen frame hives? I keep bees only for experiment and recreation, and wish to try these larger sizes.

JOS. G. BAIER.

New Brunswick, N. J., July 9.

[We do not give exact dimensions for making hives in our A B C of Bee Culture, and you will see the reason why if you read the chapter and the article on *Hive-making*. There are very few people who can work from dimensions or drawings, and the better way is for the average person to send and get a sample of the hive in the flat, such as he desires to copy, and then work from the pieces of this. The dimensions of the different frames that are in use are given under head of *Hives*. You can get approximately the dimensions of a hive by adding $\frac{1}{2}$ inch to the outside length of a frame. This will give the inside length of a hive. If you add $\frac{1}{4}$ inch to the depth of the hive, that will give the depth of it. The width depends upon the number of frames. Frames are spaced $1\frac{1}{8}$ inches from center to center. Decide on the number of frames you desire to use, then add $\frac{1}{2}$ inch to allow for bee-space on each side, and this will give you the width of the hive. But, as I said before, your better way would be to get a hive and then work from that; otherwise you will come to grief.

As to the length of time that a queen can live in a cage without comb, all depends upon the age of the queen and the kind of usage to which she has been subjected during the time. We have had queens confined in our office as a matter of experiment, with a dozen bees, for five or six weeks, and a cage of bees and a queen may be put in a hive, and sometimes live all winter.—ED.]

SOAP-SHAKER FOR CLIPPED QUEENS; METHOD OF HIVING SWARMS; NUMBER OF BEES IN A POUND.

Instead of using a cage made out of a section, like H. Piper's, page 535, I take a soap-shaker (those little cages that are used with a piece of soap in to make suds for washing dishes and clothes). They open and shut like clam-shells. The long wire handle can be used to hang them up by.

In using, I cage the clipped queen (I have my queens all clipped) by picking her up in my hand and allowing her to run in to the side that is nearest to the flying bees, turning the wire-cloth side toward them; and when she is trying to get out through the meshes I shut the cage up and fasten the jaws together by adjusting the tin fastener that holds them together. I like this cage better than Mr. Piper's, because I can

fasten it to a limb of a tree, a pole, or anywhere else. If you fasten it to a pole you want to tie a small limb to the pole near it for the bees to cluster on, which is better than Mr. P.'s ladder.

I have often tied a small market basket to the pole, and then tied the cage so it would be partly in the basket, then watched the bees cluster as I held it up so they could find it. Watch them and you will see one or two alight on the cage, and run about it for a minute or two, then fly away, and soon be back with three or four others. Soon they are gone again, then more will accompany them back, and so they go back and forth until a few begin to cluster, then soon the whole swarm will alight. Now take them to your prepared hive; shake before the entrance, and release the queen and you are all right. Late years I wait until the bees return to the old stand, and let them run into the new hive that I have placed there for them, releasing the queen as they enter.

In reply to Dr. Miller's Straw, page 528, you reckon 5000 bees in a pound. How came you to change your estimation, for you used to claim that 3000 make a pound? I have counted a large colony that swarmed, and found between 8 and 9 pounds that clustered, and but a very few bees left on the combs (not more than a pound), and it took a little over 700 to make a quarter of a pound, so there were not over 3000 bees in the hive. If I had a colony that I thought contained 70,000 bees I would count them before reporting to a paper. I have counted bees that have been starved, and found that it took nearly 5000 to make a pound; but we don't find bees in that condition when we weigh them; for when we buy or have a swarm they are filled with honey.

J. L. HYDE.

Pomfret Landing, Ct., June 22.

[Your idea of a soap-shaker is good. It is a handy implement that can be purchased at almost any tinshop or hardware store.

You say, "If I had a colony of bees that I thought contained 70,000 bees I would count them before reporting to a paper," implying that our estimate as to the number of bees to a pound was overdrawn. Let me refer you to Prof. B. F. Koons, of the Connecticut Agricultural College; Prof. C. P. Gillette, of the Colorado Experiment Station; and to Prof. Lazenby, of the Ohio Experiment Station, for the number of bees in a pound. These scientific men, all of them, had at their disposal delicately adjusted scales, and in one instance, at least, a pair of balances that would weigh to the millionth of a pound. It was a remarkable fact that the figures of all of them as to the number of bees in a pound, under different circumstances and at different times, were approximately the same. Their estimates were from 4000 to 5600 bees to the pound. When the bees were loaded, of course there would be fewer of them than when their sacs were empty or when just going to the fields.—Ed.]

THE GOOD OLD HONEY YEARS HAVE COME BACK.

On my return from Florida, May 2, I found that many colonies had died of starvation. They had sufficient stores to last them until fruit-bloom, and built comb under the devices, starving later. I fed at once, giving them all they would carry down, until they neglected the feeders, going to the fields. This heavy feeding paid well. My bees have stored more surplus than neighboring apiaries. If cool weather followed the hiving of a swarm, I fed them until it was warmer.

Old settlers say they never saw before such a growth of white clover. Ground is white, the heads touching each other, and it still continues. Basswood bloomed July 1, but it lasts but a day or so in the valley along the Illinois River. The weather was cloudy and cool, and I could see no difference in the honey-flow.

During the past dozen years or more, our colonies have been growing less, the increase less than winter losses. This season it is different. Last winter's combs are nearly all covered. Swarming has been quite erratic. Many colonies appeared to be superseding their queens, and a swarm would be divided up into several. I shall soon have these small swarms in good-sized colonies, feeding whenever there is a dearth of honey.

SURPLUS.

When I saw the white-clover honey coming in, just as it did in the good old honey years, I felt like dancing for joy, even if I am old and rheumatic. I got out the extractor, and it never threw out nicer honey—light in color, thick, heavy, oily, and rich. Why, it appeared as if, as soon as a bee came out of a cell, it was immediately filled with honey. I tied cheese-cloth over the top of a jar, and it would be full and running over, before I thought of such a thing. I've had many a curtain lecture about stirring up those bees; "let 'em alone; you make 'em cross." The temptation was too strong to resist. I would quietly slip away, take out a few combs, and extract them, unbeknown to them all.

A good many colonies have finished cases of sections, and are working on the second. The good old honey years have come back to stay, and let us rejoice and be glad, and give thanks to the Giver of all good.

