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GLEANINGS IN BEE CULTURE

BEE-KEEPING AS AN OCCUPATION

"Bee-keeping is not an occupation in which one can easily become wealthy. . . It can be depended on to furnish a comfortable living, and perhaps enable a man to lay up a few thousand. . . Fortunately, however, the professional man's happiness bears little relation to the size of his fortune; and the man with the hum of the bees over his head finds happiness deeper and sweeter than ever comes to the merchant prince with his cares and his thousands."

—W. Z. HUTCHINSON.

THE A. I. ROOT CO.
MEDINA, OHIO.

Western Edition

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North Texas Beekeepers

will find Dallas the best point from which to purchase supplies. We have a carload of ROOT'S GOODS in stock, and sell them at Factory Prices. Don't forget that we can furnish anything in the way of field or garden seeds, plants, and poultry supplies. Large illustrated catalog for 1906 free on application. Mention *Gleanings* when you write. Wish to purchase Beeswax.

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Seed and Floral Co.
Dallas, Tex.

SPRINGFIELD MISSOURI

We carry a large and complete stock of
The ROOT'S 1906
BEE-SUPPLIES

All orders filled same day as received, thus insuring for our customers quick service, Springfield freight rates,

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Send for seed catalog, bulb and plant catalog, Cyphers incubator catalog, The A. I. Root Co. bee-supply catalog

SPRINGFIELD SEED CO.
Springfield, Mo.

MY DREAMS HAVE COME TRUE

EVER SINCE I was a little boy at Leon Springs, Texas, I was wishing to be a bee-keeper; but my few colonies would not increase fast enough to suit me, so I started to take orders for The A. I. Root Company, until gradually I managed to keep a small stock of supplies, in connection with the bees. Year after year my bees increased, and the supply trade became more extensive, although I was only a boy under age. Many times during a honey-flow I would take a bee-journal and a lantern in the evening after supper, sit on a bee-hive in my apiary where all the bees were humming and the sweet odor of the wax-working bees would surround me, and read until midnight. Although a boy, I began to order supplies in carload lots. I found it necessary to move to a city, and chose San Antonio. Here I had the best of shipping facilities, but year after year the supply business increased so that I could not fill orders as fast as they came in. Many times I would wish in my dreams that I had a large warehouse on a railroad track, filled with supplies, and plenty of good help to take care of all the trade promptly. So I found it necessary to locate on a railread track, and in 1904 I bought a place of business on the S. A. & A. P. Railway, opposite the passenger depot, fronting South Flores Street, where I have a building 40x250 feet filled to the brim with Root's supplies of every description—honey-cans, honey, and every thing in connection with this line of business. I also installed a Weed New-process Foundation factory, where we can make 500 pounds of comb foundation daily; have plenty of good help both in the office and warehouse, and I am happy to say that the past season I have had no difficulty whatever to take care of all orders promptly. Do not forget when you come to San Antonio to be sure to make me a call. I have large office rooms with plenty of desks and writing material, so when you come make yourself at home, do your corresponding from here, and read the bee journals. I have a reading-table with all the bee-journals bound, and at your disposal.

HONEY-CANS.—Nearly every bee-keeper in Texas knows my high grade of honey cans and cases, so it is needless to say any thing in this line except that I have a very large and complete stock, and am in a position to ship promptly.

The following are the standard honey-packages for Texas, made so by the Texas Bee-keepers' Association:

Prices f. o. b. San Antonio—	1 to 10 cases,	10 to 50 cases,	50 or more cases,
3-pound friction-top cans, 20 in a case	\$1 10	\$1 05	\$1 00
6-pound " pails, 10 "	1 00	95	90
12-pound " " 10 "	1 35	1 30	1 25
60-pound square cans with 8 inch screw caps, two in a case.....	1 10	1 05	1 00
60-pound " " 1 3/4-in. "	85	80	75

Hoping to be favored with your valued order, I beg to remain

Yours very truly,

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South Flores St.

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

Give me your order for the BEST GOODS MADE. You will be pleased on receipt of them. You will SAVE MONEY by ordering from me. My stock is complete; in fact, I keep EVERY THING the BEE-KEEPER needs. CINCINNATI is one of the best SHIPPING-POINTS in the Union, PARTICULARLY IN THE SOUTH, as all freight now GOES THROUGH CINCINNATI. Satisfaction guaranteed. Send for descriptive catalog and price list. It will be mailed you promptly FREE of charge.

Six Per Cent Discount For Cash Orders Received in January

I will buy your HONEY AND BEESWAX. I pay CASH ON DELIVERY; or, if you are in NEED OF HONEY, write for prices and state quantity wanted, and I will quote you the lowest price of any quantity wanted—in cans, barrel-lots, or car-lots—of EXTRACTED or COMB HONEY. I guarantee its purity.

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Let me book your order for queens. I breed the finest GOLDEN ITALIANS, RED-CLOVERS, CARNIOLANS, and CAUCASIANS. Can furnish NUCLEI beginning of June. For prices, refer to catalog, page 25.

I have in stock seeds of the following honey-plants: White and Yellow Sweet-scented Clover, Alfalfa, Alsike, Crimson Clover, Buckwheat, Phacelia, Rocky Mountain Bee-plant, and Catnip.

C. H. W. WEBER,

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

Cincinnati, - Ohio.

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.

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.

TORONTO.—Prices here remain about the same. Honey is never scarce in Toronto if there is any surplus in the smaller towns, as so many bee-keepers still persist in sending their honey to the large cities, when they could often get a better price in country towns, where there are no bee-keepers to compete with. We notice there are not so many offering honey for sale this month as there were in December, so we presume the bee-keepers have placed most of their surplus stock. Prices at present are as follows: Extracted, 6½ to 8; comb, \$1.50 to \$1.75. E. GRAINGER & Co.,
Jan. 8. Toronto, Ont.

CHICAGO.—The market is steady, with about the usual demand. The prices range from 14 to 15 for best grades of white comb honey. There is not an active demand for off grades, which usually sell at 1 to 3 per lb. less. For extracted a steady demand exists for the best grades at 6½ to 7; but for sour or off flavors there is practically no sale. Beeswax brings 30.
R. A. BURNETT & Co.,
Jan. 8. 199 South Water St., Chicago, Ill.

TOLEDO.—The demand for comb honey at this season of the year is rather quiet, and prices have weakened somewhat. We quote fancy white clover at 14 to 15; No. 1, 14, with no demand for amber. Extracted white clover in barrels brings 6 to 6½; cans, 6½ to 7½; amber extracted in barrels, 5 to 5¼; cans the same. Beeswax, 30 to 32.
GRIGGS BROTHERS,
Jan. 8. 521 Monroe St. Toledo, Ohio.

BUFFALO.—Since the holiday season, the demand for honey is very slow. There is very little change in the prices, because the dullness is not owing to the price now, but to the usual slow demand at this time of the year. Fancy and A No. 1 white comb, 13 to 14; No. 1 ditto, 12½ to 13; No. 2 ditto, 11 to 12; No. 1 dark ditto, 10 to 11; No. 2 dark ditto, 9 to 10; white extracted, 6½ to 7; dark ditto, 5 to 5½. Beeswax, 28 to 30.
W. C. TOWNSEND, Buffalo, N. Y.
Jan. 10.

CINCINNATI.—The nice weather holds back the demand for comb honey. Crops seem to be exceedingly short, and producers in the West keep the prices high. We quote as follows: Fancy water-white and No. 1 white clover, 14 to 16; No. 2, 12 to 14. Extracted seems to be more plentiful, and we quote same in barrels at 5¼ to 5½; in cans, ½ ct. more; white clover, 7 to 8. Beeswax, 28 to 30, C. H. W. WEBER,
Jan. 8. 2146-8 Central Ave., Cincinnati, O.

ST. LOUIS.—Our honey market rules very slow, and prices are easier on account of the dullness prevailing. We quote: Fancy white comb honey, 13 to 14; No. 1, 12 to 13; amber, 11 to 12; California light amber, in 5-gallon cans, 6 to 6½; white and Spanish needle, 7; Southern in barrels, 4¼ to 4¾; in cans, 5 to 5½. Beeswax, 28½ to 29. R. HARTMANN & Co.,
Jan. 8. 14 So. Second St., St. Louis, Mo.

CINCINNATI.—There is no demand for honey at the present time, on account of the holidays. However, we look forward to a revival of trade about the 15th of the month. The price of comb honey remains firm. Quote fancy white at 15 to 16½; extracted amber, in barrels, 5 to 6½, according to quality; fancy white extracted honey in 60-lb. cans, 7½ to 8; amber in cans, 6 to 7. We are paying 30 cts. per lb. delivered here for choice yellow beeswax. THE FRED W. MUTH CO.,
Jan. 8. 51 Walnut St., Cincinnati, O.

NEW YORK.—Comb honey pretty well cleaned up, and there is still a fair demand. We quote fancy white at 14@15; No. 1, 13; amber, 12; buckwheat, 10@11. Extracted in fair demand, especially California. We quote white, 6½@7; light amber, 6@6¼; amber, 5½@5¾; buckwheat, 5½@6; Southern, in barrels, not much demand and rather hard to sell, 50@60c per gallon, according to quality. Beeswax firm and steady at 30. HILDRETH & SEGELKEN,
Jan. 10. 265-267 Greenwich St., New York.

BOSTON.—There is a good demand for strictly new honey, with light supplies. We quote fancy, 16; A No. 15; No. 1, 14½ to 15; No. 2 practically out of the market. Large stock of old honey on hand going very slow. Prices nominal. BLAKE, SCOTT & LEE,
Jan. 11. 31-33 Commercial St., Boston, Mass.

SCHENECTADY.—We report a very quiet market since the opening of the new year, with unchanged prices. Merchants, as a rule, are taking account of stock, and do not care to buy until through. CHAS. McCULLOCH, Schenectady, N. Y.
Jan. 9.

KANSAS CITY.—The honey market as usual shows quite a little decline during the holidays, amber selling at \$2.75; white from \$3.00 to \$3.10. Extracted, 6 to 6½. Beeswax, 25. C. C. CLEMONS & Co.,
Jan. 8. Kansas City, Mo.

COLUMBUS.—We quote: Fancy white comb, 16; No. 1, 15; No. 2, 13; amber, 12. EVANS & TURNER Co., Columbus, O.
Jan. 8.

BEE SUPPLIES.

We handle the finest bee supplies, made by the W. T. FALCONER MFG. CO. Jamestown, N. Y. Big Discounts on early orders, let us figure with you on your wants.

MUTH SPECIAL DOVE TAIL HIVES, have a honey board, warp-proof cover, and bottom board, think of it, same price as the regular styles. Send for Catalog.

THE FRED. W. MUTH CO.,

51 WALNUT ST.,

CINCINNATI, OHIO

ATLANTA.—Our market is rather quiet; very little honey moving. We quote: Fancy white comb at 12½ to 14; A No. 1, 11 to 12½; No. 1, 10 to 11. Extracted is slow at 6 to 8. JUDSON HEARD & Co., Atlanta, Ga. Jan. 9.

DETROIT.—The demand for honey is lighter at present, with slightly lower prices as the result. Fancy and A No. 1 white comb, 13 to 13½c; light amber, No. 1 quality, 12c. Darker grades, 11 to 11½. Extracted, white clover, 7½ to 8; Beeswax, 27 to 29c. Jan. 15. M. H. HUNT & SON, Bell Branch, Mich.

FOR SALE.—Three barrels of buckwheat extracted honey; new barrels; weight, 390 lbs. net each, at 6c on car. Sample free. E. D. TOWNSEND, Remus, Mich.

FOR SALE.—Extracted honey—fancy white, 6½ cts.; fancy amber, 6 cts.; ¼ cent less in five-case lots or more. C. C. CLEMONS & Co., Kansas City, Mo.

WANTED.—Comb and extracted honey. State quality, quantity, and price. JUDSON HEARD & Co., Atlanta, Ga.

FOR SALE.—Superior grades of extracted honey for table use. Prices quoted on application. Sample, 10 cts. to pay for package and postage. O. L. HERSHISER, 301 Huntington Av., Buffalo, N. Y.

FOR SALE.—Finest quality new-crop California water-white, white-sage, and light-amber honey in 60-lb. tins, two in a case; new cans and new cases. Write for prices and samples, and state quantity you want. HILDRETH & SEGELKEN, 82 Murray St., N. Y. City.

FOR SALE.—One ton No. 1 white comb honey, in no-drip cases, 24 sections to case, at 14c per lb. Water-white extracted 8½c; amber, 7c, in 60-lb. cans, two in a case. Light-weight white comb at 13c. QUIRIN-THE-QUEEN-BREEDER, Bellevue, O.

WANTED.—We will be in the market for comb honey in both local and car lots, and parties having same to sell or consign will do well to correspond with us. EVANS & TURNER, Columbus, Ohio.

WANTED.—I will pay spot cash for one to ten tons of water-white or amber extracted honey at railroad station. C. W. DAYTON, Florence, Cal.

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.—Comb, extracted honey, and beeswax. State price, kind, and quantity. R. A. BURNETT, 199 South Water St., Chicago, Ills.

WANTED.—Fancy white comb honey, also extracted honey in barrels. Send samples, and name best price delivered here. GRIGGS BROS., Toledo, Ohio.

WANTED.—Clover and basswood extracted honey; also No. 1 amber honey. Send sample, and state quantity and price, delivered at Preston. M. V. FACEY, Preston, Fillmore Co., Minn.

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Yours truly, N. E. Franca.

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Gleanings in Bee Culture.

Devoted to Bees, Honey, and Home Interests.

Circulation 25,000. Reaches every State and sixty foreign countries.
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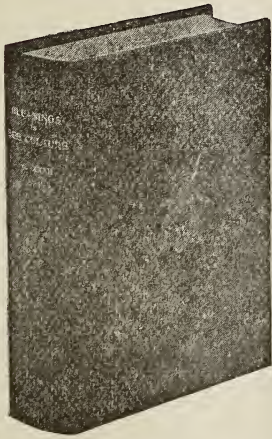
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SO MANY inquiries reach us regarding early volumes of GLEANINGS that we submit the following list for convenience of present subscribers. The prices named are subject to withdrawal without notice, as our stock of many volumes is very low. This accounts for the price asked for some being so much higher than others.

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The A. I. Root Company, Medina, Ohio

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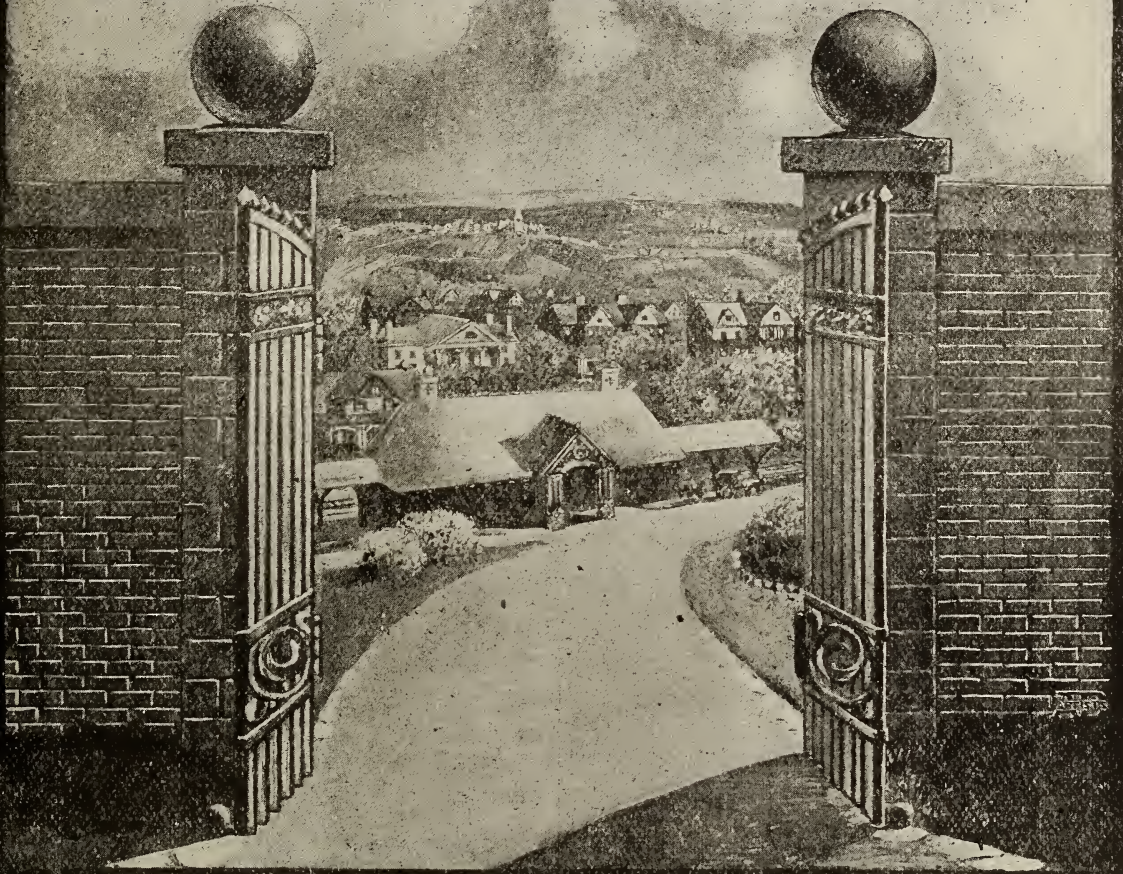
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SUBURBAN LIFE

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S. S. McCLURE

Editor

McClure's Magazine

New York City

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Beginning January 1, 1906, Mr. C. P. Dadant will begin in the WEEKLY AMERICAN BEE JOURNAL a series of articles describing in detail the very successful methods of the Dadants in the production of large crops of honey. To the one who wishes to make money in keeping bees, this Dadant series of articles will be worth—well, who can estimate their value?

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SOUTHERN BEEDOM

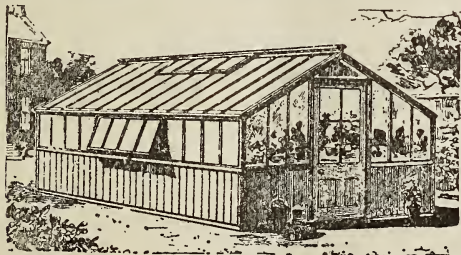
This is another new department to begin in the WEEKLY AMERICAN BEE JOURNAL January 1, 1906. It will be conducted by Mr. Louis H. Scholl, of the Texas State Agricultural College, in charge of the Experiment Station Apiaries, numbering some 250 colonies. It will be a great department for Southern bee-keepers.

The foregoing are only SAMPLES of the good things to be in each number of the old WEEKLY AMERICAN BEE JOURNAL for 1906. And the cost is only \$1.00 a year—less than two cents a copy. Every bee-keeper who wishes to succeed should have the AMERICAN BEE JOURNAL, no matter how many other bee-papers he may be taking. Sample copy free, or a three-months' trial trip for 20 cents. Address

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Charles H. Manley,

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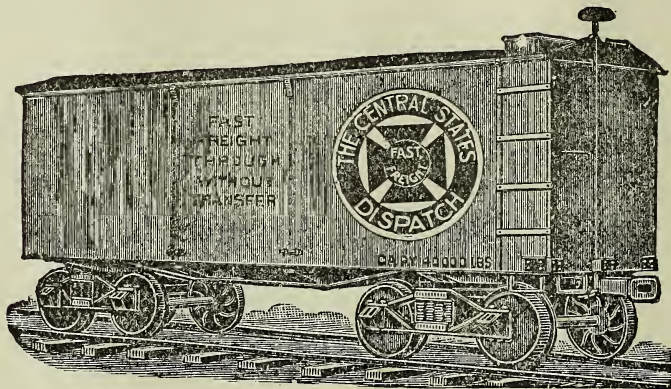
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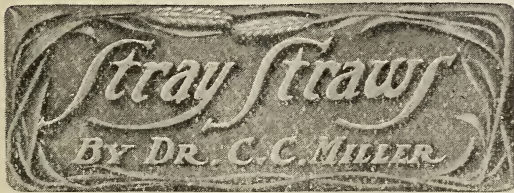
ILLUSTRATED SEMI-MONTHLY

Published by THE A. ROOT CO.
\$1.00 PER YEAR MEDINA, OHIO.

Vol. XXXIV.

JAN. 15, 1906.

No 2



C. J. JOHNSON, don't use a Miller feeder in winter. Use combs of honey or candy; and if you must use syrup, a Doolittle is better than a Miller in winter. Page 36.

E. MATTY, p. 36, you can keep chaff hives in the same cellar with other hives, but you'd better follow the editor's advice with this modification: Put *part* of the chaffs out and part in. [I accept your amended advice. —ED.]

E. W. ALEXANDER says, p. 27, "We don't like any shade among our hives." Please tell us why. [When I visited Mr. Alexander he said he had noticed for many years that the shaded bees did not do quite as well as those out in the open; and next season he expected to cut out even the few trees remaining in his yard. —ED.]

C. A. HATCH, what a rascal you are, to dangle before one's eyes the prospect of knowing something positive about overstocking, only to end up by saying, p. 21, "I am forced to admit I know but little about the matter." Well, the disappointment is somewhat relieved by the thought that you're about as ignorant as I am.

SPEAKING of kinds of frames to suit all, the editor says, page 15, "It is the old, old story, that you can not make one shoe fit every foot." Yet I've known an editor to insist I should wear an extracting-shoe on my comb-honey foot—in other words, that I should use a frame suited for extracting, when I don't care a rap what extracting men use. [Yes, I believe I did give you some such advice. For myself, at least, I would have a frame that would be suitable for either extracted or comb honey. —ED.]

THE INDEX seems to the editor a matter of some value, p. 15. I indorse all he says. I felt as pleased to get the index as if it had been an additional number. But I want to speak a good word for another thing. The index is not available till the close of the volume. If I want, Dec. 5, to look for an item that appeared earlier in the year, there is nothing for it but to leaf through the preceding hundreds of pages if it were not for the table of contents that appears in each number. In a late number of the *British Bee Journal* it was said that that paper and GLEANINGS were the only bee journals giving such tables. Thanks for the index, and thanks for the tables. [The bee-keeper or correspondent who does not find an index to his journal useful enough to bind it carefully with the rest of his journals will be losing a great deal of the value of the discussions, both past and future. I suspect this, though: That if every reader of GLEANINGS had spent the hours and hours of hard labor that Stenog and I have on that list, they would appreciate its value, perhaps, more than they do. —ED.]

J. W. ORMSBY, your section-protector, p. 23, may work all right with you; but if used here the bees would crowd propolis in the crack between sections and protector, wedging it in so tight as to raise the protector, and then the glue would be crowded in just as far as their tongues would reach, unless there is some additional weight to hold the protector down. You say, "In using this we can leave the sections on any length of time, and they can't be soiled." I'm afraid some beginner may understand from this that no harm will come to sections left on after the flow, if only they have the protector. The chief harm done to sections left on after the harvest is over is not from bee-glue on the wood, but on the comb or foundation, and this no protector can help. [Your point is well taken; indeed, I intended to mention that very thing, but overlooked it. That is one reason why wide frames are not as good as T-supers or topless wide frames—that is, section-holders. Unless the covering strip, or protector, fits down perfectly smooth and

tight, as you say, there will be propolis streaks along the edges as you describe. —ED.]

WHAT ANSWER, Mr. Editor, is to be given to South Georgian, who wants to know, p. 24, whether the Danz. $4 \times 5 \times 1\frac{3}{8}$ section holds a full pound at Medina? A 4×5 section has 11.3 per cent more surface than a $4\frac{1}{4} \times 4\frac{1}{4}$ section; and if a $4\frac{1}{4} \times 4\frac{1}{4}$ section holds 15 oz., a 4×5 section of the same thickness ought to hold nearly 16.7 oz. But, S. G., if your observations were for only one season you mustn't count them too conclusive, for another year the bees may put more honey in the same sections. [I was surprised that I had not answered South Georgian's question so plainly asked. In answer I may say that the $4 \times 5 \times 1\frac{3}{8}$ section will not average a pound in Medina. The "fancy" will weigh practically a pound. But, doctor, your figures are a little misleading. When you compare the $4 \times 5 \times 1\frac{3}{8}$ section with a $4\frac{1}{4}$ square, you are assuming that the latter is $1\frac{3}{8}$ thick, which is not the fact. As a matter of fact, the $4\frac{1}{4}$ square plain is $1\frac{1}{2}$ thick. So far as I know, there are no $4\frac{1}{4}$ plain $1\frac{3}{8}$ thick; therefore it does not follow that the 4×5 should hold $16\frac{7}{10}$ ounces unless it is $1\frac{1}{2}$ inches thick, and it is not so made except on special order. You can not, of course, compare any plain section with one having beeways. The cleats on the fences are $\frac{2}{16}$ thick, while the beeways on the slotted sections are $\frac{3}{16}$ wide; so that, in the case of plain sections, a small part of the beeway is in the section. Therefore it follows that a $1\frac{7}{8}$ beeway section has slightly more capacity than the $1\frac{1}{2}$ plain, although they both hold approximately the same. —ED.]

MARBACH'S metal spacer is an improvement over the regular Hoffman by just the amount less of contact surface, and that's a good deal. It can be used interchangeably with the regular Hoffman; but it must be remembered that a hive filled with each kind alternately would be no better than to have all regular Hoffmans—possibly not so good—for there would be a space of $\frac{5}{8}$, which the bees would be sure to fill with glue. [Possibly the space of $\frac{5}{8}$ would be filled up in your locality in time. Yes, I know it might in time in a good many places; but it would be the work of just a moment to take a knife or, perhaps better, some blunt instrument and scrape out the propolis between the projecting points when it is warm. In some localities I have seen even the tin rabbits on the hive filled level full, but we have never seen any thing of the kind around here. But say, doctor, if you will get rid of those hybrids, and put in all pure Italian stock, the same as our friend Alexander and most of the bee-keepers in York State are being forced to do on account of black brood, you will have a great deal less of that propolis, I think. I used to notice when we had black bees how they and their crosses would fill up every thing with bee-glue where Italians would leave the same things reasonably clean, or at most smear them

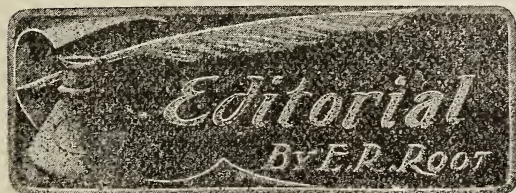
with a red stain. Come, now, doctor, will it not pay you to rear pure Italian queens, and requeen every colony that does not have pure yellow blood? I remember that one time you bred purposely from a hybrid because she was a great money-getter. —ED.]

THE QUESTION of filling the vacancy in the Board of Directors in the National is a rather ticklish one. There seems ground for saying States should be represented on the Board according to proportion of membership. But with only twelve members on the Board, strict justice can not be done on a representative basis, for not more than twelve States can be represented at best. It has rather seemed that we were better off when the Board was only half as large as now. With so small a number there could be no thought of sectional representation, and no feeling of jealousy in that regard—the only thought being to get the best men, no matter where located. On the other hand, local representation has its advantage in local interest. Genuine representation would demand a member of the Board from each State, with an additional member of the Board for every so many additional members in each State. But that would make a board very cumbersome. In fact, it is too cumbersome now for prompt expedition of business, seeing the business must be done by mail. Possibly a plan might be devised to have a large representative board, this board to select a central committee to do most of the business. [This is one of the questions that was brought up at the last National convention; and after an hour of talk we practically got back to where we started. This is a matter that, in my opinion, should be discussed through the bee journals so that the *entire membership* can have a hand in it if it desires, then vote intelligently on the proposition when it is put to them in concrete form. —ED.]

YOU BUCKEYES seem to be doing a good bit of crowing because you're getting the upper hand in the fight with boss Cox and the rest of the whisky gang. I don't blame you the least bit; but I want you to understand that you're not the only pebble on the beach. At the last session of the Illinois State Legislature three of its members were Prohibitionists, and there is a fair prospect that the number will be largely increased in the next session. I don't think you can match that in Ohio, nor for that matter in any other State. It doesn't mean that the third party has become so wonderfully strong. These three men were the nominees of the Prohibition party, but they were by no means elected by a third-party vote. A lot of clean men in the old parties have gradually become so restive under the party yoke that they finally said, "Put clean men on the ticket, men who will work against the saloon, or we'll bolt the ticket." The party machines counted on that as mere talk, and put on men who would stand for the saloon. Then the unexpected happened:

The ticket was scratched, and votes were cast for men pledged to work for prohibition. Revolutions don't go backward; look out for the Sucker State next time. [But the independent spirit among voters in Ohio is very strong. I hope the day is past in our State when Republicans or Democrats will any more accept any candidate, good or bad, that their respective bosses happen to jam through the nominating convention. If ever politicians in Ohio have been taught a lesson at all it is this: That they must never again allow a boss to jam a candidate on to a ticket when such candidate is not acceptable to the party at large.—ED.]

THE ROOT TWIN mating-box may be no better down south than the single box, but I'm sure it's better up north. And while you're at it, why not have triplet boxes? You could have three compartments like the two you already have, or you could have a middle compartment for only one frame, only in the latter case you must be sure to have the middle compartment *at least* two inches wide. I'm not speaking at random, but from actual experience, having had fifty such triplet hives in use, only they had full-sized L. frames. [We could make a triplet box, but the middle compartment would have a great advantage over the two outside ones. This, perhaps, would do no harm. The twin box, as it is, is very nearly cubical; and by putting the flight-hole on each diagonally opposite corner there would be no trouble from the queens mixing. But when we have a triplet box we introduce a complication, because we are compelled to get one pair of holes pretty close together.—ED.]



I HAD intended to say something about the Chicago convention; but just before going to press I found my space was all taken up with other matter. I will try to give some sidelights in our next issue.

BENTON IN THE CAUCASUS (RUSSIA).

OUR readers will remember that the Division of Apiculture, Department of Agriculture, Washington, reported last summer that its last imported Caucasian queen was dead; and as there were serious uprisings in the Caucasus regions, in Russia, Dr. Phillips in charge had grave doubts as to whether Mr. Benton, then in Europe, would be able to get any more queens of this race. At all events, he (Benton) it appears pushed on, and, although he encountered all sorts of difficulties, such as detention and actual im-

prisonment, to say nothing of the risk of life, he secured queens of this race and sent them on to the Department, so that the government is well supplied with imported Caucasians. It appears from the postal card which will be seen on page 92 that Mr. Benton is not entirely through with the difficulties of his journey yet. His lightning express train may ditch him yet.

BEEES AND POULTRY.

SEVERAL of our subscribers objected to the severe strictures placed on the American hen by Mr. Frank McGlade in our issue for Dec. 15, page 1307; and from the amount of correspondence that has come in, it is apparent that a large number of bee-keepers are poultry-keepers also. It is these particularly who think Mr. McGlade has been unfair to the hen. In this issue we are publishing two articles which I hope will help to even up things a little. But our poultry-keepers must not take the statements of Mr. McGlade too seriously. While he states the actual facts in his own experience, yet there is a sort of humor about the whole of it, and this is made the more emphatic by the cartoons by our artist, Mr. Murray.

I suppose that, as a matter of fact, the great majority of bee-keepers have some other pursuit in connection with their bees. Many keep poultry; many others run a small fruit-farm, and others still have a regular ranch or farm. It is not the policy of GLEANINGS to run down any industry that may happen to be run in connection with bees; and we are sure that Mr. McGlade had no desire to do the poultry business an injustice.

THE USE OF A NOM DE PLUME.

GLEANINGS admits the use of a *nom de plume* whenever a correspondent desires, from motives of modesty, to conceal his identity, or in cases where a busy man desires to avoid a correspondence more or less voluminous, which may follow in case his name is put before the public. But we will not allow a correspondent who desires to strike back at some one to come out under mere initials or a *nom de plume*. If he desires to score the other fellow he must stand out in open fair fight; and even then we reserve the right to temper his language or omit it altogether. GLEANINGS will not be a vehicle for personal quarrels and wrangles, but it will allow fair dignified discussion, the purpose of which is to bring out new sidelights or correct error. Two or three times lately a correspondent has desired to strike back at another one, and requested the use of his initials or a *nom de plume*. I wish to make the position of GLEANINGS on this point clear once and for all.

THE SIMMINS DIRECT METHOD OF INTRODUCING QUEENS.

A CORRESPONDENT in this issue refers to the Simmins direct method of introducing. As some of our readers may be unfamiliar

with the plan, perhaps it will be well to describe it here. The reigning queen is removed a few hours previous to liberating the new queen; then the queen to be introduced is kept from food for at least half an hour, when she is liberated right on the combs just after dark by lamp light. The hive is not to be opened again for 48 hours. The object of starving her a little is to put her in the right attitude whereby she will be favorably received. She will ask for food, which will be given her, and this of itself has a tendency to predispose the bees toward her favorably. Mr. Simmins claims the method is almost infallible; but we have not found it so in our own experience. The average bee-keeper would, in my opinion, secure better results by following the candy methods as recommended in all the mailing-cages that are sent out; but in this connection it might be well to state that the best time to introduce queens is toward night, especially if they are to be released among the bees.

DAMPNESS — IS IT DETRIMENTAL TO THE WINTERING OF BEES IN BEE-CELLARS?

In the department of Conversations with Doolittle, in this issue, Mr. D. rather conveys the impression that dampness is not harmful in cellars, and that ventilation is a detriment rather than a benefit. Both of these factors, whether injurious or not, hinge on conditions afforded by the structure of the cellar, and the locality. I fear that, if the advice or teaching is followed by others, it is liable to lead to disaster. While there can be no question that Mr. Doolittle's practice is correct so far as his locality and conditions are concerned, yet a change of conditions would, I am sure, give entirely different results. Mr. Doolittle is able to do what most of us can't do, and that is to control temperature within a range of three or four degrees, and this one factor makes it possible for him to get along with little or no ventilation, and at the same time protects the bees from the dampness described. In our locality, subject to such extremes of temperature, dampness makes fearful havoc. We tried to do as Doolittle does, and failed with a loss of some three or four hundred colonies in two different cellars at outyards. The experiment was not tried once, but several different winters. When the temperature is liable to go up or down, ventilation and dampness are two very important factors. This conclusion is not based on experiments made in Medina only, but observations made in other cellars in different parts of the country. Our temperature runs all the way from 38 or 39 up to 60 and 65. When high, we ventilate; when low, we close the windows, letting the natural heat of the cellar warm it up. Our cellar always smells sweet, and the bees come out in fine condition. But in two other cellars where we had dampness and didn't ventilate, the bees nearly all died each winter, and even when we did ventilate the dampness killed them just the same. When the temperature is

liable to go down below 40° F, accompanied with dampness, serious results are almost sure to follow.

CAUCASIANS; CONFLICTING TESTIMONY CONCERNING THEM.

In this issue we publish an article from D. E. Lyon, Ph. D., which speaks quite favorably of Caucasians. It will be noted he introduces a letter from Mr. Frank Benton, which, while not claiming any thing remarkable for these bees in the way of honey-production, goes on to describe their distinctive markings. The illustration in Dr. Lyon's article, in connection with Mr. Benton's description, will give one a pretty fair idea of how this particular strain of bees looks. It seems as if there would be no difficulty in distinguishing these from the ordinary black bees of this country.