Peoria, Ill.

MRS. L. HARRISON.

THE SALISBURY PRESS AND THAT "ACHING VOID."

I do not laugh very often; but while reading about that "aching void" under one of Miller's Straws I so far forgot myself that I laughed out loud, all my myself. If the ordinary bee-keeper undertakes to make our press by hand I am thinking his aching void will ache quite severely before he finishes the machine. F. A. SALISBURY.

Syracuse, N. Y., June 6.

RAISING QUEENS IN TOP STORY.

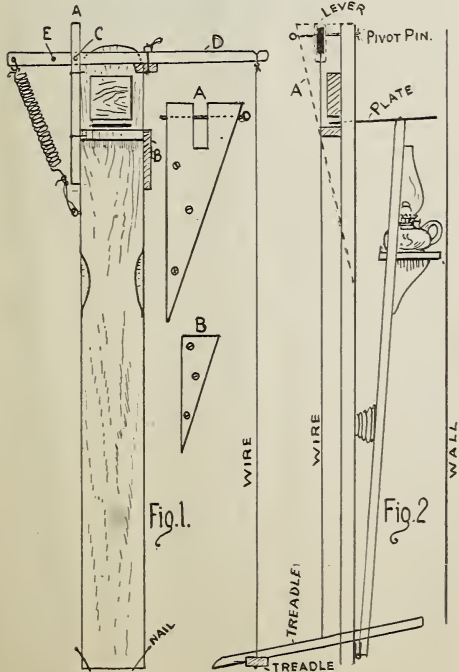
It has occurred to me that I could raise young queens in the top story of my hives, where I have a perforated board that separates it from the bottom, so that the old queen can not get at the cells in the top. Let me ask whether the hatching of a queen in the top will lead to swarming, and, second, will the young queen be likely to enter the top after being out on her wedding-trip if the top hive has an entrance? What do you think of it any way?

Paterson, N. J. L. CLAXTON.

[You can raise queens in the upper story of a hive, and have them fertilized, sometimes, during the honey flow. Cells will be built very readily in the upper story, but not during a dearth of honey unless the bees are fed. The chance of getting the queen fertilized upstairs, even under the most favorable circumstances, is not good, to say the least. The plan fails too many times to make it really a success.—ED.]

COMBINED SECTION-FORMER AND FOUNDATION-FASTENER.

Mr. Root:—If you will refer to GLEANINGS for May 15, page 448, you will see there a picture of a "handy section-press" by Anton G. Anderson. When I saw that illustration I said to Mr. V. V. Dexter, who is working with me, "There is a prin-



ciple which can be applied to a combined section-press and foundation-fastener." He suggested adding it to the Daisy foundation-fastener, and the enclosed drawings show you the result—a combined machine

that is giving us splendid service, and, unlike all other combined machines on the market, it is easily adjustable for different-sized sections by changing the position of the lever D by removing pivot C and inserting it again in the next hole in the lever, marked E. The machine should be upright, or nearly so, and the hot plate should slope a trifle forward so as to melt a little foundation as possible, and use the melted wax in fastening to the very best advantage. The pivot C should be high enough to admit freely the tall section. When the square section is used, the lever D is simply brought down a little further by the foot.

When the treadle is pressed, the section is folded; and at the same time the plate is thrust forward (or, rather, the section and press are pulled back) so as to expose the heated edge of the hot plate, so that the one treadle both folds and attaches the foundation.

I believe your mechanics could work this out so that you can sell the wooden pieces A and B, lever D and spring, when all your customers now having the Daisy could send to you for the press attachments and screw the same to their old Daisy machines. Please let us know at once if you consider the idea of any value. Of course, you could put out a combined press and fastener for those who used a new machine or who do not wish to add the press to their old ones.

I had always doubted the utility of a combined machine until trying this one.

E. F. ATWATER.

Boise, Idaho, June 6.

[The plan you have outlined, and which we have had our artist sketch out, is perfectly feasible. It is a question, however, whether the average purchaser would not prefer to have the two operations performed by two separate machines. A section-former on the principle shown in the illustration is not as powerful by considerable as something like the Hubbard press, nor is it anywhere near as rapid. That it will do the work, there can be no doubt.

But in changing from a 4¼ to a 4×5 section, it will be necessary to have an extra hole in the standard A. When the pivot is changed, the bolt C would have to be put through the hole E, and should be, to get the best results, put through a hole in the standard A, a little higher up. This would permit the lever D to fit square down on top of the section.—ED.]

KEROSENE OIL FOR BEE-STINGS; HOW TO SCRAPE THE STINGS OUT.

For bee-stings, try a drop of kerosene oil, and rub it in. For a horse that upset a hive and got the result, take a gallon of kerosene and give him a bath at once. Scrape him with the back of a hand-saw, knives, or a piece of hoop iron, very hard, to scrape out the stings. Work on the throat first. Be quick about it.

READER.

INSURANCE ON BEES.

In a few numbers back you spoke of insurance for bee-keepers. I have never seen any thing more than a mere mention of this subject; and if you can give us any information, general or specific, it would be highly appreciated.

CLIFTON F. PULSIFER.

Nessen City, Mich.

[Nothing more has been said on this subject. So far as I know, no insurance company will accept such risk; and yet I see no reason why bees are more subject to fire than any other property similarly exposed. If any one among the fire-insurance agents who are subscribers can give us any information, we should be glad to hear from him.—ED.]

REPORT FROM P. H. ELWOOD.

We had some April weather in March, March weather in April, and back again to April weather in May, and no rain—the worst drouth that has occurred in a great many years. Through June we had a very cold rainy time, making us think of April. Bees had a good run on fruit and dandelion, but it was all needed through June. In fact, some May swarms that came near the close of the flow starved. The wet weather came in very well to grow the white clover, of which we shall now have a small blow. Basswood will also be a short blow. Since the first of July the bees have been gaining on stores, and the crop of honey will depend on the weather for the next month. A small bloom with good weather will get a crop. We do not look for a large yield.

P. H. ELWOOD.

Starkville, N. Y.

GOOD SEASON IN UTAH.