But while we hear all kinds of conflicting testimony as to their value as honey-producers, yet there seems to be substantial agreement as to their gentleness; but on other points the testimony is decidedly at variance. Mr. J. B. Hall, of Canada, one of the fairest bee keepers — that is, as little open to prejudice as any one on this continent — describes in the *American Bee-keeper* one strain of Caucasians which he introduced 22 years ago, and which, ever since, he has been trying to get rid of. They ran too much to building queen-cells, he says, he having counted at one time as many as 112 perfect queens thrown out in front of the entrance of one hive. Another thing, their cappings were concave instead of convex.

Mr. Julius Hoffman, of Hoffman-frame fame, in the *American Bee-keeper*, says he introduced them to his apiary in 1880. He reports that they did little or no work on buckwheat, but produced the finest grade of white comb honey. This would conflict somewhat with the statement of Mr. Hall; but he agrees with him when he says they will raise from 75 to 100 queen-cells in bunches. He concludes by saying he thinks they would be a good bee for clover sections; but because they are practically useless for buckwheat honey he discarded them. But both Mr. Hall and Mr. Hoffman speak of their bees as being more or less yellow, resembling Italians. Mr. Abram Titoff, the Russian representative in this country, speaks of two strains of Caucasians — the yellow and the black in particular. The kind condemned by Mr. Hall and Mr. Hoffman in the *American Bee-keeper* were on the yellow order, while those praised by Dr. Lyon are black. Apparently there may be a difference in the strains of this race.

Some seven or eight years ago, while I was in Colorado, the Raufuss Brothers spoke to me about a new race that was very gentle and good workers, which they had just introduced. If I remember correctly they were Caucasians. These bees looked very much like the black Caucasians that I have seen in recent importations. At that time both the Raufuss Brothers spoke favorably of the bees, particularly putting

emphasis on their gentleness; and I have understood that they still regard them in the same light.

At the National convention in Chicago, Mr. Holtermann stated that J. B. Hall had told him the Caucasians were the meanest bees to weed out of a locality that he ever came across. He had been 22 years in trying to get them out of his, and still their blood showed up in spite of him. There was considerable between-session talk concerning these bees, and some thought they might prove to be another case of the English sparrow; but Dr. Phillips, of the Department of Agriculture, Washington, did not think we need have any fear along that line. Apparently the strains the government has introduced are not of the type complained of by Mr. Hall and Mr. Hoffman.

Perhaps we shall have to conclude there are Caucasians and Caucasians; but it may be wise for us to go slow about introducing them in our own localities. GLEANINGS has absolutely no interest in these bees; indeed, its publishers have not even decided that they will offer them for sale the coming season. A. I. Root is testing a black strain of the bees on one of the islands off the west coast of Florida. He may be able to produce them in their purity, and at the same time prevent their being spread to other localities, should they prove to be undesirable, as they have been in Mr. Hall's experience.

A DAMAGING LIBEL ON BEES AND BEE-KEEPERS.

THE following item appeared in the *Detroit Free Press* for December 10, and has since been copied and re-copied in numerous other papers, and speaks for itself:

"There are several popular errors about the ways of bees which need rectifying," said Ike Hubbard, a honey-hunter. "The average bee, instead of being an example of industry, is about the laziest thing that flies.

"Even in the busy season in midsummer no bee will quit its hive until after the sun is well up, and has taken off the heavier part of the dew; and so soon as the sun slants toward the hill in the afternoon every bee will come flying home and go to roost, though darkness is four or five hours away.

"Then there are few bees that will hunt for honey from flowers so long as they find corn syrup or brown sugar to steal. This fact is so well known to apiarists that many bee-keepers buy corn syrup for fifty cents a gallon and pass it along to the bees, which convert it into something that resembles honey, but is not honey, and still sells for the genuine product of the hives. When a man can buy syrup for fifty cents a gallon, and then sell it back to the trader as honey for \$8 a gallon, he can get rich right away, provided he has enough bees."

I have read a good many false statements about the honey business, but I do not know that I ever saw one that is more untruthful, and more damaging to the bee business in general, because it purports to come from a *bee-keeper*, or one who *pretends* to "know it all." These "know-it-all" chaps generally do not know any thing about the thing they are talking of — at least it is so in this case. For example, witness his statement that honey brings \$8.00 a gallon. As a matter of fact, it doesn't bring much more than *one-tenth* of that in Detroit.

We call on bee-keepers everywhere to write to the papers publishing this stuff, denying this statement before it is copied and recopied any more. Now, do not drop the matter right here and assume that the other fellow will do it, but *do it yourself*. Sit down at once and write a sweeping denial, and say that bees won't take raw glucose; but be sure to make your language respectful, otherwise the editor will not publish it.

ADVANCED BEE CULTURE — NEW REVISION.

I HAVE in my hand a copy of this new work, containing 330 pages, and, as its title indicates, it is written for the benefit of experts. It is handsomely bound, beautifully printed, and illustrated with original photos made by the author. Taking it all in all, the book is the equal, if not the superior, from the standpoint of the printer's art, of any thing that has been published in bee culture; and in bee lore it is by no means a second to any of them. I said at the outset that it is a *new* work. From a glance over the previous editions it seems to be a good deal more than a revision, because it seems to be rewritten, almost every page of it.

The style of writing is simple, and easily understood. One does not have to read over a paragraph, written by W. Z. Hutchinson, the second time in order to comprehend the meaning. Indeed, I doubt if there is a clearer writer on bees in all beedom; and, what is more, he seems to have the happy faculty of arriving at the very kernel of every idea.

In one respect it is similar to our A B C of Bee Culture, in that it is a summary of the best ideas and methods brought out in the discussions of the respective journals of which the respective authors are editors. For that reason a new reader of the *Bee-keepers' Review* will find *Advanced Bee Culture* a necessity if he would get the benefit of current discussions in current issues. In like manner the A B C is a necessary complement to GLEANINGS.

The book starts off with a chapter entitled "Bee-keeping as a Business." In reply to what goes best with bee-keeping, the author characteristically replies, "Some more bees." He discourages the idea that one should run bee-keeping in connection with some other pursuit; and while doing so he does not overlook some of the difficulties of the one pursuit in seasons of the year when the bee-keeper has but little he can do profitably unless he can have a side issue. He lays great stress on the importance of having the right kind of bees and a good location; then he closes the chapter with the statement that bee-keeping is not an occupation in which one can easily become wealthy; but, rightly managed, the business will afford a comfortable living. But he adds in words that ought to be emblazoned in gold, "Many a man with the hum of the bees over his head finds happiness deeper and sweeter than ever comes to the merchant prince with his cares and his thousands."

"Making a Start in Bee-keeping" is the title of the next chapter. He would advise the beginner to read all the standard textbooks, and, having done this, to subscribe for the best bee journals. Then he would urge his pupil to work one season with a good bee-keeper as an apprentice.

"Mistakes in Bee-keeping" follows next; and it is one of the most interesting chapters in the whole work. Here are just a few of the mistakes he points out: "A man who has decided to make bee-keeping his life business makes a mistake when he gets a few colonies and attempts to learn the business all by himself. . . . A beginner is quite liable to fall into the error of increasing his colonies too rapidly. . . . A mistake that is made by many is to look on bee-keeping as a sort of royal road to wealth. . . . Many bee-keepers make the mistake of computing their income at so many pounds per colony. . . . Another mistake is that of choosing hives, implements, and methods that are complicated. . . . Some bee-keepers make the mistake of condemning any practice not according to nature. The whole system of modern bee culture," he says, "is largely a transgression of nature's laws, or managing differently from what the bees would manage if left to their own way of doing things. . . . Many bee-keepers make the mistake of thinking they can improve some of the standard hives and implements, and that before they have fairly learned the business. Others make the mistake of adopting new hives and implements or varieties of bees on too large a scale. . . . One expensive mistake easily made and yet easily avoided is made year after year by many bee-keepers; and that is, not securing hives, sections, and foundation in season. . . . It is a mistake to suppose that a poor location can be changed to a good one by planting for honey."

"The Influence of Locality" is a chapter that shows the breadth of the author's views. He was, he says, often sorely puzzled at the diametrically opposite views expressed by different correspondents of the bee journals in his earlier experience; but at that time he was at his old home in Genesee Co., Mich. It was not until he had seen the fields of New York, white with buckwheat; admired the luxuriance of sweet-clover growth in the suburbs of Chicago; followed for miles the great irrigating-ditches of Colorado where they give life to the royal purple of the alfalfa bloom; climbed the mountains in California, pulling himself up by grasping the sage brush, that he fully realized the great amount of apicultural meaning stored up in that one little word *locality*. Then he goes on to describe the peculiarities of the different places, and then winds up this interesting chapter by the terse statement, "Above all things, know your locality."

"The best Stock and how to Secure it" is a chapter that would be considered orthodox by the great majority of bee-keepers. He says there are only two varieties of bees worthy of consideration for use in the Unit-

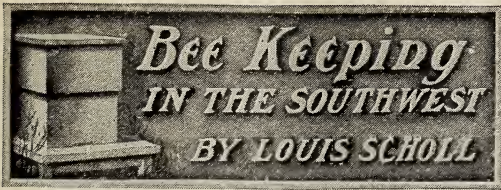
ed States. In fact, they are about the only varieties now left here for consideration, and they are the Italians and the Germans. The Syrians he criticises as being too prolific; Cyprians irritable, and the Carniolans too much inclined to spend their energies in breeding and swarming. The tendency of the Italians to put their honey in the brood-nest he thinks is now easily overcome.

The next chapter, "On the Choice of a Hive," gives the preference to the Langstroth hive and frame. This is a change of position from the former edition of his work, where he recommended the Heddon divisible brood-chamber. He has no use for staples or projections on frames to make them self-spacing, because he thinks the eye and hand can space frames without such aids. Closed-end frames have their advantages, but he thinks they are not equal to the loose unspaced hanging frame. In explaining his change of front from the Heddon to the Langstroth hive he says, "Divisible-brood-chamber hives cost considerably more than other styles of hives; and after using them for years by the side of the ordinary Langstroth hive, seeing them used by other persons in different locations, and considering the new features that have recently sprung up in bee-keeping, I have gradually come to the decision that, if I were now starting in the bee business, I would not use the horizontally divisible hive."

In the chapter on honey-boards and queen-excluders he describes the use of the Heddon slat honey-board and the queen-excluding zinc board.

"Sections and their Adjustment on the Hive" is the title of a rather interesting chapter. He gives the preference to the four-piece plain tall sections, to be used in connection with fences. In explaining this preference he says: "The principal advantage of plain sections and fence separators is that the freer communication thus allowed the bees induces them, for some reason, to build out the combs fuller around the edges and corners, and attach them more perfectly to the sections. This gives the finished product a more attractive appearance, and greatly lessens the danger of breakage in shipment. Another point, although it may be a minor one, is that a plain section is filled fuller of honey; that is, the edges of the wood do not stand out so far above the surface of the comb as they do in the beeway sections. A filled plain section has a plumper look than a beeway section, the latter having the appearance of being only partly filled. A tall plain section may not contain any more honey than a square section of the beeway type; but it *appears* to contain more, and has, withal, a more attractive appearance. There is still another little point, and that is that a plain section offers special advantages in the matter of cleaning it of propolis, as there is no inset to work into with the scraping-knife." I do not however, consider the advantages of the plain section sufficient to warrant any expensive change of fixtures in order that it may be adopted."

(To be continued.)



1906, and half a month of another bee-keeping year already gone.

Who, in the South, has tried "brick honey"? If a nice grade of candied honey can be obtained I shall give it a trial this winter. Who else wishes to make the experiment?

While our bees are actually flying on warm days, and gathering some honey and pollen, their Northern cousins are in the cellars or winter-packing, only dreaming of such things.

The most beautiful Christmas weather prevailed in our locality during the holidays this year. The bee-keeper, as well as his bees, rejoiced. Several good rains recently have added to the prospects for next season.

The greater activity of bees in a warm climate accounts for a greater amount of stores consumed by them. Not only are the bees themselves active, and through a much greater part of the year, but brood-rearing also continues much longer. More brood is required to replenish the colony with bees, worn out by the greater activity, hence more stores are needed.



KEEPING UP WITH THE BEES.

When the rain has been a pourin' down,
 An' to water it has changed the lan',
 An' the hand o' time is still a goin' roun',
 An' the sun is ag'in showin' its face,
 An' the bees a raisin' a heap o' san',
 Then's when it's the beginnin' of a race,
 While the apiary may be high and dry,
 An rivers may be higher'n' high,

An' the roads that no wagon nor wheel
 'll do any thing like a turnin' roun',
 Then's the time "ter take ter yer heels,"
 An' sink them inter the muddy groun'.

MORE HONEY GATHERED PER COLONY IN THE SOUTH.

With the abundance of honey-yielding flora, and the long warm seasons in the South, it would seem that a colony of bees must store an increased amount of surplus over a similar colony in a Northern locality with shorter seasons. This is not necessarily so, however. The colony with Southern conditions no doubt gathers more honey during the season, but at the same time it consumes much more. Not only is more consumed by the bees themselves, but a much greater number are reared. A colony in the North, therefore, may not *gather* nearly so much honey in a season, yet the surplus of both may be the same.

A FLIGHT BEFORE CELLARING.

Bees should be allowed an extra flight after hauling them home and before putting them into the cellar if the weather will permit it at all. The hauling stirs them up considerably, and a great deal of food is taken by the bees during the agitation. A cleansing flight after that will put them in good condition for the cellar, while without it the little creatures are gorged with excrement, of which they would have been free under natural conditions. Bees that have been hauled home and set out before putting into the cellar will fly the next day or as soon as the weather will at all allow them to do so, when colonies that remained undisturbed will not fly but remain quiet. The flight after the disturbance is necessary, therefore, and it should be given them by all means before putting them into the cellars when practical to do so.

MOSS FOR CLOSING ENTRANCES AND RELEASING BEES.

I have used moss as an entrance-closer a great deal, and in various ways, for a number of purposes. When entrances are to be closed rapidly and only temporarily, I know of nothing handier than the moss that covers some of our trees and hangs down within easy reach in some of our apiaries. Just to grab a handful of it and stuff it into the entrance closes it in short order. By a little forcing with the fingers it can be packed so firmly that it will secure the bees for some little time. Recently I had occasion to use it in closing entrances in two out-yards to confine the bees while erecting scaffolds upon which to set them above flood water. They were confined throughout an entire day and night, and next day until eleven o'clock. For closing entrances quickly and without any further preparation or expense, this served the purpose admirably.

But I make use of this method still further. When moving colonies a short distance the above method of closing the entrances for releasing the bees so they will not return to the old stands works like a charm. The

bees are left confined during the greater part of the day, or until near noon time, so that they become considerably disturbed. The moving to the new location can be done either during the evening or early morning before, and leaving them confined on the new location, or they can be confined on the old place when they are not flying, and then moved during the warmer part of the day. The latter is the most satisfactory, as the moving stirs the bees up more just before they are set free; but in warm weather the former should be adhered to.

To release the bees the moss is only partly removed from one side of the entrance, and left in front of it to obstruct the passageway somewhat. The bees rush out with a roar, and mark the new location immediately.

For closing up newly made nuclei, in out-yards especially, the moss, for closing the entrance, is most excellent and convenient. Several years ago a lot of 30 such nuclei were made and closed up while robbing was bad. The rest of the season was a bad one except for just enough honey coming in to keep the colonies built up. I did not return to this yard until next year, or nine months later, and found that all the nuclei had released themselves by gnawing away a part of the moss, and had built up to good colonies.

This taught me a lesson to go still a step further, and use moss in closing the entrances for winter. Only a small opening is left at one side of the hive. Next spring the bees can enlarge the entrances as they need it. I have two apiaries closed up so now, that I do not expect to visit until late next spring, when supers will be needed. If wood were used, extra visits would be necessary to regulate or open the entrances. The danger of a colony remaining closed up by oversight is also done away with, as the bees can free themselves.

SOME IMPORTANT QUESTIONS.

If we would only stop occasionally and ask ourselves a few questions I am sure we should profit by them. Instead we rush on in the same old way, and without the slightest thought that we might go slower, and make more by improving upon our ways and methods.

THE QUALITY OF OUR QUEENS.

First of all, what kind of queen heads each of your colonies? Is she as good as she should be? This is an important question. What, in the success of a colony, does not depend upon the mother of the hive? The best of them is none too good. It would be folly for one of our Texas "cattle kings" to head his herd with a scrub bull of unknown worth; yet too many bee-keepers are practicing just such a thing with regard to their queens. Entirely too little attention is given this subject. Were this not the case, much better strains of bees would be found in many of our apiaries instead of rundown strains that are not yielding their owner the profit that *could* be obtained.

PROFIT.

Here's an example. In an experimental yard of 21 colonies, managed for bulk comb honey, one colony produced 245 pounds of surplus. Four averaged 160 pounds each; ten gave 90 pounds each; three, 60 pounds; two, 15 pounds, and three gave no surplus, making a total of 2000 pounds, or a ton of honey. The difference in surplus stored was due to the queens more than any other condition. The colonies were all treated alike, and had the same chances. I knew the queens of each colony, and could judge them accordingly. The colonies making the larger yields contained queens of better stock from the previous fall's raising, and were in their prime. The others were either old or unproductive. The most prolific queen had the most populous and prosperous colony, and produced the most honey.

A LITTLE FIGURING.

Now let us suppose that such a queen would have been at the head of each colony. Might not the yield have been increased considerably? Instead of 2000 pounds it would have meant a total of 5145 pounds, or a gain of 3145 pounds. The selling price averaged 9 cents per pound, or \$180 for the crop. At the same rate a gain of \$283.05 would have been made. Is it needless to argue that improvement in stock would pay? It is only necessary to figure what returns would have been obtained with the colonies that produced only a small amount or no surplus.

WINTERING THE COLONIES.

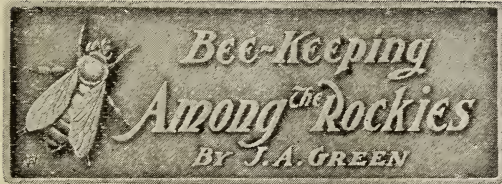
Do you know that your bees are wintering all right? Have they sufficient stores to last them, not only for the average winter but through a "rainy day" that might prolong the wintering season? Many bee-keepers suffered much loss last winter from just such carelessness. It was supposed that stores sufficient were in the hives to winter the colonies safely. The spring was late, cold, and wet, and the supply for an average winter was soon exhausted. As no new stores could be obtained by the bees they starved.

BEING PREPARED FOR THE HARVEST.

If the bees winter well, are you prepared for the honey-flow? That is, did you order your supplies *early*, get a good discount for ordering them early, and spend rainy days nailing them up, and making good wages while otherwise there would have been nothing to do? There is no doubt that the early-discount offers are of much value to the bee-keeper who observes them. It not only saves him money on the discount given, but he saves valuable time, and makes idle time valuable by nailing them up and preparing them for the season ahead of time. Your attention has been called to this matter so often, and it was kept before you so constantly in the advertisements of supply-dealers, that it is none but *your* fault if you did not take advantage of the opportunity.

DISPOSING OF THE CROP.

If you make a crop, what are you going to do with it? With many bee-keepers it is an easy matter to produce a crop of fine honey; but then their ability to handle it to advantage ceases. This should not be. The producer should know and understand how to make the most out of his crop. If he does not he should educate himself up to it. With some this ability comes naturally; but others must learn it. Education is necessary in other lines, and also applies in apiculture.



STORAGE-CRATES FOR COMB HONEY AND SECTIONS.

Doctor Miller does not seem to have understood my description of the way my storage-crates for comb honey are made, since he says that he does not understand that they are any more open than supers. If he will read over again my description on page 1121 of the way they are made, and will then make one up according to directions, he will see that they are very much more open and ventilated than any super, and that it would be practically impossible to pile them up in any such way that there would not be a free circulation of air through them. I made a slight mistake, though, in my description when I said that four pieces of lath make the bottom. It takes five pieces, supporting four rows of sections. These should not be nailed on so that the spaces between are exactly regular, but so that the inside ones are divided evenly between the rows of sections. To make a crate for $1\frac{1}{2}$ sections, using $\frac{3}{4}$ lumber for the sides, these pieces of lath should be $13\frac{1}{4}$ long. The sides on which they are nailed should be about $17\frac{1}{2}$ long (no shorter, though a little longer would do no harm) and at least $4\frac{5}{8}$ wide, making the inside depth of the crate a little more than the height of the sections.

Unless your lumber is perfectly seasoned, cut your boards $\frac{1}{8}$ wider. When honey is placed in this crate, the air always has free access to the bottom of the sections, even if the top is tightly covered, and there is more or less circulation of air through the ends.

Now, I did not say that Dr. Miller piled his supers of honey up closely together, but that almost all bee-keepers did so. I have been in the honey-houses of a great many bee-keepers, and I believe I have never yet seen one in which there was what I considered adequate provision for ventilating and

ripening the honey, and it was but very rarely that any attempt whatever was made in that direction.

Very often the honey is put into shipping-cases as fast as it is taken from the hives. This I consider very detrimental to the quality of the honey. We have heard a great deal about the folly and shortsightedness of those who put unripe extracted honey on the market, but I think it is high time that we paid more attention to the proper ripening of comb honey.

Now a little more in regard to the other uses of these storage-crates, since some do not seem to understand the advantage of having another set of receptacles than the supers or shipping-cases. As the sections are folded, they are set into the crates *upside down*. When thoroughly dry they are ready to have the foundation put in, when you will find that the sections are right side up for this purpose. After the foundation is in, the sections are set back into the crates, right side up this time. You may think that time could be saved by putting them directly into the supers, but really time is saved by doing one thing at a time. Besides, while I usually have all the work up to this point done by cheap help, I prefer, when possible, to do the work of putting the sections into the supers myself, in order to give each one a rigorous though quick inspection before it goes to the bees. I find I have not nearly as many imperfect sections when I attend to this myself.

When the supers are removed from the hive they are emptied as soon as possible, though in the rush of the honey season it may not be for some days. The object of this is to remove any unfinished sections and get them back on the hives as soon as possible. It is but seldom that I leave a super on the hive until every section is entirely finished. Generally there are some to go back to the bees. While getting these out it takes but a little more time to empty the super, putting the finished sections into the storage-crates, there to remain until I am ready to scrape the sections. This releases the supers for further use, if they are needed; and if they are, they are very quickly filled from the sections ready for use, packed away in storage-crates. This reduces greatly the amount of supers required to handle the crop, and correspondingly the amount of capital invested in them, since a storage-crate costs only a fraction of the price of a good super. When the sections are stored away in these crates they are in the best possible shape for ripening the honey, owing to the abundance of ventilation ensured.

Usually I prefer to make separate jobs of scraping, sorting, and casing, the honey being put back into the storage-crates after each operation except the final one of casing, which is put off as long as possible.

Some might object to the extra handling required by this; but the work can be done better and generally faster by doing one thing at a time. One learns to work rapid-

ly under such conditions; and in much of the handling, four sections are handled at one time, two in each hand, and in such a way that no combs are ever damaged by a careful hand.

IMPROVEMENT OF BEES.

Is the optimistic tone of the article by R. B. McCain, page 1236, entirely warranted? Is it true that "the stock of the honey-bee has been wonderfully improved by man's management in the application of the principles of scientific bee culture?"—It is true, indeed, that there is a great difference in the working qualities of different strains of bees, and that in some cases we may, perhaps, fairly claim to have accomplished improvement by intelligent selection; but as a whole I must say that the results have been pitifully small and inadequate, considering our opportunities. We have frequently had our attention called to the fact that we have exceptional opportunities for improvement by breeding and selection on account of the shortness of the generation of the bee; but have we really made as much improvement in bees as has been made in other domestic animals in the same time? It is true that most of us believe that the Italian bee is better than the German brown or black bee it has superseded in nearly all localities, and that there can be found those who express a preference for each of the other races that have been brought to this country, but the importation of these races is not to be considered as improvements in bees due to man's management or the application of principles of scientific culture. The only thing that can be considered in that light is the change that has been made by breeding and selection since they have come to this country. How much real improvement has there been? I think there has been some; but, leaving out the claims of advertisers, many of which are not substantiated by results, and remembering how many there are who believe that bees from newly imported stock are superior, it does not really seem that any thing very wonderful has been done.

Too much of our breeding has been done hap-hazard, and without any intelligent system or direction other than the production of yellow bees and nice-looking queens. Will Mr. McCain or any one else point out where bees have been produced which are better adapted to particular localities, or to particular kinds of work, or where the quality of the honey, other than an improvement in appearance, has been affected by improvement in the stock? We must remember that many people have bees that, from one cause or another, are very inferior. When one of these gets new stock, no matter where, he is quite sure to get something superior to what he has had. Accordingly he writes a glowing testimonial, which the queen-breeder publishes, and plumes himself on having something really superior, whereas his stock may be quite ordinary. My own experience with some of this so-called superior stock has seen very disappointing.

INTENSIVE VS. EXTENSIVE BEE-KEEPING.

The article by E. W. Alexander, on the amount of honey per colony, is very interesting, and brings up the old question, "Which is the more profitable, many bees and little manipulation, or few bees and much manipulation?" This question is not confined to bee-keeping, but is a vital one in many industries. In most of them, at least, the best of the argument seems to be in favor of a man trying to do no more than he can do thoroughly, and, for the most part, with his own labor. For instance, this is largely a fruit country, and consequently one of many small farms. I have heard a number of men say that they could make as much money on ten acres as they could on twenty, and very few seem to care to try to handle more than twenty acres. On one side of me there is a fruit-ranch of 110 acres, which, according to report, has never much more than paid expenses. On the other side of me are a number of ten to twenty acre orchards, the owners of which are making a good living and laying up money.

Now, to how great an extent does this principle hold good in bee-keeping, and where is the line below which there is not a fair living, and above which an extra number of colonies is only a waste of capital and a vexation of spirit instead of a source of profit? It is an interesting question; but I am not going to try to solve it now. I think that, like many other problems in bee-keeping, the solution depends on a number of factors, the principal of which are the man and the location. I think, too, that a middle course is likely to be found best, and this is along the line that I expect to follow, keeping no more bees than I can take good care of, doing nearly all the work with the bees myself, and hiring help as far as possible for that not directly with the bees. But I expect to use such implements and methods that I can handle properly more bees with than are kept by the average bee-keeper.

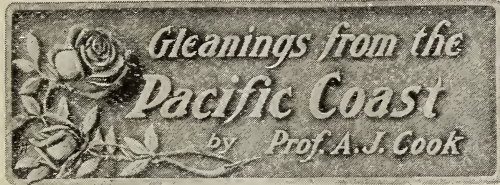
I would call attention to the fact that Mr. Alexander keeps several hundred colonies of bees, and that he does not pretend that they are managed in the way that he advises. Regarding the plan he outlines, I would say that the localities where any large amount of surplus may be safely counted on after July are, comparatively speaking, very few, and the beginner in the average locality who attempted to follow his instructions would, I think, be likely to meet with disaster.

[I would respectfully suggest that Mr. Green have a photo taken of his ventilating-crates, said photo to be taken at our expense and sent here. It strikes me he has a good thing.

What Mr. Green has to say about the lack of improvement made in the mating of queens is only too true. One difficulty in our way has been the problem of controlling the male parentage of our bees. This is where we have been handicapped. But some of the breeders, at least, will try the experiment very soon of breeding queens on

an island with selected drones. Possibly we may then be able to accentuate the desirable traits which we now lose by this hit-and-miss mating out in the open.

Mr. E. W. Alexander is, I should say, a sort of go-between as regards the extensive fruit-man and the small one. One reason for his success is that he and his son, with a couple of helpers, do all the work, as their bees are all in one locality. — ED.]



ORDERS OF INSECTS.

In our last we learned something of the lowest of the orders of insects—*Neuroptera*—as given by the great Linnæus. We remember that the members of this order are usually easily distinguished by the numerous veins and cross-veins of all the four wings; hence the name, *Neuroptera*, nerve-winged, and also the common name of lace wings. They also have biting mouth-parts, and vary in their transformations, as some, the pseudo-neuroptera, pass through incomplete transformations, like the dragon-flies, the white ants, and the day flies, or *Ephermeria*, often so common about the street-lamps in towns near the great lakes or other bodies of water. The larvæ of these and the dragon-flies live in water. In the other sub-order, the neuroptera proper, the transformations are complete. Here are four families that will interest all our readers. The hellgramites are among our largest insects. The larvæ live in water; are very large, and are useful for dissection if the student wishes to learn the internal anatomy of insects. He thus learns that the heart is tubular, and extends the whole length of the back; the nervous system runs along below opposite the heart; the breathing-organs are complicated branching tubes, one each side the body, and these receive air through spiracles, or breathing-mouths, along the sides of the body. These are easily seen in these hellgramites, and in such huge creatures as the great tomato caterpillars—the common green “worms” so troublesome to gardeners. The food-tube stomach and intestines is central. These huge larvæ, or nymphs, are also useful to the fisherman, for they are excellent for bait. The ant-lions and aphid lions also belong here. The former are terrors among insects, so great is their ferocity. Their formidable traps consist of earthen funnels, or holes, dug in the sand. As the ant or luckless insect comes along over the edge of this threatening cavern, it slides down and is grasped by the ant lion, and its life shaken

out of it, after which its blood is sucked dry. The ant-lion is a long slim insect with huge jaws. The aphid-lion is much like the ant-lion in form and general appearance. These names are given to the insects as larvæ. The mature insects are very different. The mature ant-lion is in form much like the dragon-flies, while the aphid-lion develops into the green lace-wing, chrysopa, a beautiful delicate fly which lays her tiny white eggs at the end of a long hair, thus to protect them from marauding insects. These eggs are laid by the provident mother in the midst of colonies of aphids, or plant-lice. As the long slim strong-jawed larvæ come from the eggs they have a perpetual banquet always ready. The aphids, or plant-lice, are terrible pillagers on our plants. One of the largest species works on our magnificent lindens. Others work on the willow, and others on our fruit-trees. Thus bee-keepers are interested in these aphid-lions, for they save his bee-fringe from devastating aphides.

These lace-wings have been divided into several orders by naturalists; and, while this is doubtless wise and warranted, the various authorities are not in accord, and so we will leave the order as the great Linnæus gave it to us.

Again, it is interesting to know that all of this order, if we except the white ants, or termites, are our friends. They feed exclusively on other insects, and so are ever waylaying and devouring our enemies. Of course, the dragon-flies, in killing bees, carry the work almost too far. Yet even these do far more good on the whole than harm.

Before quitting this word-painting of the lace-wings I wish to give a word regarding the cadis worms. The larvæ live in streams of water, and build by gluing together stones, shells, or sticks, for themselves, homes, and protection. They crawl along on the bottom of the streams, and drag the stony hollow cylinders, in which they live, about as they go in quest of luckless fish or insect. I have used these cadis “worms” in the San Bernardino Mountains very successfully as bait for trout. The mature insects have thick paper-like wings, which, when at rest, incline roof-like above the body of the insect.

ORDER ORTHOPTERA.

This order includes the crickets, katydids, locusts, and allied insects. The upper (or front) wings are usually long and slim, and hence the name, which means straight-wings. We hardly need say that they have biting mouth-parts, for did not the ancient locusts eat “every green thing from off the face of the whole earth”? In Kansas the locusts have, when very thick, entirely stripped the trees and shrubs of bark. The transformations are always incomplete. The little hopper could never be mistaken for aught but a cricket, katydid, or locust, as the case might be, by the veriest novice, even though it had just skipped from the egg. The under (or hind) wings are broad,

and, like all the wings of neuroptera, are lace like. They usually fold like a fan, and are not infrequently marked with lines or spots of color, which at times are quite brilliant. Often, as these insects fly, various of them stridulate, as it is called — that is, they rub their wings or wings and legs together so as to give the whir or chirp which is most familiar in the cricket, though common to all katydids, and not rare among locusts.

Besides the insects named above, we find here the long wingless walking-sticks, so awkward and bizarre, as they mimic leaf or twig, often in marvelous fashion; the fierce praying-mantis, which, unlike all others of the order, is a friend, as it feeds on other insects; yet, like the darning-needle, it feeds on bees. It, however, does us far more good than harm. This insect, though common in California and the Gulf States, is not found in the northern or colder States or regions of our country. It is called praying mantis (preying mantis would not be inappropriate), as its front legs are jaw-like, fitted for grasping its prey, and thus its attitude reminds one of the position of prayer or supplication, or, perhaps, more often of benediction. We also have here the cockroach, the flat thin insects that often infest storehouses and cellars. I saw them here in Berlin the other day in one of the buildings at the Zoological Gardens in such numbers as to frighten one not used to them. Their flat form reminds one of a professor's pocket-book, and fits them admirably to secrete themselves between boards, or in very scant crevices.

It only remains to be said that all the orthopterons, except the mantis, are our enemies. They all feed voraciously on plants, and so are terribly pestiferous. Probably of all the insect hosts we have no better examples of wanton destruction than that afforded by locusts. No country is exempt from their enormous ravages, and they often come in such overwhelming multitudes that it takes every thing green to satisfy their voracious appetites. A mixture of bran, molasses, and arsenic tempts them, and gives the death potion at the same time. They are also gathered often in a rapid way by use of a horse-scraper-like machine which receives them into a reservoir of kerosene oil from which escape is impossible. In the northwest of our country where these have been used with abundant success they are known as "hopper-dozers." These insects, in destroying our honey-plants, touch the pocket-books of the bee-keepers, and the praying mantis often lays tribute direct by banqueting on the heavily loaded worker bees as they come from the field.

THE GIPSY MOTH.

About forty years ago a beautiful European moth, known as the gypsy moth, was introduced from Europe into Massachusetts, near Boston. That moth is here about Berlin and elsewhere in Europe, but is not a serious pest. In America it has become an alarming destroyer. It is a general feeder,

and scarcely any plant escapes its hungry appetite. The State of Massachusetts has expended nearly \$1,000,000 in trying to eradicate this moth, and the end is not yet.

THE VEDALIA IN CALIFORNIA.

Some years ago the white scale, introduced from Australia, worked havoc among the citrus trees of California. It seemed as if citrus culture was doomed. The scale worked on most plants, so that, to extirpate it, seemed impossible. A bright thought led to the introduction of a minute ladybird beetle from Australia, which keeps the white scale in check there. Soon the California orchards were practically free of the white scale, and have remained so ever since. Californians are jubilant, for the little vedalia works for nothing and boards itself. Since the introduction of the vedalia other insect friends have been secured, which, though not so strikingly valuable as the vedalia, are yet doing signal service.

A GYPSY-MOTH PARASITE.

As stated above, the gypsy moth does little damage, owing to parasitic enemies, in Europe. Another moth, more common, but also kept down by parasites, is the brown-tail moth. These pass the winter as partially developed caterpillars in silken tents or webs. The same parasite that kills the gypsy moth works on the brown tail. It is possible to collect the brown tail, but hard to find the gypsy. It is hoped that, by sending nests of the brown tail to Massachusetts, the parasites can be secured that will wipe out the gypsy moth. I believe that the only rational way to meet this gypsy-moth evil is to secure the parasites that hold it in check in its European home. I have been asked to collect nests of the brown tail, and have already sent over 1000 to Boston, to be held in the hope that the parasites may be secured. As each of these nests carries from 50 to 100 caterpillars, it can readily be seen that, if the parasites are general, we may hope for a colony of immense proportions — millions, in fact — which I believe offer far more hope than do the millions of dollars already expended, looking to extermination by mechanical means and methods.