Had we not last about every thing in the way of bees this would be a fine season, as the flow is good, weather prime, and bees working splendidly. One party at Plain City had 60 and lost 60; another, 78 and lost 70; R. has 1000, and lost 500; Frost, 300, and lost 150; Mitchell, 400, and lost 300; so you can judge of the State losses. South loss was small. Last season we got 5 cts. for extracted; asking 7 to-day; crops will be good for the number of stands. In the valley up the canyon, where we got the trout dinner, I lost every stand.

Ogden, Utah. C. W. FROST.

THE FORMALDEHYDE TREATMENT A SUCCESS.

Some of my best colonies to-day are those on fumigated combs, badly diseased with black brood in 1901 and '2.

Mayfield, N. Y. G. W. HAINES.

AVERAGE CROP IN MASSACHUSETTS.

At present the outlook is good for a fair crop, and bees are gathering nectar quite freely from clover and sumac. As a rule

we think that there will be an average crop with prices about the same in the New England States. W. W. CARY & SON.
Lyonsville, Mass.



TOURING IN AN AUTOMOBILE.

July 10.—We made 125 miles yesterday, and both Huber and myself declare it was the most enjoyable ride we ever took in one day. Instead of feeling fatigue, I did not have any nap at all, which is something that has hardly happened before in years; and at 9:30 P.M. I voted to go on to a town 12 miles further. Mr. Auble told us a new motor would often take on some queer freaks, and we found it so. We were delayed but little when the machinery needed readjusting; but toward night, if we happened to stop it to inquire, or for any other reason, it was loath to start again, or if we went over a very rough place at high speed; but when it once got agoing it seemed to delight in going faster and faster. Huber is overhauling it now.

We arrived in Toledo just after dark. As the town was full of various patterns of automobiles, we joined in the merry throng and ran through their beautiful parks. The activity of the farmers in the fields was a delightful sight to me as we rushed through the rich country of Northwestern Ohio.

Metamora, O., July 10, 10 A.M.—The reason we didn't go 12 miles further was, the machine "wouldn't go." It said by its actions that 125 miles was work enough for its first long trip. Huber overhauled it, but this morning it still "gets its back up" whenever we stop a minute.

Later, same day.—A rubber tube used to let the water off (in freezing weather) got to swinging against a brass stopcock, until it wore a hole in the tube and let all the water out of our automobile. It was our business to watch and see to this; but we did not until the machine got pretty nearly "redhot." Something similar had been allowed to happen once before, and we now found why it was hard to start. Water was getting into the cylinder. When well under way the water was blown out; but when we stopped it accumulated. At Morenci, Mich., a crowd collected to see us start. Of course, there were many jests to the effect one could hitch up a horse in less time than we took to start, etc. Finally, off it went, and I had just time to turn to the crowd and say, "Good by, gentlemen," when it suddenly stopped again. Huber then declared we must get the address of Mr. Wilbur, the "bee-man," who had invited us, so we could get there with no more stops. So I took it down.

"Turn north at the hotel; go two miles

to the second cross-road; turn east three-fourths of a mile, then north half a mile."

When we finally got agoing again we did this, and in about fifteen minutes were at friend Wilbur's bee-yard. In the shade of an apple-tree Huber declared the machine would have to come apart until we could re-pack the cylinder head. This took about one day.

Mr. Wilbur has about 80 colonies of bees, and about 140 laying Plymouth Rock hens. He has a fine crop of honey, and gets about 100 eggs a day from his fowls. In working for comb honey he says he would rather have a few pounds less, and have filled sections, than to have so many partly filled sections to carry over. The latter never make first-class honey when finished the year after.

The auto makes lots of fun, and calls forth many jokes. A boy called to us in one of the towns, and we slowed up to see what was wrong. He just wanted to say, "Say, mister, your *whip* just dropped out of your buggy;" and for the first time I was reminded that *whips* and the manner of using them are to be a "lost art" in the great and near future.



WINTER OR SAND VETCH; ANOTHER OF MY HAPPY SURPRISES.

When I first visited Traverse Bay region I was attracted by a plant that grew wild in the fields, that the people called "wild sweet pea." The great quantity of purple blossoms in long clusters, like the blossoms of the locust-tree, first attracted my eye; and then the great quantity of pods containing little bits of peas afterward convinced me it must be a valuable leguminous plant. I thought several times it might be valuable to grow for stock or to plow under; and last fall, in digging potatoes, I was once more greatly pleased to see a greater quantity of nitrogen nodules on the roots than I ever saw on any other plant. Last fall, after digging potatoes I tried the experiment of sowing Mammoth and Medium clover in the fall. After my first early potatoes, crimson clover was a big success, as I have told you. About half an acre of Mammoth clover, put in after Early Trumbull potatoes, produced a magnificent stand, and was knee-high and full of blossoms when plowed under the last of June. Medium clover, put in after an acre of Early Michigan potatoes, looked fairly well. But where I sowed clover as late as the middle of October it did not amount to very much, especially as the wild weeds got ahead of it. Now, mind you, after the potatoes were dug in October the ground was thoroughly harrowed with

a spring-tooth harrow. I think all the weeds were thoroughly cut up and killed. This present summer, about the last of June, when I decided to plow up a six-acre field where I dug these late potatoes in October, I found this new leguminous plant growing with wonderful luxuriance. In fact, there were single plants, a perfect mass of purple bloom, large enough to make a pretty good wheelbarrow-load. The remarkable thing is that this immense plant must have made this growth after the ground was so thoroughly harrowed in October. If it came up in the fall it wintered very safely; and then it pushed ahead beyond any thing I ever saw before in the way of clovers or any other legume. The roots did not seem to be very large, but great branches put out like a squashvine in every direction. The blossoms stood up 2 ft. high. The boys tore it to pieces, and offered it to the horses that were plowing, and they ate it with great avidity. I at once mailed some of the blossoms, foliage, and roots, containing the nodules, to our Ohio Experiment Station; but before doing so I noticed that the plant bore a strong resemblance to a picture in the seed catalogs, under the name of hairy or sand vetch, also called winter vetch. Here is what Peter Henderson says in regard to it:

SAND OR WINTER VETCH (*VICIA VILLOSA*)

is perfectly hardy throughout the United States, remaining green all winter, and should be sown during August and September, mixed with rye, which serves as a support for the plants, or in spring with oats or barley.