CELLAR WINTERING.

"Good morning, Mr. Doolittle. This is Mr. Allen, who called on you a little while last spring. Do you remember me?"

"Yes. You are the person who looked over my bee-cellar and said you would build one in the fall, are you not?"

"Yes, I am the man, and I came over to have a little talk with you on this cellar-wintering matter, now that I have the cellar built, and my bees therein."

"How do the bees seem to be doing in your new cellar?"

"I went into the cellar just before I came here, and found the bees very quiet."

"That is good. As long as they keep quiet you can rest assured they are wintering well. If they are thus quiet during February and March you will have reason to rejoice, for those are the months which will tell the story about good or bad wintering."

"The cellar bottom seems damp to me—in fact, quite so."

"That is nothing unusual, especially the first winter after any cellar is built. It will be dryer in after-years; but there has been no time during the nearly thirty years I have had my cellar built but that the ground on the bottom has been damp and almost sticky at this time of the year, or from six weeks to two months after the bees have been put in. The bottom is always the driest at about the time the bees are put in, and the wettest about a month after they are taken out. The cool air of the fall and early winter, coming in contact with the warm soil, has a tendency to make the earth in the cellar dry at that time, and the warm air in the spring striking the cold dirt makes it wet at that season."

"I see. I had not thought of that part. But my cellar is so damp that the moisture condenses and stands in drops in places on the roof, and drops down some. Do you have any thing like this?"

"Yes. The flagstones covering the roof of my cellar are as dry as dry can be when the bees are first put in, in the fall; but after the first week of the bees being in there, the moisture thrown off from the evaporation of their food begins to condense on these stones, so that, at the end of a month after they are set in, water collects on the stone and on the walls to the cellar till it runs down and often drops off on the cellar bottom, and would drop on the hives did it not follow the stone down to the wall, and the wall down to the earth and trench under the wall, where it is carried off in the drain under the wall."

"And yet your bees winter well?"

"Always have done so, except the year I kept the oil-stove in this cellar to get rid of this moisture. That year I met with a big loss."

"I was fearful of this moisture matter. I have sawdust and chaff cushions on a part of my colonies, and these are damp on top but dry underneath."

"This is as I use to find matters when I wintered with cushions on, as I did for many years. This comes about from the moisture from the bees being driven up through the cushions and stopping, to a certain extent, when it reaches the cooler air of the cellar, on the same principle that we find the tops of such cushions covered with frost after a

zero spell of weather where the bees are wintered outdoors."

"Do you think that is the cause of this? I had thought that these cushions were taking on the dampness from the cellar."

"If that was the cause they would have become damp at once on the hives being put in the cellar. What is the temperature of your cellar?"

"Forty-two degrees."

"That is pretty cool for a damp cellar. Can't it be made to run a little higher in some way? The weather has been so mild so far this winter that mine has not fallen as low as usual thus far, the mercury keeping at from 47 to 48 degrees, while generally it has fallen to some 45 or 46 by the latter part of December."

"I have two ventilators for the cellar—one at the back and one at the front end. The back one has been closed for some time, and I closed the front one to-day. Would you leave both closed?"

"I certainly would till a temperature of 45 was reached. When it goes higher than that, if it ever does, you might open them, if you so desire; but I have opened no ventilators to my cellar for 18 years. In fact, there have been no ventilators for this cellar for the last ten years, and the bees have wintered full better since all ventilators have been done away with."

"Well, I will try leaving my ventilators closed for a while, at least, or till I see good reasons for opening them. But how about mold? does it ever form in your cellar? And does it do any harm as long as the inside of the hives are dry?"

"Patches of mold are often seen on the roof and walls of my cellar, especially toward spring, when there will be patches of mold as large, and nearly as deep, as your hat, yet I can not see that they do any harm. How about dead bees? Are your bees dying much?"

"There are no dead bees on the cellar bottom to speak of, and the few that have dropped down on the bottom-board below the frames are dry, with no appearance of mold."

"That is good, and shows that the bees are wintering well thus far, and I hope and expect they will continue to do so, if you can keep a temperature three or four degrees higher."

"I put in two bags of fine dry sawdust from our planing-mill, where they resaw lumber, to-day. Would you put in such occasionally?"

"That will be a good thing in keeping your earth floor dry, and keep the dead bees from being mashed on the floor, as well as save the bother of sweeping up the dead bees. When I had such sawdust I put it on (a two-bushel bag at a time), once a month, when, after the bees were out in the spring, the whole was cleared out."

"I was in the cellar fifteen or twenty minutes with a lantern, and only two or three bees came out to it. Should any have come?"

"This also shows that the bees are wintering well. At times, some years, there would a hundred come in that time, and I find that a lantern or a lamp will disturb the bees more than a candle. I do not know why, unless the heated glass of the chimneys throws more heat on the bees when looking at them. A sperm candle is the best thing I know of to take into a bee-cellar for light, and you can hold it right up near a cluster of bees in a way that enables you to see better with it than with a lantern or lamp."

"Thank you. I will try it next time. But there is one thing more I wish to know about, when I must be going. There are some mice in the cellar. Would it be safe to poison them with strychnine on cheese? Would there be any danger of the mice carrying it among the bees?"

"I do not think there would be any danger from the poison used, to the bees; but I should not like the stench that would come to the cellar after a little if there were many mice to eat the poisoned cheese. Why don't you try traps?"

"I have had two traps set for some time, and have caught but one mouse. Is cheese a good bait?"

"That depends on the kind of mice that may be in the cellar. We have three kinds here — the field-mouse, which lives on grass and herbs — the kind that 'bark' our fruit-trees during the winter; the house-mouse — the one which every good housewife dreads, because it gets into the pantry and feasts on every thing it can find there; and the woods, or what is known as the 'deer' mouse in these parts, the same being of a fawn or deer like color throughout, except the under side, which is pure white. It is this latter mouse which is the most to be dreaded with the bees, as it gnaws the combs in some part of the hive remote from the bees, and makes its nest there during the dormant period with the bees, while it eats the thorax of the dead bees for a living. And the scramble over and among the combs of the hives disturbs the bees to such an extent that it can not be tolerated. But this mouse cares very little for cheese, and eats it only when nothing else is to be had. And the field mice do not eat cheese at all. For the house-mouse, cheese would be a good bait."

"What kind of bait shall I try, as I think it is the deer-mouse that I have."

"Get some good choker traps. Bait part of the holes with kernels of corn, and a part with squash or pumpkin seeds, and you have something ready for any mouse that comes along, as all mice like either corn or these seeds. Even the little shrew, which sometimes bother bees, are easily caught with the seeds."

"Thank you. I will try the traps again. But the mice do not always get caught in these traps when they spring them, do they?"

"Not after the spring gets weak with age, unless you fix the trap so it is 'dead sure' always."

"How is this done? They get out of mine."

"Take the trap when you purchase it, and drive a wire nail down through from the top so that it projects into the hole into which the mouse stick its head, from one-eighth to three-sixteenths of an inch, this projection or point coming just in front of the wire that chokes them, and you have the trap fixed so that no mouse will ever get out that once sticks its head in, no matter how weak the spring gets. When the spring is set, this nail-point is not in the way of the mouse putting its head in the trap; but when the trap springs, the spring draws the back of the neck, by means of the choker-wire, up against this nail-point, so it pierces the skin and holds him fast right there."



LONG-TONGUED BEES.

Has the Interest in them Died Out?

BY E. F. ATWATER.

I should be sorry to think that all interest in the subject of long-tongued bees is a thing of the past. Only a few years ago the editor told us of the immense yields that might be secured from such bees in a locality supporting 25 to 50 acres of red clover. During the season of 1902 I had an apiary of 100 colonies in a locality where there were actually thousands of acres of red clover within range. The bees worked on the second crop quite freely, but could make only a scant living from that source. All the surplus honey from this yard was stored in June, from alfalfa and white clover, 15 lbs. per colony.

Every year there are times when our bees work quite freely on red clover. Last year, two yards produced honey in August a shade darker than our alfalfa, and without the distinctive alfalfa flavor. Whether this was due to a slight admixture of honey-dew or red-clover honey I can not say; but I incline to the latter view. I have gradually withdrawn our yards from the best red clover locations, though there are still immense quantities of red clover within range of some of our yards.

Our bees are largely from stock sent here years ago, first from Kretchmer, later from Root. We have crossed them with other Italian stock from Case, Hyde, Moore, and others, and Carniolans. The latter blood seems most valuable.

I wrote in one of the journals that Prof.

A. J. Cook wishes to add to the Caucasians the tongue-length of the best of the yellow races. The longest-tongued bee ever measured was of the Caucasian race, measured by Prof. Gillette, of Colorado. I have a colony of pure Caucasians, and I look forward with interest to their honey-record. They are in the home yard with unlimited red clover, and some alfalfa within range. For gentleness they are far ahead of any and all Italians, or even Carniolans; nor have they lacked energy to take feed from an Alexander trough feeder under the rear end of the hive. They are the only bees that I ever saw that would contract the entrance of the hive with a huge rampart of propolis, and other matter apparently worked into it.

At our convention a few days ago one of our members exhibited a glossometer, and told us how his best yield of alfalfa honey came from the longest-tongued colony in the yard. Have those who announced their intention of breeding for tongue-length accomplished any thing?

Meridian, Idaho.

[No, indeed, the interest has not died out, so far as we are concerned. Our red-clover stock has been of the long-tongued sort; but since the old original queen-mother died, and we have not been able to duplicate her — that is, to raise another queen whose bees and queens would show up as well as those of the old original — we have not said much about the long-tongue business. If we were able to inbreed, selecting the queens and drones both for mating, we would be able to accentuate this quality of increased length of tongue. If it is possible to breed cattle with shorter horns than the normal stock, it will be possible by careful selection and inbreeding to breed bees with longer tongues, providing, of course, we can control the male parentage. A. I. Root is now located on an island in the Gulf of Mexico, off the coast of Florida, and it is possible that he may be able to tackle this problem of breeding from selected drones, so that we may advertise conscientiously bees with longer tongues than the average.

It is unfortunate that some adverse criticism arose about this long-tongue matter when it came to the front; but that should not deter us from going at this matter in an honest and straightforward manner.

There is no doubt from what you write that your bees gathered some red-clover honey. The flavor of this honey is not the equal, quite, of that of other clovers. It is a little darker, and, while not unpleasant to the taste, by a long way, it is hardly equal to the other light honeys.

If the Caucasians have a tendency to sport to longer tongues, this may help a little toward a solution of the long-tongue problem. There is no question at all but we might secure big crops of honey if we could only produce a bee that could reach the nectar in the red clover. As it is, considerable honey is secured, but nothing like what we might be able to obtain with the right bee. —ED.]

WAX-RENDERING.

How to Use the Hot-water Method without any Great Pressure for Getting Wax out of Old Combs.

BY ROLAND F. SHERBURN.

Having read different articles in GLEANINGS about melting combs for wax, wax-presses, etc., I will give you my method. As long ago as I can remember we used to melt the combs and strain every thing through some coarse cloth, pressing as best we could. Of course, a part of the wax was lost in the dross.

When I commenced in the bee business on my own account I happened to find a way to get practically all the wax without much trouble. Some twenty years ago I made a pan for melting candied honey, that would fit on top of a cook-stove, after the plan of a molasses-pan, using plank for the sides, and galvanized iron for bottom and ends. This was two feet square and one foot deep. When I wanted to melt the wax this pan naturally suggested itself as the best thing to use, and I never have wanted any thing better.

This is my plan: Place the pan on top of the stove, and put in two or three buckets of water. Always put in plenty, adding more as needed. When this comes to a boil, put in the combs and cappings to be melted. Have ready a piece of wire cloth, such as is used for door-screens, say 15 inches square, and a dipper. Shape the wire cloth so that it can be pressed down into the melted wax without the dross getting into it, and commence dipping out the wax just as soon as melted. The vessel which holds the wax should first have a quart or two of hot water put into it to keep the wax from sticking to the bottom, and to hold any settlements which may have been dipped out with the wax. Now keep it going as long as there is anything to melt, adding the comb and dipping out all the wax you possibly can.

There should always be plenty of water in the pan; and in the wind-up it should be kept slowly boiling. It will have a brown foam over part of the pan all the time. Please notice here is the point—the wax-press if you please. As most of the wax has already been dipped out, what is left in the pan is mostly water and the dross. By shifting the contents of the pan so that all parts of it will be boiled through repeatedly, you can imagine that the parts will be disintegrated and the wax forced to the top.

This thick dirty-looking juice will boil like molasses, so the wax will be forced to one side or corner, furthest away. Always remember to skim off the wax.

This pan should be made of an even size from top to bottom, so as to hold a close-fitting wire-screen frame. This frame I made of light slats for the outside, with two slats across to support the screen and keep it from bulging. When I am through with the boiling and skimming, this wire-screen frame is placed on the slumgum, and weighted

down with rocks, so that all the dross or slumgum will be forced below, and the wire frame covered with two or three inches of the water. You can see the necessity of having the frame fit nicely, so that all the dross will be forced below the water. The pan may yet simmer a little (but care must be had or it may burn on the bottom), and then left to cool, and any remaining wax can be taken off.

I am fully aware of the value of beeswax. If this work has been properly done, there will be no worry over the loss of wax; you will have the wax, practically all of it. What is thrown out of the pan will be simply dross.

Now that the wax has been secured I again partly fill the pan with clean water and remelt the wax and dip or strain it so as to make it clean, and free from impurities.

That the readers of GLEANINGS may know what can be done in this way, I will say that, in the spring of 1904, I sent to Messrs. Dadant & Son nearly 300 lbs. of fine wax, all of my own raising. This was made in two batches, or boilings—part of it in one day, and finished the next. A great advantage of this plan is that all the free wax is disposed of as soon as melted. In the foregoing batch, perhaps 200 lbs. of wax was skimmed off the first day, and then the pan, two-thirds full of waste, was left to cool.

Lone Tree, Iowa, Nov. 21.

[This method of rendering wax is used by a number of bee-keepers. For cappings, burr-combs, or perhaps even brood combs that are not so very old, it ought to give excellent results. For large quantities of old black combs, however, we doubt very much whether such treatment would remove all the wax. By *all the wax* we mean, of course, all that can be profitably removed.

We have had no experience with the plan here given, but we base our conclusions on the statements of those who have found it profitable to buy up such refuse and render it in some form of wax-press making use of screw pressure.—ED.]

THE OTHER SIDE OF THE BEE AND POULTRY QUESTION.

BY FRANKLIN G. FOX.

The Dec. 15th issue of GLEANINGS arrived a few days ago. It is the finest magazine of its kind that I have ever seen. I have been reading at it during my spare moments, and reflecting on what I read when my hands are busy at other work. One of the articles that has held my attention is the one on bees vs. poultry, by Frank McGlade. While I am deeply interested in bee culture, which I believe I am now making a success, I do not wish to see other occupations misrepresented. Of course, we were not all cut out for bee-keepers, poultry-fanciers, farmers, etc. Each of us has our calling; and, while we may be able to make a living at some

other occupation, our success will not be as great as the work for which we are naturally adapted. While GLEANINGS is not a poultry journal I want to give a few facts on the other side of the poultry question.

About two years ago an aunt of mine, who had followed professional nursing for some years, accepted a proposition of my father's, and went into the poultry business with my mother as partner. They bought three incubators, two double brooders, and had five colony houses built; fit up two rooms in an old house for the brooders, and began business. Of course, it was all outlay for about eight months, except what was derived from the sale of young cocks. The breed chosen was the renowned Barred Plymouth Rocks. The feed and eggs all had to be bought. A strict account was kept of all expenditures. Corn was high two years ago. The eggs and cockerels were sold to a commission man. By marketing the cockerels as broilers we got from 14 to 15 cents a pound for them.

About Sept. 1, one year after the hens began laying, an inventory was taken and books balanced. Stock on hand, 300 head of hens, good for another year's work; about 300 head of young stock; net profit above all expenses, \$300. This does not include the hen manure, which was worth \$100.

There was something woefully wrong with Bro. McGlade's feeding or managing, or those young pullets would certainly have shelled out bushels of eggs through the winter. Rock pullets begin to lay at eight months of age, and can be kept up with their good work till July. He says that fat hens will not lay. Well, he should see our flock. They are fed a balanced ration, and have it dished out to them five times a day. You can not get something for nothing, and poultry will not work for nothing and board themselves as some think bees will do. A poor wild chicken can not and will not do good work. Our hens are very tame and happy. They have their every need looked after. Hens will not thrive on neglect.

A man at no great distance from here keeps about 300 White Leghorn hens. He does a little trucking also, and has made a comfortable living for years.

The paths of the bee-keeper are not all paved with flowers and sweetened with honey. Misfortune often waylays the apiarist on the road.

So far I have had had more experience in bee-keeping than profit. I will copy a few figures from my book account:

1901,	invested \$	7.92;	received \$	5.89;
1902,	"	4.91;	"	14.78; profit \$ 7.84
1903,	"	114.81;	"	13.07; loss, 111.74
1904, '5	"	185.86;	"	245.25; profit, 109.34

I might add that, in 1903, my yard was stricken with foul brood. I treated it, then fed up for winter, but went from 32 colonies in the fall to 6 nuclei in the spring. Last winter I went from 32 colonies back to 20. I have learned a great many things by the dear hand of experience.

The great trouble with most men, and es-

pecially with the bee-keeper who is not a professional, is that they have too many irons in the fire, and some of them will be burned. We should make a specialty of some one line of business that is to our liking, and, as Editor Hutchinson says, "know every thing about it" (if that is possible).

Erwinna, Pa., Dec. 22.

McGLADE'S ARTICLE ON THE HEN.

Bees vs. Poultry.

BY W. H. PEARSON.

I am well aware that GLEANINGS is not a poultry paper; but when one of its writers (p. 1307) uses its columns to boost bees and run down poultry I can not let such an article pass without replying. It is evident that Mr. McGlade does not understand the science of poultry-raising. He produces evidence of that in the single statement that fifty selected early pullets did not lay till March 1st, and then one-third of them wanted to sit by April 1st.

Any one who has ever kept poultry, and kept it right, knows that such a statement shows that the man behind those pullets either did not know how to care for them or that they were the kind that never would lay; and I will wager that it was the fault of "the man behind." Mr. McGlade says, "They get fatter and fatter, and a fat hen won't lay many eggs." Of course, they won't. If he knew so much as that, why did he let them get fat?

A well-known writer on poultry says, "The 200-egg man is much more rare than the 200-egg hen," meaning that there are more hens that lay 200 eggs per year than there are men who are able to handle the hen to make them produce that amount.

I will venture the statement that here in California it is the rare exception where poultry does not pay, and pay big, when handled half way intelligently; and I have no difficulty in making a few hens in a city back yard bring in two dollars for every dollar spent on them. I have handled as many as 200 Brown Leghorns in a flock, and made them pay one dollar net per year each, without counting their manure as worth any thing, and it is worth a good deal.

Why! we have poultry-keepers who ride in automobiles here in California, and the hens paid for the auto too. Flocks of 500 Leghorns are common here, and their owners make money, lots of it, as is proven by their staying in the business year after year. I know a young lady at Haywards, Cal., who keeps from 1100 to 1500 Leghorns, and makes them pay her well every year.

Comparisons are odious; but for the benefit of Mr. McGlade and other "doubting Thomases" I will institute a little comparison between poultry and bees, from *my* standpoint, and see how it works out.

A little over a year ago I took it into my head that I should like to have a hive of bees

in the back yard for my own pleasure, if not for profit. Upon canvassing the neighborhood I failed to find any bees, so had to go about six miles out in the country before I could find any, and they were in an old box hive, with some kind of home-made "contraption" called frames by their maker; but when I came to investigate I found that the frames were glued to the cover by the bees, and the bottom was nailed on, making a combination that beat me.

When I came to look for a modern hive I found I could not buy the kind I wanted (a Danzenbaker) unless I bought a bunch of five, and I didn't want five. So I left the bees in their box for nearly a year, then I got Messrs. Lilly & Co., of Seattle, to ship me down a single Danz. hive, set up with wired foundations, and starters in super, which cost me in San Francisco, unpainted, four dollars, besides the trouble and expense of going after it and carrying it home, seven miles by rail and boat. When I came to transfer the bees to their new home the box came all to pieces, and a more mixed up mess of bees, honey, old comb, and old box I never saw. I finally got the bees into their new home, and then let them carry all the honey from the box wreck in also. Then I thought I would prefer some real Italians instead of the hybrids I had. So I sent to Mr. Alley, in Massachusetts, for a golden queen. She finally arrived, and when I went to look for the old queen I couldn't find her. I tried several times to locate her, but failed utterly. So I made another journey to San Francisco and bought an Alley queen-trap; brought it home, took every frame from my Danz. hive, and shook them in front of the entrance, and in this way caught the queen, which turned out to be very dark and small—much darker than her bees. (It seemed like the irony of fate for the queen to be superseded by an Alley queen to be caught in an Alley trap.)

By this time the season was so far advanced that there was no more surplus honey, so I thus far have not had a spoonful of honey in over a year from my bees. But is that the bees' fault? Not much. I don't blame my bees any more than I do Mr. McGlade's hens for not laying. It was my fault for not providing them suitable quarters, just as it was Mr. McGlade's fault for not caring for his poultry so they *could* lay eggs instead of putting fat on their bodies.

As the account stands now, I am a creditor to the bees for about \$8.00, with no honey in sight. Per contra, if I had taken five dollars I could have bought 100 first-class White Leghorn eggs; the rest of the \$8.00 would have paid for incubating them. I could have sold over \$8.00 worth of surplus cockerels, and have had a nice bunch of pullets laying by Oct. 15, when eggs were worth 50 cents a dozen (they have been as high as 60 cents, and are now selling at 55), and the pullets would have been worth, at a low valuation, 75 cents each. How does that work out, Mr. McGlade?

When it comes "to giving advice to those

who are not familiar with either bees or poultry," be sure you know what you are talking about or you may make a woeful mistake.

This article is already too long, but I could say three times as much and not do the hen half justice.

In conclusion I want to rap the editor a little for his knocks at the hen. Don't do it. In the first place, she does not deserve any knocks; in the second place, if you must have something to point to as a "horrible example," take, say, cows, and let the hen alone. Hoard's *Dairyman* says there are more robber cows than good ones in the U. S., and that, if half of the ordinary farm cows were sent to the butcher, their owners would make more money, and Hoard's ought to know, as it is their business. Then, again, I fail to see why it is necessary to run down one thing in order to boost another. Why not keep both bees and poultry? On a ranch they ought to be a winning pair, neither interfering with the other.

Oakland, Cal., Dec. 28.

[See editorials.—ED.]

HOW TO USE SHALLOW HIVES.

The Prevention of Pollen in Supers over Shallow Hives.

BY W. K. MORRISON.

Dr. Miller's objection to the shallow hive calls up some of my own experience, and shows that, even after one seems to have about exhausted a subject, one little remark sets the whole thing a-flame with the fire of lively interest. I think the doctor will see that, where one is using a very shallow hive (say 6 inches), a zinc queen-excluder is necessary, and also that an excluder lessens the amount of pollen in the sections. If a shallow hive is used in the same way as the standard Langstroth, then the chances of getting pollenized sections are much increased, without a doubt. But where does the right depth come in? Is it 7 inches or 10? I incline to the seven-inch depth. I admit, however, as one goes north a deeper frame will seem better; though if I were keeping bees up north, particularly if comb honey were my aim and the seasons none too good, I would select a hive no deeper than the Danzenbaker. As Mr. J. E. Hand states (and he lives in Illinois), the shallow hive puts the honey in sections—yes, all the honey, and that, too, without trouble or fuss. It is a labor-saving device. But, as I have repeatedly pointed out, it is wholly unnecessary to use starters in a shallow hive with the object of compelling the bees to go into the sections. There is no need to resort to such strategy. If, however, starters are used, the chances are some pollen will get into the sections, more particularly if full sheets are used in the latter.

Some months ago, when on a visit to the

province of Berbice, in British Guiana, in the nice little city of New Amsterdam I noticed a sign reading, "Comb honey for sale," and, walking into the store, I asked the proprietor to show me the honey, and, sure enough, he showed me 2000 4×5 sections that were practically perfect. Then he took me behind the store to show me 50 colonies in Danzenbaker hives at work on as many more. I can assure the doctor there was no pollen in these sections, and that, too, in a country where flowers bloom all the year round, and pollen is plentiful. The owner of the apiary was a beginner.

But this is not all. I have been told over and over again in all parts of the American tropics that comb honey was a failure, as the bees refused to work in the sections. In such cases I have recommended the parties to use some very shallow hives to get the sections well started, then transfer them to the deep hives. Even where extracted honey is run for in the orthodox manner, there is too much honey in the brood-nest and too much swarming; and, needless to say, the conditions are worse when comb honey is sought for. The bees keep piling honey in the brood-combs till actually the colony dwindles to a mere handful of bees. The wax they secrete, but have no use for, they utilize in closing up the connections between the upper and lower stories of the hives. In this case I prefer to cut out the upper combs so as to attract them away from the brood-chamber.

It seems to me, also, in using shallow hives the sections are better filled, as they are actually better fastened to the bottom-bar of the section, but that may be mere imagination on my part.

My experience with the Danzenbaker hive is limited; but I have used several hundred hives of a smaller depth, some no deeper than four inches, and spaced 1½ inches from center to center. The very shallow hives I used for "feeding back," and these were a success when all else were failures. I used to buy very cheap extracted Haytian honey, and convert it into first-class section honey. The Ideal shallow extracting-super makes a very good hive for "feeding back;" in fact, one can not very well use any thing deeper.

If any one has any difficulties with pollen in sections of the Danzenbaker hive, I should like to suggest the use of a spare empty comb on one side of the hive to catch the pollen; in fact, I think Mr. Danzenbaker recommends this plan. If one aspires to be a comb-honey specialist I think it is a good idea to have always a spare comb on one side to catch the pollen, no matter what hive one may use. The bees certainly require such a comb.

Dr. Miller seems to think a super containing 45 1-lb. sections as too much of a good thing; and if I were using the same hive as he does I would say so too. But where a shallower hive is used, the conditions are changed; and my hive plus one 45-lb. super is about 14 inches high, and one of his hives

with a super on is also 14 inches high, so we are equal, doctor. It is not the weight of a brood-chamber that worries me—it is its *bulk*. I dislike Jumbo hives, on account of their bulk chiefly; the capacity I get by using two Ideal supers. I also get much greater powers of manipulation.

There is also a phase of the matter which has never been stated before; viz., the desirability of having a taller and broader section in the interest of the consumer. It seems to me our sections are too thick for economical cutting at the table. I got this impression in New York on seeing the late Capt. Hetherington's comb honey on sale. It has always seemed to me since, that thin combs would cut up much better at the table, more particularly at the hotels and boarding-houses, where food is shared out in small portions. But there is more than this behind the broad and thin section. It is this: *Thin sections require no separators*. Thick ones always do, but that's another story—with apologies to Kipling.

PROPER COLOR FOR HIVES.

A Review of the Discussion.

BY G. C. GREINER.

The explanation Mr. Latham gives on this subject, pages 1312-'14, is quite a setback to many bee-keepers who are in the habit of painting their hives. Have we, during a lifetime, so misconstrued the laws of nature that we have painted white where black should have been used? When reading the article I was in hopes and expected to find a footnote at the bottom that would explain the matter in a different light, but was disappointed in my expectations.

I do not feel capable of crossing bats with Mr. L. on this subject, and reply to his article in detail; but as all my observations run in opposite directions I can not refrain from expressing a few thoughts.

We were taught in our boyhood that the color of summer garments should be white, because it would reflect the rays of the sun or outside heat, and keep the inside cool. In the winter, and I suppose that also applies to cool nights, garments should be the same color, because it would reflect the inside heat and keep the inside warm. If this is correct logic, and applies to hives as well as to human beings, then white is the proper paint.

If we expose two hives, painted in opposite colors, to the rays of the sun, the combs of the black one will be all melted, and running out of the hive before the combs of the other succumb to the heat. To the touch the sensation is equally surprising. The black will almost burn our hand while the white will cause no inconvenience to the hand that is placed upon it. Even a short exposure during noon hours will have the same effect. This is no guesswork, but actual observation. I have witnessed instances of this kind repeatedly in my past life.

Comparatively speaking, there are but very few hives in the shade. The many different views of leading apiaries, as they are presented to us (Mr. Alexander's, for instance) prove this, and the most of the few that are in the shade are exposed to the sun some hours during the day. Thus it hardly seems worth while to make allowances for hives in the shade; but supposing we did, would black be the right color then? If black encourages radiation, and I think we all agree to this, then it follows that the cooling-off process is also encouraged, and is that our aim? We manage every way to confine the heat to hives and supers during cool nights, which we consider quite essential to assist in comb-building, and why should we work in the opposite direction by painting our hives black?

Individual preference can play no part in this matter; there must be a right and a wrong way, and the sooner we find out which is which, the better.

Undoubtedly many others are laboring under the same difficulties, and for their benefit, as well as for my own, I would request some of our friends who are better posted to give us their views and experience on this subject.

La Salle, N. Y.

[If you will read Mr. Latham's article carefully again you will see he does not recommend black as a color for hives *unless* they can be kept permanently in the shade; that when they are to be exposed to the sun they should be painted white. The law that he lays down—that "good absorbents are good radiators," however, is liable to work both ways. If a black hive is a good radiator in the summer in the shade, why would it not follow that it would be a good radiator of heat in winter, when the sun was not shining? It would almost appear that the advantage of the color in summer would be more than offset by the less in radiation in winter, unless, forsooth, the hive were covered with a winter case painted white, said case being removed during summer.

Mr. Latham states some very interesting facts in regard to white as a color for retaining heat. We know that snow, when it covers the ground even a few inches, will prevent the ground from freezing. Now, if that snow were perfectly black instead of white, according to the same law that ground would freeze. It seems almost a paradox to say that snow (minute particles of ice) covering something not frozen will prevent that something from freezing; but the fact is too well known to be gainsaid.

In view of the almost universal condition that hives are out in the open, and if in the shade in one spot may soon be moved to another place exposed to the sun, it would seem safer to provide for general conditions rather than for that condition which is abnormal. The manufacturer, if he sends out hives painted, would have to make them white. The bee-keeper who moves his bees to outyards would have to have his hives

like wise white, for he can not always get shade in a bee-yard spot available. We find in our own experience it is difficult to locate our bees just where we would like. But there is another condition where black would be too much of a good thing. At night, when there is no sun, there is but little danger that the supers will be too warm, say for comb-honey production. If supers then are painted black they would dissipate heat at a time when it is decidedly needed. Taking it all in all, general conditions require white for hives.—ED.]

INTERESTING NOTES FROM GERMANY.

The Direct Method of Introducing Queens.

BY DR. BRUNNICH.

Let me give you a few words concerning this extremely good way of Mr. Simmins, given by Mr. Miller. I have given, during this season, under the most varying conditions, 13 queens to strong colonies, and a large number to mating-cases, all with good success. Perhaps I may mention some of the most interesting cases. Generally I let the queen go 45 minutes without feed. Once by mistake one queen was obliged to fast two full hours, without the least injury. It was, however, a fertile one. A virgin would certainly have died in an hour. Then I gave some good puffs of tobacco smoke to the colony, and after one or two minutes the queen was allowed to enter the hive without giving any more smoke.

Queen No. 2 I gave to a colony which had killed or balled different queens, and which was already in quite a degenerated condition. No. 3 I gave to a lady, distant half an hour from me. It was in the afternoon, at 3 o'clock. I sought the old queen, then I gave smoke with only a cigar, and then the young queen was given. In August I had a strong colony whose young queen had been lost some time. The bees already had laying workers with much drone brood, open and capped. Well, the queen was given and immediately accepted. Most interesting to me was the following:

I took a queen out of a section, which I thought to be all right, and gave it to a freshly dequeened colony. After some days I found that all the brood in the section was drone brood, and the queen probably not fecundated. Nevertheless, the colony accepted the poor queen, which continued to lay only drone eggs. I may add that all queens given were marked on the thorax with a very quick-drying color, so that no mistake is possible.

VITALITY OF SPERMATOZOIDS OF DRONES.

I had occasion to have an exceedingly interesting experience. The 29th of July, at 10 A.M., I found in a section in my mating-station a dead queen—certainly dead for some hours, for the queenless bees took not the least notice of her. In the evening, at 10, I dissected the queen and found that she

was fecundated, and opened the *receptaculum seminis*, whose contents I examined in a few drops of salt water. To my great surprise, all the spermatozooids were quite alive, and moved with extreme quickness for at least half an hour. For 14 and perhaps 20 hours the queen had been dead, but nevertheless the spermatozooids still lived. The day was a very warm one.

A QUEEN WHICH KILLS A WORKER.

On the 30th of July I gave to a section (a mating-box with one frame, and with glass on both sides) a virgin. A bee came to her in a somewhat unkind way. Immediately the queen crawled on to the said worker and gave it one or more stings. The bee was dead in a moment.

A QUEEN STUNG BY A BEE.

On the same day as above, I observed on my mating-station that a virgin queen recently given was stung by a worker. I saw how the bee extracted its sting from the thorax of the queen. Directly the left middle leg of the queen was lame. However, she became fertile, and works now in a full colony, after my amputation of her motionless leg.

Ottenbach, Germany.

SMALL ENTRANCES IN WINTER.

BY SAMUEL SIMMINS.

“A bee-keeper I once visited had five or six hives in a covered apiary facing south. Those hives were placed upon strips made of one-inch timber, two inches wide, and nailed edgewise on stakes driven into the ground, so as to form a sort of rack. The hives had no bottom-boards, for our friend thought bees succeeded best when they had plenty of air. . . . Strange to say, colonies in these hives wintered successfully, and we were very much astonished, in one of the hardest winters, to find that he had not lost a single colony, while our losses had been heavy.”

Now, the late Charles Dadant wrote the above words for the *American Bee Journal* of Dec. 26, 1895. It will be noticed the bees were in a covered place, apparently fully open on the south side, if not all round; and that well-known writer and bee-master was astonished at the success of his friend; but really when we come to think about the matter there is nothing very remarkable about it. The bees were dry, and therefore the cold did not take hold of them as it does where they are shut in almost close, so that their own moist and impure exhalations can not be disposed of.

Let us see what a small entrance does. If the weather is warm, or you place your bees in the cellar where frost does not reach them, they very soon set to work changing the air which would otherwise become foul; but when left outside during winter the limited entrance allows not only the accumula-

tion of bad air, but, what is equally dangerous, a moist atmosphere, and then the cold is much more severe in its effects. During a low temperature bees can not warm up any part of the hive beyond the margin of the cluster, consequently no efficient ventilation can be conducted by themselves.

Suppose you feed up a colony with a lot of thin syrup just before a period of frost sets in. You will find within a week the whole of those bees are frozen dead, while sitting upon an abundance of food. They have not had time to cap it over so the cold will not be attracted by the moisture; neither have they the empty warm cells just where they should be able to crowd in head to head, and so form a compact cluster.