It grows to a height of 4 to 5 feet, and is the earliest crop for cutting, being nearly a month earlier than scarlet clover, and a full crop can be taken off the land in time for spring crops. Being much hardier than scarlet clover, this is the forage plant to sow in the Northern States, where scarlet clover winter-kills, though it is equally valuable in the South.

It is exceedingly nutritious, much more so than clover; is eaten with relish, and may be fed with safety to all kinds of stock.

Sow one bushel per acre with one-half bushel of rye or wheat.

I believe all of our seed catalogs recommend it very highly.

Now, I am going to purchase seed of different seedsmen, and plant the different kinds side by side with seeds also of the plant growing wild in Michigan. If it grows every season, in other localities, as it grows on my ground, single plants averaging four feet apart each way, planted after digging potatoes, it would cover the ground with an immense lot of fertilizing material in time to be plowed under for another crop of potatoes; and my impression is it is worth as much as clover for feed or for turning under.

The particular point that recommends it to me is that it is now growing wild on the borders of the woods and waste places in Northern Michigan. But the thing I can not understand is, why such a rank-growing leguminous plant should be allowed to pass all this time unnoticed—that is, up in that locality. Can any of the readers of GLEANINGS tell us more about it? I think it is offered by several seedsmen in 100-lb. lots at about 10 cts. per lb.

QUEENS

**Golden Italian &
Leather Colored**

Warranted to give satisfaction, those are the kind reared by **Quirin-the-Queen-Breeder**. We guarantee every queen sent out to please you, or it may be returned inside of 60 days and another will be sent "gratis." Our business was established in 1888, our stock originated from the best and highest-priced **Long-tongued Red-clover Breeders in the U. S.** We send out fine queens, and send them promptly. We guarantee safe delivery to any State, continental island, or European Country.

The A. I. Root Co. tells us that our stock is extra fine, while the editor of the *American Bee Journal* says that he has good reports from our stock, from time to time. Dr. J. L. Gandy, of Humboldt, Nebr., says that he secured over 400 pounds of honey (mostly comb), from single colonies containing our queens.

A FEW TESTIMONIALS.

P. F. Meritt, of No. 13 Breckenridge St., Lexington, Ky., writes: The bees sent me last July did splendidly. Each colony has at least 75 lbs. of honey—pretty good for two-frame nuclei.

Mr. J. Koorda, of Demotte, Ind., writes: Send me six more queens, the 48 sent me last spring are hustlers.

Mr. Wm. Smiley, of Glasgow, Pa., writes: Your bees beat all the rest, now send me a breeder of the same kind.

A. Norton, Monterey, Calif., writes: Your stock excels the strain of Mr. —, which is said to outstrip all others. Your stock excels in profitable results as well as in beauty.

Price of Queens After July First.

	1	6	12
Selected	\$ 75	\$4 00	\$7 00
Tested	1 00	5 00	9 00
Select Tested	1 50	8 00	
Extra Selected Tested—the best that money can buy.....		3 00	
Two-frame Nuclei, no Queen.....	2 00		

Add the price of whatever queen is wanted to that of nuclei. Our nuclei build up fast, and if not purchased too late will make some surplus.

Queen-rearing is our specialty; we give it our undivided attention, and rear as many queens (perhaps more) as any breeder in the North. No order is too large for us, as we keep 300 to 500 on hand ready to mail. Send all orders to

Quirin=the=Queen=Breeder, Parkertown, OHIO.

Long Tongues Valuable South as well as North.

How Moore's strain of Italians roll in honey down in Texas.

Hutto, Tex., Nov. 19, 1902.

J. P. Moore.—Dear Sir:—I wish to write you in regard to queens purchased of you. I could have written sooner, but I wanted to test them thoroughly and see if they had those remarkable qualities of a three-banded Italian bee. I must confess to you I am more surprised every day as I watch them. They simply "roll the honey in." It seems that they get honey where others are idle or trying to rob; and for gentleness of handling, I have never seen the like. Friend E. R. Root was right when he said your bees have the longest tongues; for they get honey where others fail. I will express my thanks for such queens. I am more than pleased. I will stock my out-apiaries next spring with your queens. Yours truly,

HENRY SCHMIDT.

The above is pretty strong evidence that red clover is not the only plant which requires long tongued bees to secure the greatest quantity of nectar.

Daughters of my 23-100 breeder, the prize-winner, and other choice breeders: Untested, 75c each; six, \$4.00; dozen, \$7.50. Select untested, \$1.00 each; six, \$5; dozen, \$9.00. Safe arrival and satisfaction guaranteed. Circular free. I am now filling orders by return mail, and shall probably be able to do so till the close of the season.

J. P. Moore, L. Box 1, Morgan, Kentucky.
Pendleton County.

Laws' Leather-colored Queens. Laws' Improved Golden Queens. Laws' Holy Land Queens.

W. H. Laws.—Your queens have proved to be excellent. My apiary stocked with your *Leather* queens are a sight to behold during a honey-flow, and the *Goldens* are beyond description in the line of beauty. Yours are the best for comb honey I ever saw. I want more this spring.—E. A. Ribble, Roxton, Tex., Feb. 19, 1903.

W. H. Laws.—The 75 queens (Leather) from you are dandies. I introduced one into a weak nucleus in May, and in September I took 285 lbs. of honey, leaving 48 lbs for winter. My crop of honey last season was 48,000 lbs. I write you for prices on 50 nuclei and 150 *Leather* queens.—Joseph Farnsworth, Idaho Falls, Idaho, Feb. 16, 1903.

Prices of Queens: Each, \$1.00; 12, \$10.00. Breeders, extra fine, guaranteed, each \$3.00. Send for price list.

W. H. Laws, Beeville, Texas.

The Best Honey Queens ON RECORD

Are those reared by The HONEY & BEE CO., Will Atchley, Manager. We breed six distinct races in their purity, from 6 to 35 miles apart, queens ready to go now. We make a specialty of one, two, and three frame nuclei and queens in large lots. Untested queens of either race, 75c each; \$4.25 for six; \$8.00 per dozen. Tested, \$1.50 to \$3.00 each. Breeders, the best that money can buy, \$5.00 each. We guarantee safe arrival and perfect satisfaction. Address all orders to

The BEE & HONEY CO.,
Beeville, Box 79. Bee Co., Tex.