In winter, the bees not being able to move freely, common sense demands that they have a dry well-ventilated hive, and this is to be secured at that season only by a comparatively large entrance to an ordinary single-chamber hive, or an extra empty chamber under the stock combs if only a medium entrance is allowed.

If these conditions can not be provided, then the only safe place is the cellar; but in many localities bees could be wintered better out than in, where a zero temperature is not greatly exceeded.

In this climate (south of England) we do not often reach zero; but in some cases the moisture in the air makes 20° of frost far worse than zero, as the lower temperature is accompanied by a drier atmosphere. I have had some colonies wintered with no covering on the frames, a roof seven inches deep, and ventilated at each end, being above the said frames. These bees had all winter a six-inch entrance by half an inch deep. Under these conditions they wintered exceedingly well, and started off in spring with more brood than many other stocks that had been covered up carefully.

"Can bees be kept too warm in winter?" is a question I have been sometimes asked. I reply, "They are usually kept too damp by unnecessary covering and cramped entrances;" and then I illustrate the foregoing example and another:

On one occasion I had two stocks at the end of a bee-house, with entrances six inches wide by one inch deep, and these were facing a persistent cold westerly wind. On examination in early spring they had five and three combs respectively, with large patches of brood. Thinking they were too cold I reduced the entrances to one-fourth, when, strange to say, both lots considerably restricted the area of their brood nests.

Evidently a free opening to the outer air is an item of the first necessity in winter, provided it is sheltered from driving snow and direct winds; and in the early spring it checks any undue inclination to fly, while at the same time allowing of rapid flight when the temperature for a few minutes is suitable for a beneficial playspell. Shut them in too closely, and then they miss some of these cleansing flights, feeling nothing of the passing glimpse of genial warmth, re-

maining sluggish, and little inclined to develop an early batch of brood.

Broomham, Heathfield, Eng., Dec. 16.

[Locality has a strong bearing on this question. South England, by reason of the Gulf Stream, is much warmer than our northern States; and in the matter of dampness our lake regions are scarcely better off than your locality. We have tried entrances cut down 12×1 inch deep, with severe losses. For twenty years we have used entrances 8× $\frac{3}{8}$, and our outdoor winter losses have not exceeded one per cent, except one season. —ED.]

PRODUCING EXTRACTED HONEY.

A Few of the Many Things to Take into Consideration.

BY E. W. ALEXANDER.

In order to make the production of extracted honey profitable at the present time it is necessary to have every thing connected with the business as handy and convenient as it can possibly be made, and then try to cut corners here and there and everywhere you can.

First, it is very essential to have the best honey-gathering strain of bees that you can find; then if you expect to have a large apiary, location is an important factor.

Then the manner of handling your extracting-combs and taking them from the hive to the extractor is another important part; and the number of men who can work to the best advantage, so each one will bear about an equal part of the labor, and not have to wait for each other, is also of importance.

How to dispose of the honey after it is extracted is another thing that will pay you well to look after. The manner of storing it before it is put into the package you expect to sell it in must also be considered. These are a few of the necessary things that the successful producer of extracted honey has to keep fresh in his mind.

As I have received several letters during the past season requesting me to give the writers some advice on these subjects, I will endeavor, with the aid of the accompanying photos, to show and describe our method of producing extracted honey.

HIVES SHOULD BE OF THE SAME SIZE.

First, we like to have all our hives of the same size, so that any frame will fit any hive in the apiary, although this season we had to press into service some hives that were two inches shorter than our standard hives, but we have promised ourselves that it is the last season that we will bother with two different-sized hives in the apiary.

HELP TO WORK TO THE BEST ADVANTAGE.

In regard to help, we find that three men can work to better advantage, and extract more honey per man in a day, than any other number. In order to accomplish this, one

man stays in the extracting-building and does all the extracting; another man stays with the hives we are working at, and opens all of them and takes out about half of the combs and puts all the empty combs back and closes up the hive, while the third man takes out what heavy combs he can and takes the full ones to the extracting-building, and bring the empty combs back. In this way we find no trouble in extracting from 30 to 32 hives per hour, or on an average a hive of nine combs in a little less than every two minutes. We always hang up a watch on the extracting-building so we can tell at a glance just how fast we are getting along. Each one, as he removes his comb from the hive, cleans it of all adhering bees, by first giving it several quick shakes up and down, being very careful to throw out no honey. Then with a small brush, what few bees are left on the comb are quickly brushed off. You will notice that, hanging from my son's right hip, is a small brush which we like the best for this purpose of any thing we have ever tried. You can also see the handle of a large pocket-knife by the brush, which is always open and ready for use.

THE ALEXANDER HEAD-RIGS.

I wish to call your attention to our head-rigs. They are made from a piece of common wire cloth, about 9×32 inches, with the ends lapped together at the back, and sewed. They have a piece of heavy sheeting in the back, which protects the back of the head, also our ears; then they have a piece of double cloth forming the top, and gathered at the center. They also have a little skirt about ten inches long, which can be tucked inside the shirt or vest collar. With this on, so far as your head is concerned you can bid defiance to all the bees in the apiary. Please make one of these head-rigs next season, for I am sure you will like it. They rest on your shoulders, and are very cool, seldom touch your face, and can be taken off and put on in an instant.

THE ALEXANDER COMB-CARRIERS.

They hold nine combs, the same as our hives, and are made of thin light pine except the ends, which are $\frac{3}{4}$ stuff. They have an iron handle, and are very durable. When we commence to extract we take a set of empty combs in one of these carriers, and set it down behind the hive we commence on, then take off the outside cover, put it on top of the carrier of empty combs, then put an empty carrier on top of it. This will bring it about level with the top of the hive, and saves stooping over in order to put the heavy combs in the carrier. Then when the hive is ready to receive its empty combs one man starts for the extractor with the heavy combs, while the other man puts the empty ones in the hive. In this way the hive is open only about 1½ minutes, in taking out its full combs and putting in a set of those that have been extracted.

NO SLAM-BANGS IN EXTRACTING.

Now, don't think there is any slam-bang

about handling our bees, for there is not. We will not tolerate any thing of the kind. Any man who works for us must be careful about killing bees or jarring the hive any more than can be helped.

QUEEN-EXCLUDERS.

We use queen-excluders on all our hives when extracting, so we are not troubled with any brood in the upper hive, neither do we lose any queens if we shake some of the combs outside the hive. Our frames hang on a wooden rabbet, just even with the top of the hive; then we use an under cover, which has a bee-space on each side. This, with our telescope top, makes a cool watertight cover which we like very much.

THE COLOR OF THE CLOTHING.

When working in the apiary we very decidedly prefer white. It does not irritate the bees as all dark colors will, and is nice and cool on hot days. I don't know of any thing that will make your bees much crosser than to work among them when wearing dark clothes. If you are careful about these things you will find it much pleasanter to handle your bees.

HOW TO STOP LEAKS IN HONEY-BARRELS.

If any of you are troubled with your honey-packages leaking, either barrels or tin pails, just rub the leaky place with common hard soap and see how nice and quick the trouble is over; also when when barreling up your honey, after you insert the bung a little, tip the barrel over so as to bring the honey up solid over the bung, then you can drive it in tight and run no risk of splitting or breaking the head. Just try these little things I have called your attention to; and if they prove of value to you, tell your bee-keeping friends that, through the medium of GLEANINGS, you have had many valuable ideas brought to your attention.

Delanson, N. Y., Oct. 16.

[It will pay the veteran as well as the prospective extracted-honey producer to read this article of Mr. Alexander's carefully; for in all the large extracting-yards I have had the pleasure of visiting I never saw a more perfect system, more beautifully worked out, than is here described by our correspondent. The three men, one in the extracting-house and the other two in the yard, are able to accomplish a lot of work. Perhaps others may be able to extract more honey, or handle more hives per man, but I am sure they will not do it in the simple quiet manner that these men do, without slam or bang, and without irritating the bees. Notwithstanding there were some 750 two-story colonies rushing to the buck-wheat-fields on one of the days of my visit, and the men working to their full capacity, the bees were unusually quiet.

One can not help feeling impressed with Mr. Alexander's close attention to the smallest details. This shows out in his article; and right here, I believe, is one of the secrets of Mr. Alexander's success, which,

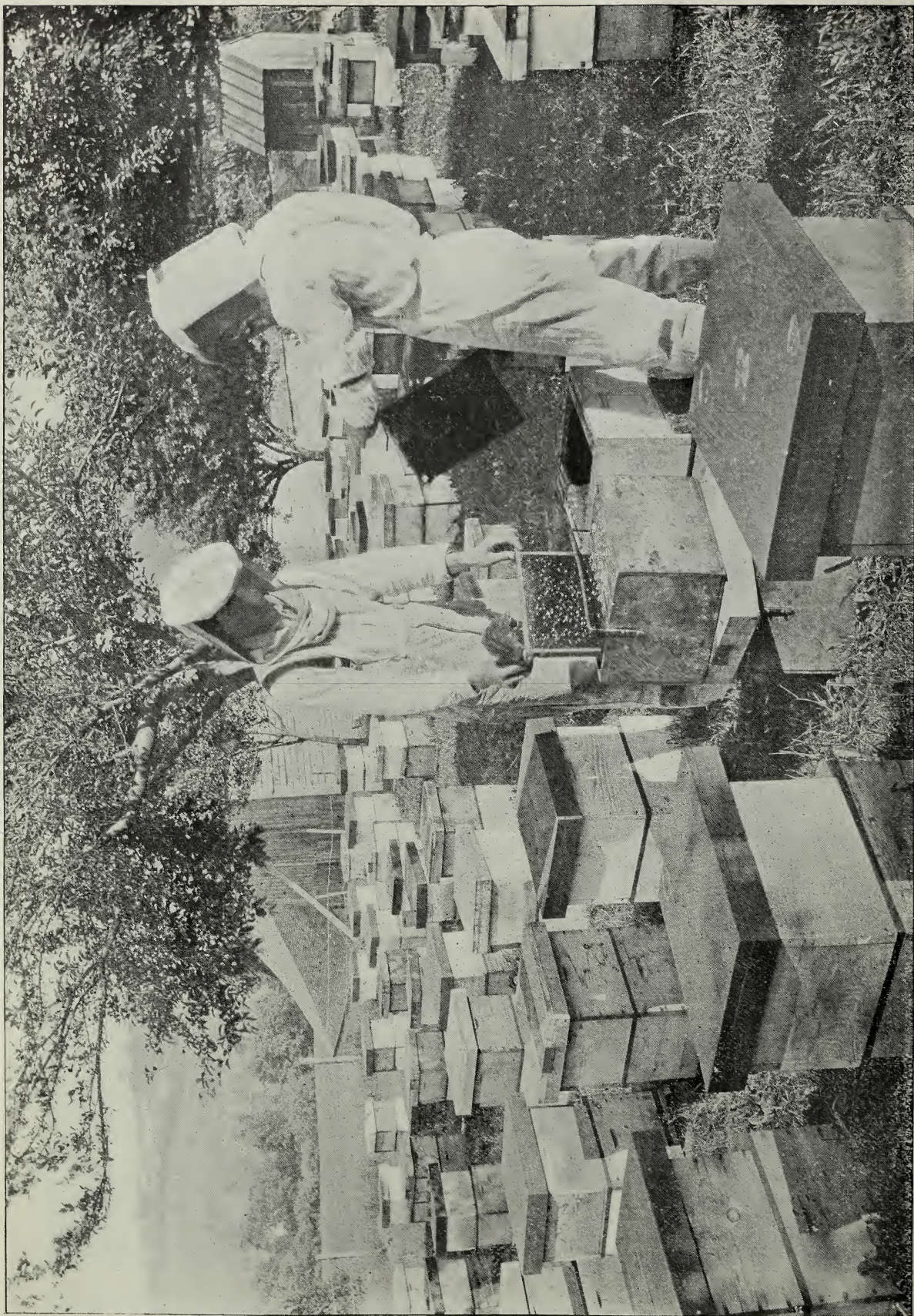
combined with his thorough system of management, enables him to accomplish large results with a minimum of labor.

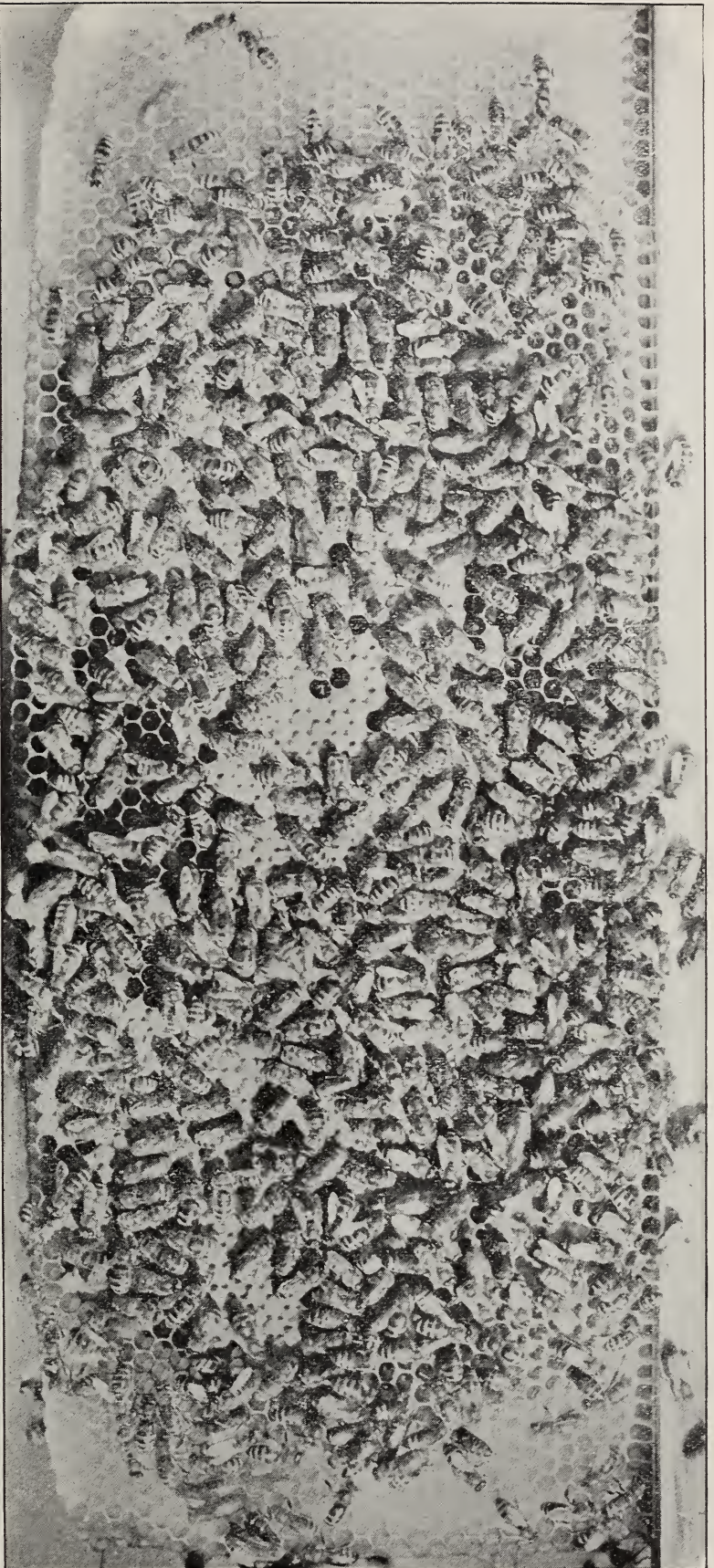
With regard to that special head-gear, when I first saw it (although I didn't tell my friend Mr. Alexander so) I thought it was the most outlandish thing I had ever seen; but when, later on, I saw it in use, and so cool and convenient that the wearer could be hatless among his bees, and still well shaded, I changed my opinion. It looks

a good deal like the head-gear described in father Langstroth's book, and something like what is described in some of the German works, though it differs from them in detail. A feature of this head-gear is that the hat may be left off, permitting cool breezes to circulate everywhere over the top of the head, and yet the top and back protect one from the direct rays of the sun. In cool weather one could, of course, wear a small cap under the rig.--ED.]



FRANK ALEXANDER (SON OF E. W.) WITH COMB-CARRIER FILLED READY TO TAKE TO THE EXTRACTING-HOUSE. THE ALEXANDER BEE-HAT AS IT IS WORN.





A FRAME OF CAUCASIAN BEES. PHOTOGRAPH BY D. E. LYON. PH. D.

As our readers are probably aware, Dr. Lyon is an expert photographer as well as bee-keeper. He uses a camera, lens, and general outfit that is the best money can buy, for he furnishes illustrated articles for some of the high-class magazines. I asked him to see if he could not get a snapshot of some live bees on a comb, for this, by the way, is a rather difficult feat to accomplish, as the comb is yellow or black; and the bees, also yellow or black, are not good subjects for instantaneous work. How well he succeeded will be shown by the illustration above of Caucasian bees. They will give the reader some idea of their general markings. As there is no yellow, but simply silver white, black, and gray, the reproduction of them here is fairly accurate, both in color and markings.—Ed.

A FINAL WORD CONCERNING CAUCASIANS.

Characteristic Markings Make them Easy to Recognize.

BY D. EVERETT LYON.

For some time the writer has been much interested in reading various criticisms concerning the new Caucasian bees. A careful reading of the testimony thus far offered convinces me that a number of writers have expressed themselves on the basis of hybrids and purely mated Caucasians. My visit to Washington last spring convinced me that in the above-named race we have a valuable acquisition to the present races of bees. My experience with them the past season has but confirmed me in the estimate of them then formed.