Wind Power

is the cheapest power known. For a farmer-keeper, who has stove-wood to cut, water to pump, and feed to grind for stock, corn to shell, and bee-hives to make, nothing can equal a well-arranged power wind-mill. *The Bee-keepers' Review* for June illustrates a wind-mill thus arranged, and a bee-keeper who has such a mill, and uses it for all the purposes mentioned, contributes an article, giving cost, advantages, and

drawbacks, together with several other interesting items on the subject. He has had his mill six years, and can speak from experience.

Send ten cents for this number, and with it will be sent two other late but different issues, and the ten cents may be applied on any subscription sent in within a year. A coupon will be sent entitling the holder to the *Review* one year for only 90 cents.

W. Z. HUTCHINSON, Flint, Mich.

Carniolans and Italians. Choice Queens a Specialty

Having added extensively to our queen-rearing plants in the North and the South we can furnish any number of queens on short notice.

Carniolans. Very prolific, hardy, gentlest bees known. Great comb builders. Sealed combs of a snowy whiteness. A worker on red clover.

Italians. Gentle, prolific, swarm very little, fine workers, and a red-clover strain.

The Carniolan-Italian Cross. A cross giving the combined qualities of each race, are hustling workers, the coming bee for comb honey.

One untested queen, 75c; 6 for \$3.90; 12 for \$6. Tested, \$1.25. Best breeder, \$2.50. Best imported breeder, \$4. For full colonies, one or two frame nuclei, large orders for queens, send for descriptive price list. Orders booked now will be filled when desired.

F. A. Lockhart & Co., Caldwell, N. Y.

Queens == 1903 == Queens.

We have ten different yards five to twenty miles apart, where Italians, Cyprians, Holylands, Carniolans, and Albinos, are bred for business. Tested queens, \$1.50; \$8.00 for 6; \$15.00 per dozen. Untested, \$1.00 each; \$5.00 for 6; \$9.00 per dozen. Our best and finest breeders, \$5.00 each. One and two frame nuclei a specialty. Bees and Queens in any quantity to suit purchaser. Safe arrival and reasonable satisfaction guaranteed. ORDER "The Southland Queen," \$1.00 per year. Send for sample copy and our 1903 catalog; tells how to raise queens and keep bees for profit.

Root's Supplies.

The Jennie Atchley Co., Box 18, Beeville, Tex.

Bred for Work

Terrace queens have given best of satisfaction; bred from selected stock; best of workers; very gentle, and fine color. Untested, 75c each; six, \$4.25; twelve, \$8.00. Tested, \$1.00; six, \$5.00; dozen, \$9.50.

Harold Hornor, Terrace Apiaries, Mt. Holly, N. J.

When you need Queens

and want your order filled at once with the best queens that money can buy, we can serve you and guarantee satisfaction. We have a fine strain of Italians that can not be excelled as honey-gatherers. We can furnish queens from either imported or home-bred mothers. Choice tested, \$1.00 each. Untested, 75c; \$8.00 per doz.

J. W. K. Shaw & Co., Loreauville, La.

TEXAS QUEENS FROM LONE STAR APIARIES.

We are now ready to furnish you queens from the best stock of any race. These queens are equaled by few and inferior to none. Write for price list

G. F. Davidson & Son, Props., Fairview, Texas.

"Tested Queens."

No! not for color, but for honey. Will sell queens from colonies that have stored a good surplus from palmetto; some have 3 10-frame supers full to date. Old enough to show what they will do, but not aged. Price for queen and bee brush, \$1.00.

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Red Clover and Three and Five-Banded Queens.



Untested, 65 cts.; 2 for \$1.00. Fine tested queens, \$1.00 each. Remember we guarantee our queens to work red clover as well as white clover. Get my circular. Plenty of queens, and go by return mail. Fifty and one hundred, special prices.

G. ROUTZAHN, BIGLERVILLE, ROUTE 3, PENN.

QUEENS DIRECT FROM ITALY

Fine, reliable. English price list sent on application. Beautiful results obtained last year. OUR MOTTO—"Whatsoever ye would that men should do to you, ye even so to them." Address

MALAN BROTHERS, Luserna, San Giovanni, ITALY.

..Very Satisfactory..

The four dozen queens I got of you last year are very satisfactory, being good honey-gatherers, and gentle, and finely marked.

CHAS. STEWART, Sammonsville, N. Y.

June 19, 1903. State Bee Inspector, 3rd Div.

To induce a trial we offer WARRANTED queens at 75c, six for \$3.50; fine select, \$1.00, six for \$4.50. Queens sent promptly; satisfaction guaranteed. Hybrids or poor queens replaced free.

J. B. CASE, Port Orange, Fla.

When you want Queens that please, and want them

By Return Mail,

join the crowd and send here where the spring rush is now over. I can guarantee them to leave promptly from now on, and arrive safe. **Best Honey Strains only** are bred from Golden, Carniolans, leather-colored Italians. 75c each, or \$7.50 per dozen; tested, \$1.00 each, or \$10.00 per dozen.

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FOR SALE—Fine, carefully reared queens, from a hardy, prolific, honey-gathering strain of 3-banded Italians, can also furnish queens from Doolittle Golden strain, if preferred: untested, 65 cents; tested, \$1.00; selected breeders, \$2.50

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We are again rearing the best of queens for market. We have 1000 colonies of bees, the best stock, and 10 years' experience. We have either Golden Italians or three banders. Price, 75 cts. each; \$4.25 for 6; \$8.00 for 12; tested, \$1.50. Safe arrival and satisfaction. Give us a trial. All orders filled promptly.

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We keep a large stock of honey-cans of all sizes ready for prompt shipments. Get our prices. We also want all the section and bulk comb honey that we can buy, and will take some No. 1 extracted. We pay spot cash. Write us.

The Hyde Bee Company, Floresville, Texas.
(Successors to O. P. Hyde & Son.)

Root's Improved Cowan

BALL-BEARING

They Wear the Blue Jackets.

Honey Extractor

Since the introduction of these extractors some 14 years ago to the bee-keeping world, we have been experimenting with a view to eliminating weak points, and perfecting the stronger ones.

All Sizes. We manufacture all sizes of extractors from the small 2-frame to the 4 and 6 and 8-frame machine-power (power machines made to order only). The can part of these extractors is made of galvanized iron covered with blue japanning, and neatly lettered.

Galvanized. The comb-baskets are galvanized wire, well braced; the hinges, hoops, cross-arms, and other metal parts, are galvanized after finishing, something you will get in no other on the market.

Band-brake. All four, six, and eight frame machines are provided with band-brake, which permits of the stopping of the machine instantly, without danger of breakage. These machines have large metal handles. Ball bearings are used which make them very light running. The honey-gates are large, which does not require the stopping of work to allow the honey to run out.

For sale by all large dealers in Bee Supplies.

MANUFACTURED BY

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

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If you are interested in Cuba and want the truth about it, subscribe for the

HAVANA POST,

the only English paper on the Island. Published at Havana, Cuba. \$1.00 per month, \$10.00 per year. Daily (except Monday).

FOR SALE.—3000 lbs. strictly first-class white-clover honey in 60-lb. cans. Sample and prices on application. G. A. BLEECH, Jerome, Mich.

Sections, Shipping Cases, Honey Cases,

and every thing necessary for the bee keeper.

FINE ITALIAN QUEENS.

Prompt shipping.

Catalog Free.

C. M. Scott & Co., Indianapolis, Ind.
1004 East Washington Street.

CARTONS FOR HONEY Wanted to introduce the best, most practical, lowest-price carton for honey, all things considered; costs nothing. We have wholesaled honey in this city for 30 years. We have seen no honey-carton equal to this. Send us five two-cent stamps, and we will send you sample, together with explanation, and some practical suggestions regarding marketing honey to best advantage; also live poultry. We originated and introduced the new popular one-pound section.

Established in 1870. H. R. WRIGHT,
Wholesale commission. Albany, N. Y.

Root's Goods in Central Michigan!

Sold at their prices. Present given with each order amounting to \$2 or over. List sent free.

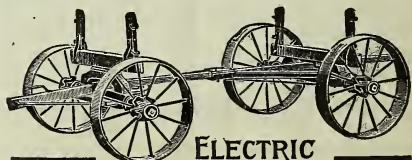
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buying the PAGE for your Fall fencing. It lasts.

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Handy Farm Wagons

make the work easier for both the man and team. The tires being wide they do not cut into the ground; the labor of loading is reduced many times, because of the short lift. They are equipped with our famous Electric Steel Wheels, either straight or stagger spokes. Wheels any height from 24 to 60 inches. White hickory axles, steel hounds. Guaranteed to carry 4000 lbs. Why not get started right by putting in one of these wagons. We make our steel wheels to fit any wagon. Write for the catalog. It is free.

ELECTRIC WHEEL CO., BOX 95, QUINCY, ILL.

WAX PROFITS.

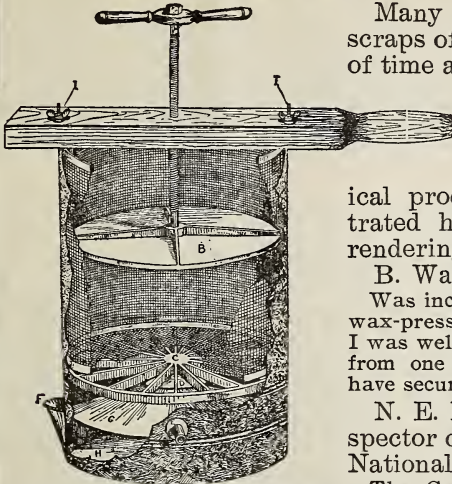


Fig. 169.—The Root-German Steam Wax-press. Price \$14.00. Shipping weight, 70 lbs.

Many bee-keepers allow old combs and scraps of beeswax to collect, which, for lack of time and the proper utensils, are scattered or eaten up by moth-worms. A big item would be added to the year's profits by the timely rendering of said wax by an economical process. We believe the press illustrated herewith fills a long-felt want in rendering wax.

B. Walker, Clyde, Ill., says:

Was inclined to believe at first that the German wax-press was a failure; but after a thorough trial I was well pleased. I secured 30 lbs. more wax from one day's use of the machine than I would have secured by the ordinary method of rendering.

N. E. France, Platteville, Wis., State Inspector of Apiaries, and General Manager National Bee-keepers' Association, says:

The German wax-press is by far the best machine or process to save wax from old black brood-combs.

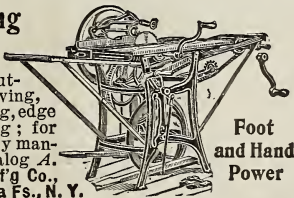
Manufactured by

The A. I. ROOT CO., Medina, Ohio, U. S. A.

We are now paying 30c cash, 32c trade, for average wax delivered at Medina.

Wood-working Machinery.

For ripping, cross-cutting, mitering, grooving, boring, scroll-sawing, edge moulding, mortising; for working wood in any manner. Send for catalog A. The Seneca Falls M'fg Co., 44 Water St., Seneca Fs., N. Y.



THE LUCKY "4-LEAF CLOVER"



Plymouth Cream Extractor is the CREAM of them all. Inner can quickly removable; water all around and under milk; has far greater cooling surface than any other. No water required 5 months in year. Special air chamber with ventilator. New and original faucet, impossible to leak or sour. Express charges prepaid. Catalogue free.

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AN EXPERT'S ADVICE

can be had free by writing us. Mr. H. M. Horton conducts this department in our great

Poultry Supply House.

Every necessity of the poultry business carried, all of the highest quality. Also Standard Bred Poultry, Hatching Eggs, etc. Write us your troubles and your wants. Ask for catalogue D. Sent free.

W. J. Gibson & Co., (Inc.), Union Stock Yards, Chicago.

Squab Book Free



Squabs are raised in 1 month, bring big prices. Eager market. Money-makers for poultrymen, farmers, women. Here is something worth looking into. Send for our **Free Book**, "How to Make Money With Squabs" and learn this rich industry. Address **PLYMOUTH ROCK SQUAB CO., 19 Friend St., Boston, Mass.**

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of Grand Traverse territory and Leelanau Co. are descriptive of Michigan's most beautiful section reached most conveniently via the

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For pamphlets of Michigan farm lands and the fruit belt, address J. E. Merritt, Manistee, Michigan.

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Heavy, white, high-cut, size 6 1/2. A neat little coupon on each envelope will earn you dollars. Other stationery cheap. For particulars and sample, address at once **Howard Co., 516 Masonic Temple, Chicago, Ills.**

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**INVESTORS !
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We have reorganized our old-established mail-order business into the co-operative system. We want to interest you (no matter how large or small your capital) and we know you will be deeply interested if you let us send you our free book. It's a mine of interesting business information. It will make you either a shareholder (shares are \$10 each) or a customer.

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[Established in 1873.]

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Published Semi-monthly by

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To promote and protect the interests of its members. To prevent the adulteration of honey.

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Until further notice we will pay 23 cts. cash, or 30 in trade, for average wax delivered here. From one to two cents extra for choice yellow wax.

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Lumber, especially basswood used in the manufacture of hives, honey-boxes, shipping cases, frames, etc., has continued to advance during the past year to such an extent that it is impossible to maintain present prices. Wages have also advanced to quite an extent during the year. We therefore withdraw prices in effect since September last on sections, hives, shipping-cases, and other wood goods. We hope to have new list prices ready to publish in next issue. Current orders will be filled at best prices we can make.

Apiary for Sale.

Owing to my age I have decided to sell my yard of 16 colonies, with extra hives, supplies, etc. Price only \$75 for the entire outfit. Some colonies have made 75 lbs. each, comb honey, this season. A bargain. Call on or address

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Pure Italian Queens in State of Washington.

Untested, 70c; tested, \$1.00. I can fully guarantee all my queens, as to gentleness, purity, and honey-gathering qualities, all being the best that can be produced. **Robt. Murring, Dryad, Lewis Co., Wash.**

Queens Big hustling beauties, bred for business from choice honey-gathering strains; 3 banded and golden Italian, for the rest of this season, 55 cts. each, \$6 per dozen; tested, 85 cts. each. Safe arrival and satisfaction guaranteed.

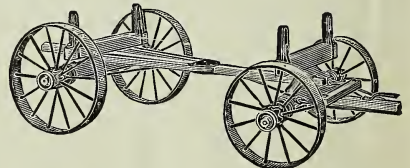
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FOR SALE.—100 colonies Leather colored Italian bees. A tested queen in each colony. In 8 frame Dovetailed hives. All right in every respect. No disease. Price \$1.00 per colony; \$5.50 each in lots of 20.

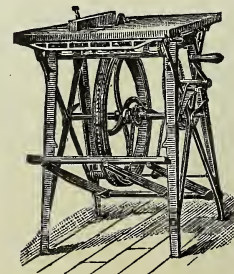
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Farm Wagon only \$21.95.

In order to introduce their Low Metal Wheels with wide Tires, the Empire Manufacturing Company, Quincy, Ill., have placed upon the market a Farmer's Handy Wagon, that is only 25 inches high, fitted with 24 and 30 inch wheels with 4-inch tire, and sold for only \$21.95.



This wagon is made of the best material throughout, and really costs but a trifle more than a set of new wheels, and fully guaranteed for one year. Catalog giving a full description will be mailed upon application by the Empire Manufacturing Co., Quincy, Ill., who will also furnish metal wheels at low prices made any size and width of tire to fit any axle.



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This cut represents our combined circular saw, which is made for bee-keeper's use in the construction of their hives, sections, boxes, etc., etc.

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Send for illustrated catalog and prices. Address

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Notices will be inserted under this head at 10 cts. per line. You must **SAY** you want your advt. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

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O. H. HYATT, Shenandoah, Iowa.

WANTED.—To exchange chaff hives for honey.
JAMES SHORE, Germantown, Pa.

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WANTED.—A partner in the bee business, box factory, and a patent bee-hive.
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CHAS. B. ALLEN, Central Square, N. Y.

WANTED.—To sell pedigree Belgian hares at \$2.00 a pair.
MRS. JANIE OSMUN,
Rural Route 1, Whitehall, Mich.

WANTED.—To exchange modern firearms for old gold watches and solid gold jewelry of any kind.
W. S. AMMON, Reading, Pa.

WANTED.—To exchange copy of *New York Herald*, April 15, 1865, in good condition, containing detailed particulars of President Lincoln's assassination. Best offer gets it.
ELIAS FOX, Hillsboro, Wis.

WANTED.—To sell for cash, 5-gal. square tin cans, used for honey, at about half price of new cans. For prices, etc., address OREL L. HERSHISER,
301 Huntington Ave., Buffalo, N. Y.

WANTED.—To sell 69 colonies of bees, cheap; in tall hives, nearly square, frames 12½x14, outside measure; hives to contain supers and separators. Also 400 lbs. of fine clover honey just extracted, at 7c on cars here.
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WANTED.—The address of every bee-keeper that makes his own hives. The "Kold Klimat" bee-hive makes the best outside case in the world for wintering bees in any kind of hives.
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WANTED.—To sell, for 65 cents each, choice untested queens, reared from selected mothers, the Carniolan-Italian cross—the coming bee for comb honey? A trial order will convince you. Satisfaction guaranteed.
L. H. PERRY, Clay, N. Y.

WANTED.—To sell my Sable and White Scotch Collie dog, one year old, eligible to register, good farm dog, easily taught, good with children, very affectionate; thoroughly house-broken, and very handsome. Price, cash, \$20.00, or will take \$25.00 in honey.
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WANTED.—Seed for blue-thistle plant.
J. M. MARTIN, New Carlisle, Ind.

WANTED.—Honey or any kind of syrup suitable for summer feeding.
FRANK T. HOOPER,
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WANTED.—Your address on a postal for a little book on Queen-Rearing. Sent free.
Address HENRY ALLEY, Wenham, Mass.

WANTED.—To sell 110 colonies of bees at \$3.00; 1500 L. Hoffman frames; also 150 colonies to let on shares.
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BEEES FOR SALE 100 3-frame nuclei with queen at \$2.00, in lots of 10 or more. Less than 10, at \$2.25. F. W. DEAN,
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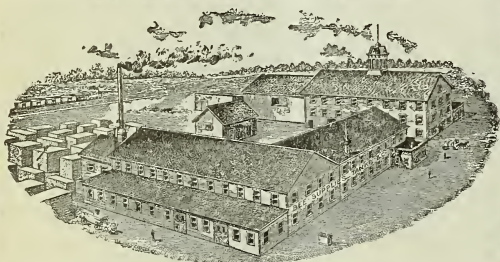
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Catalog and Price List.

We Have Not Moved.

The government, recognizing the necessity of a great and growing business enterprise, for better mail service has given us a postoffice on our premises, which enables us to change mails with the passing trains instead of through the Wetumpka, Alabama, postoffice more than a mile distant. This gives us our mails about two hours earlier, and also one hour for making up outgoing mail. This will be particularly helpful in our queen business. We are now booking orders for Italian queens, Long-tongued and Leather-colored; both good.

J. M. Jenkins,
Honeysuckle, Alabama.

Shipping-point and Money-order
Office at Wetumpka, Alabama.



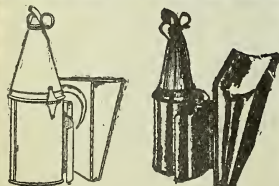
Kretschmer M'fg Company,
Box 60, Red Oak, Iowa.

BEE- SUPPLIES!

Best-equipped factory in the West; carry a large stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers. *Write at once for catalog.*

Agencies.

Trester Supply Company, Lincoln, Neb.
Shugart & Ouren, Council Bluffs, Iowa,
Foster Lumber Company, Lamar, Colo.



BINGHAM SMOKER.

Dear Sir—Inclosed find \$1.75. Please send one brass smoke-engine. I have one already. It is the best smoker I ever used.
Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER

Bingham Brass Smokers.

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's four-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke-engine, 4-inch stove, per mail, \$1.50; 3½-inch, \$1.10; 3-inch, \$1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 23 years. Only three larger ones brass.

T. F. Bingham, Farwell, Michigan.

ON ACCOUNT OF FLOOD

WE had a number of large shipments lost in transit; this reduced our capacity for filling orders of certain stock promptly.

We will now have a car load of all kinds of different bee supplies on hand by the time this advertisement reaches you.

We hope to receive your continued favors, and will not have to cause you any further delay on the class of goods we ran short of.

Jno. Nebel & Son
HIGH HILL, - - MO.

Oregon Bee-keepers



For years we have supplied you with a portion of your requirements in bee-keepers' Supplies, for which we thank you. We are better prepared than ever to take good care of orders this season. We have acquired the business of Buell Lamberson's Sons, of this place, and have the agency for this State for

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

One carload is already on the way, and others will follow. If you require special goods or anything not usually kept in Western stocks, we can get it for you on our next car.

Seeds, Fertilizers, Trees, Garden Tools, Poultry and Bee Supplies.

Portland Seed Company,
Portland, Oregon.

Headquarters in CALIFORNIA!

We wish to remind GLEANINGS readers that we are again ready to serve them with whatever they require in Bee-keepers' Supplies. We not only have a good assortment of our own manufacture but we can furnish a

Full Line of Root's Sundries

such as Smokers, Sections, Cowan Extractors, etc. Let us have your name and address at once, and we will send you our catalog.

Union Hive & Box Co.
Los Angeles, Cal.



Montana, Minnesota, Dakota, and West'n Wisconsin BEE-KEEPERS

Our 33d annual catalog (for 1903, 92d edition) is now ready. Send for a copy at once. We have a full line of goods in stock, and can fill orders promptly. Save freight by ordering of the St. Paul branch. **Bees and Queens.** Orders booked now for spring delivery. **Honey and Wax.** We handle honey and wax. Write for particulars.

The A. I. ROOT COMPANY
Northwestern Branch,
1026 Mississippi St.,
ST. PAUL, MINNESOTA
H. G. Acklin, Manager.

Texas Bee-keepers.

STOCK.—Our warehouse is now stocked with a good assortment of Hives, Sections, Extractors, and other supplies direct from Medina.

PROMPTNESS.—We can therefore fill your orders promptly. Do not suffer long delay by ordering from some distant point but send orders here.

HEADQUARTERS for bee-keepers in San Antonio. Whenever you visit San Antonio you are invited to call at our office and make it your headquarters. See our display of supplies. Leading bee-journals on file for your perusal too.

WANTED.—Beeswax and Honey. Write for particulars.

The A. I. Root Co.,
438 West Houston Street,
San Antonio, Texas.

BEEKEEPERS

Notice

We sell the Root goods here at Root's factory prices, which means the freight is paid to Des Moines, Iowa.

Immense stock and every variety of the best up-to-date goods now on hand packed for prompt shipment.

Satisfaction is guaranteed on every order sent us. Thousands have been pleased with their goods from us. We can satisfy you.

Write for estimates, sending list of what you will need, and get our discounts for early orders. We will save you money. Send to-day for 1903 catalog.

JOS. NYSEWANDER,
710-12 W. Grand Ave.
DES MOINES, IOWA.

26th Year

Dadant's Foundation.

WHY DOES IT SELL SO WELL?—Because it has always given better satisfaction than any other. Because in 25 YEARS there have been no complaints, but thousands of compliments.

WE GUARANTEE SATISFACTION.—What more can anybody do? Beauty, purity, firmness, no sagging, no loss. **PATENT WEED PROCESS OF SHEETING.**

BEESEX WANTED AT ALL TIMES.—Send name for our catalog, samples of foundation, and veil material. We sell the best veils, either cotton or silk.

LANGSTROTH ON THE HONEY-BEE, Revised. The classic in bee-literature. \$1.20 by mail.

Bee-keepers Supplies
of All Kinds.

DADANT @ SON,
Hamilton, Ill.

Why Not



Place your order now? We will make you special prices for early delivery. We are headquarters in Central California for Root's Cowan Extractors, Sections, Weed Foundation, Smokers, etc., as well as a full line of local-made supplies. We can give you prompt service. We solicit your patronage.

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Madary's Planingmill
Fresno, California.