I can not but believe, and I have good reason for so doing, that a number of adverse critics of this race have not had the Caucasians in their purity; and yet, in spite of this, the testimony as to their gentleness has been of a universal character, showing that a dash of Caucasian blood in other races is a boon of inestimable value.

If this be true of a hybrid with just a trace of Caucasian blood, how much more gentle can we not expect the pure stock to be?

The first objection we hear raised against Caucasians is that they are so gentle that they allow themselves to be robbed, and do not repel their enemies with vigor. In answer to this I would say that such has not been the case with the strain of Caucasians

I possess, for by several trying tests I have proved them to be good defenders of their homes. In the early fall I purposely opened a colony of Caucasians, and in a little while about 50 robber bees were flying over the frames; and when they would fly too near, the Caucasians would repeatedly jump up to them and try to catch them; and when they would succeed in getting one, the way they would ball and try to sting it was a caution. And yet, while all this was going on I was constantly lifting out the frames without veil, gloves, or smoke, and not the first Caucasian attempted to sting me, even though they appeared quite vicious toward their enemies.

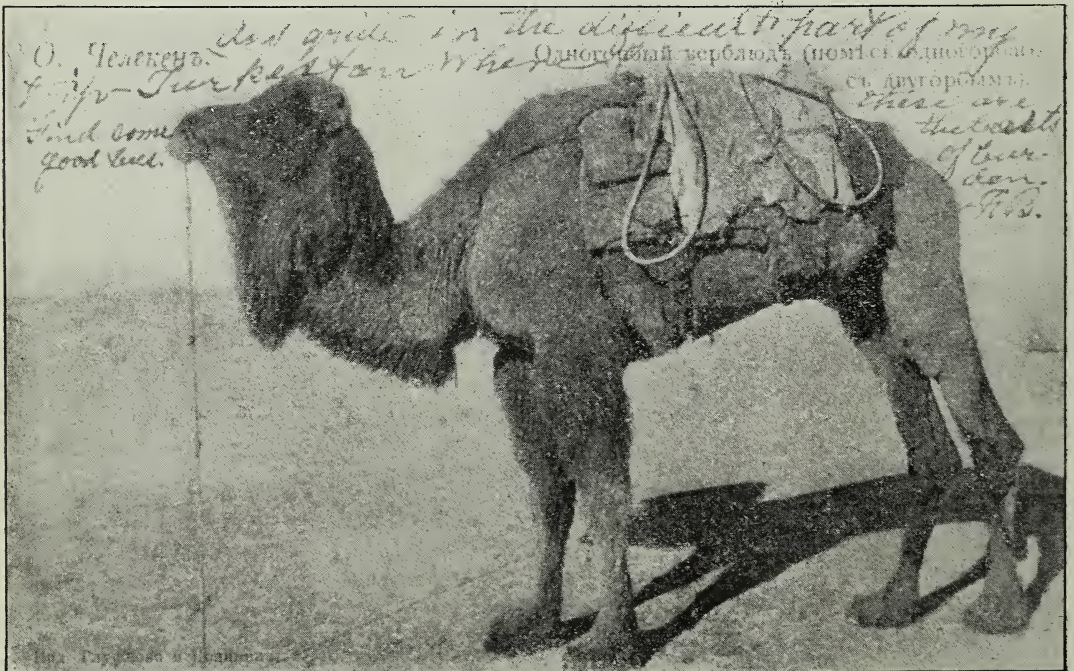
To test them further I caught a grasshopper and held it on the top of their frames, and immediately they covered it; and in order to save its life I shook the bees off and sent the grasshopper on its way.

I can not think of any other test that would prove their ability to defend their homes.

The other objection we hear is that they are so much like the black bees that even an expert often can not distinguish them; and in answer to this I would say it is a question of being absolutely certain of having the real thing.

Look at the bees in the illustration on preceding page and see how distinctly they are marked. There is no difficulty in distinguishing pure Caucasians like these; and when I took their photo last summer they posed just as nice and as quietly as one could wish.

The three bands which, in my strain of



FRANK BENTON'S LAST POSTAL TO GLEANINGS, SEE EDITORIAL.

Caucasians, are so distinct, are of a pronounced light gray, which, with the slight shade of orange on the abdomen, make it easy to tell these bees from the blacks.

I think I have fairly met the only objections against this race, and would reiterate what I have often said—namely, don't condemn them without really knowing them; for the real Caucasians, purely mated, are just the reverse of what their opponents charge them with being.

They are a trifle smaller than the Italians, and have the oriental type form of the Cyprians; and as honey-gatherers they have with me done just as well as the Italians, and much better than many colonies of that race.

If Mr. Frank Benton were in this country he would have something to say in defense of this race, adding his testimony to that already given by Dr. Phillips, to the good qualities of this noble race. Just before he sailed abroad he sent the following letter to the writer concerning the qualities and markings of the Caucasians, and in his absence I submit it as his estimate and defense of the little fellows:

FRANK BENTON'S OPINION OF CAUCASIANS AS GIVEN IN A LETTER TO MR. LYON.

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF APICULTURE,
WASHINGTON, D. C.

Rev. D. Everett Lyon:—I have your letter of March 21, asking about Caucasian bees. I can give only the main points in the character of this race, having had it under test on a comparatively small scale for two years past. I knew the race, however, by general reputation, while I was in Europe and in the East. The reports in the European journals at that time were, just as may be noted regarding Carniolans in this country—quite contradictory; and as I had numerous other races under test in those years I did not undertake a practical test of these bees until year before last. As I obtained in the autumn of 1902 three Caucasian queens, I had full colonies of the race with which to begin the season of 1903. Through additional importations of queens direct from the Caucasus, in Russia, I have further verified the observations which were made on the first lots obtained.

The most striking quality possessed by these bees is their remarkable gentleness. It is not equaled by any other race with which it has been my good fortune to meet. As a rule, no smoke will be needed at all in their manipulation, or, at most, a single whiff passed over the tops of the frames is quite sufficient to take away all sign of resentment. Under ordinary conditions the hives may be opened in any manner one chooses, at any time of the day, and the frames even roughly removed and all manner of manipulations made, without the necessity of resorting to smoke, and with no protection to hands or face; nor will a single bee offer to sting. The only time that pure Caucasians resent intrusion is when robbing has taken place and the hive is rudely jarred on a cool morning. At least such has thus far been my experience with them.

I can not say that they have shown remarkable qualities as honey-producers, but have thus far merely held their own fairly with the average of Italians and Carniolans. The same differences exist between individual colonies as is the case with Carniolans and Italians, so that a selection in breeding as rigid as that to which the Italians have been subjected would undoubtedly give strains of Caucasians that would fully equal or exceed the best Italians or Carniolans. The race is not very uniform in its markings. In this respect, in fact, it hardly equals the Carniolans, the yellow or rusty red bands cropping out constantly. There is, however, a peculiar marking which enables one to recognize Caucasian blood quite readily after he has acquired some skill in the matter. The dark color is of a peculiar dull leaden gray, and gives the bees a very ringed appearance. You have doubtless noticed Carniolans or blacks which had fallen into water-troughs, crept out, and be-

come partially dried. These might be taken to resemble, in color, the Caucasian workers, as you will notice that the dark rings around the body show more distinctly when the fuzz is dampened. True Caucasians are slightly smaller-bodied than Italians or Carniolans—in fact, have the type form of the oriental races. The queens vary somewhat, as do the Carniolans, from a golden orange yellow to a black color, inclining, however, more to the dark type—dark bronze being rather typical. The drones are very black, and considerably smaller than Carniolan drones. The race is a very prolific one, and the workers seem active and evidently keen-scented, since they find sweets that are left exposed quite as soon as do bees of any race.

I have formed a very excellent opinion of these bees, and believe particularly that they will form excellent crossing material with the Cyprian race. We need males of a gentle race to mate with the queens of any or all of the oriental types; and I think in the Caucasians we have a type that will coalesce with the Eastern races.

FRANK BENTON,
In Charge of Apiculture.

March 25, 1905.

HONEY-HOUSES IN CUBA.

How to have them Light, Cool, and Comfortable; How to Lay out a Cuban Apiary.

BY C. F. HOCHSTEIN.

I hear and read a great deal about the extracting honey-houses in Cuba being dangerous, sweat-boxes, bake-ovens, etc., and most of them are; but there is no need of having them so, as with very little expense they can be made light, cool, and comfortable.

My honey-houses are so cool, any day of the year, that, when I come into one of them from working outdoors in the sun, I always put on a jacket to keep from catching cold. Any house can be made so, no matter what it is made of, or what kind of roof it has. Make it as follows: Three feet up from the ground nail a board 1×6 all the way around your house; then leave an open space of three feet and nail another 1×6 board all around. This leaves an open space of three feet all the way around, with a 1×6 board above and below it.

Next get some white pine or some other soft-wood strips, $\frac{1}{8}$ thick by 2 inches wide. Cut them on a miter, as shown in the small enlarged view, and nail them to the lower edge of the upper 1×6 board. Then tack on your wire cloth, allowing it to project past the mitered blocks one inch.

Use galvanized wire cloth, for the green or black will not last one year in this climate. The galvanized cloth comes 40 inches wide. This gives you one inch to catch on the lower board; 36 inches opening 2 inches on blocks, and one inch for projection. Leave a $\frac{3}{8}$ opening between each block from block to block. This gives you a bee-escape every six inches all around the house. Nail a duplicate block exactly over the under block to hold the wire cloth, but do not cover over the V-shaped bee-escape with any thing. You will find the bees get out of the honey-house very quickly; but on account of the wire-cloth projection of an inch over the blocks the bees will not find their way in, and you will find your house cool and comfortable on the hottest day of the year.

In laying out an apiary in Cuba the best

and most inexpensive way is to take two 2×3-inch scantling; lay them parallel with each other; then cut 1×3 strips just one inch longer than your bottom-board; nail one of these across from one 2×3 to the other every 3 ft., then turn the thing over so the 1×3 come to the bottom; straighten them up to make your row, then level them up both lengthwise and crosswise, leaving the rear scantling one inch higher than the front one. This gives the hives the pitch to carry off the water. Leave an alley of five or six feet. Put down another row with the pitch the other way. This gives you an alley to work in with the entrances facing from you both ways.

In placing your hives on these supports, put them directly over the 1×3 strips. You will find this leaves you a space of 18 inches between hives, which is just right for one-story hives to sit on one and work the other, or to stand between and work either way on two-story hives.

The above is meant for ten-frame hives, which are the hive best fitted for Cuba. Eight-frame hives could be placed closer, but then the 1×3 strip should be placed closer also, else the strips will come in the way of one's feet.

For shade we generally set out bananas here; but they prove a nuisance, as the drying leaves make a lot of rubbish. Besides, in a few years the suckers from the bananas will crowd away your hives. The best

shade in Cuba for bees are grapevines over an arbor. These will give partial shade in the summer, and sunlight on the hives in winter. Some advocate sheds. These are all right in the summer; but in the winter I think the bees should have the sun.

The best strain of bees for Cuba, I think, are the hybrids—first, last, and all the time. Italians clog the brood-chamber too much with honey, to the detriment of brood-raising. Of course, we have to have Italians in order to get hybrids. Our bees here run to blacks very quickly—not, I think, because, as some suppose, that the black drones are quicker on the wing than the Italians, but because, to every Italian drone you can find in Cuba, you will find one million black ones.

Contracted entrances in winter, and wide-open entrances in summer will do much to keep brood-rearing up in winter and prevent swarming to some extent in summer.

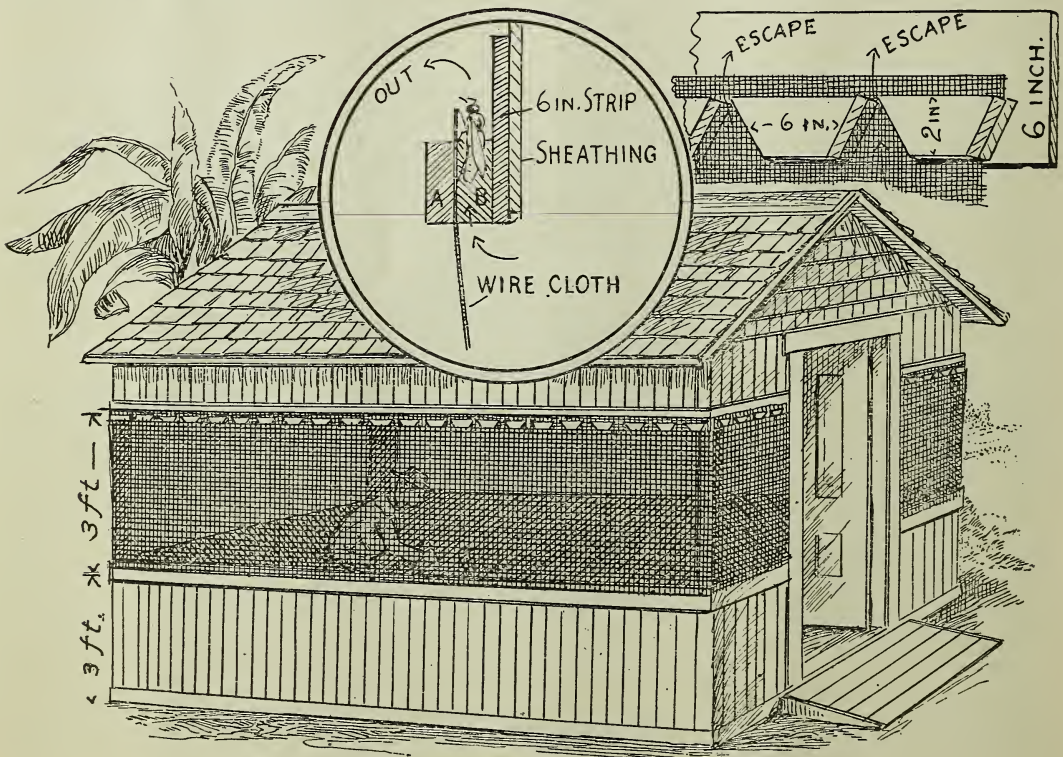
Punta Brava, Cuba, Nov. 17.

FEEDING BEES IN WINTER QUARTERS.

An Interesting Experiment with Different Kinds of Feed; How to Make Sugar Syrup.

BY W. R. GILBERT.

It happens that, after an unfavorable season for honey-gathering, there does not seem to be a sufficient store of honey in the hive to carry the bees through the winter.



CUBAN HONEY-HOUSE.

To gain information as to the best method of overcoming this difficulty the following experiment has been tried with six strong colonies of bees.

Four frames of sealed honey were taken from each of the six colonies, leaving the cluster on the four remaining frames. The four frames were left in the center of the hive with a division-board at each side, and some light packing was placed between the division-boards and the sides of the hive. The wooden covers were removed, and a large propolis quilt made of heavy canvas was placed over the top of each hive. Over the top of the propolis quilt, extra packing was placed to keep in the heat, absorb moisture, and prevent drafts or upward ventilation. The bottom-boards were left on as they came from the bee-yard, leaving the entrance wide open.

The experiment was as follows:

1. Two colonies received maple sugar of the best quality.
2. Two colonies received a candy made of honey and sugar.
3. Two colonies received partly filled sections of honey.

Each colony, when put on this test, weighed 31 lbs., and each was given 3 lbs. of its particular food to start with. The experiment lasted four months. The two colonies fed on maple sugar consumed $11\frac{1}{2}$ lbs. each; they were examined every two weeks, and water added to the sugar through holes in the tops of the cakes, keeping it soft and moist.

The two colonies fed on partly filled sections of honey consumed during the same time $14\frac{3}{4}$ lbs. each. There was, for several reasons, considerable waste in this test; and if partly filled sections could be sold at even a reduced price it would be advisable to sell instead of feeding back.

The two colonies that were given candied honey consumed $10\frac{3}{4}$ lbs. each. The honey was moistened at intervals, which made it easier for the bees to suck up.

My honey candy is made as follows:

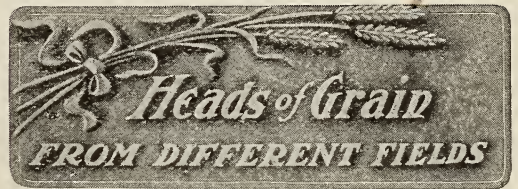
Take good thick clover honey, and heat (not boil) it until it becomes very thin; then stir in fine granulated sugar. After stirring in all the sugar the honey will absorb, take it out of the utensil in which it has been mixed, and knead it thoroughly with the hands. The kneading makes it more pliable and soft, so that it absorbs or takes up more sugar. The kneading operation, with the adding of fine sugar, should be continued till the dough is so stiff as to be quite hard to work. It should then be allowed to stand a day or two; and if at the end of that time it is so soft as to run or be sticky, a little more sugar should be kneaded in. It should be cut into cakes of convenient size, and placed on top of the frames in such a way that the bees can get at it easily.

The colonies in all three tests came out in excellent condition. Any one of the three methods may be safely followed; but I would strongly recommend examining and

weighing all bees the first week in September. At that time every colony should have a good laying queen, and should weigh over 50 lbs. In seasons when there is no fall flow of honey, all colonies weighing less than 50 lbs. in September should be fed up to that weight at least. The best method for getting colonies up to the required weight is, when extracting, to have several full well-sealed combs, then remove some of the light ones out of the hives and replace them with the heavier full frames. If no honey is available, feed sugar syrup. This latter plan is a rather tedious one, and great care must be taken not to daub the hives or appliances, as robbing at this season of the year is very easily started and hard to stop.

Sugar syrup may be made as follows:

Use the best grade of granulated sugar, two parts to one of water by weight. The water should first be brought to a boil, then the pan or vessel set back on the stove so that the boiling will not continue, but the water kept sufficiently hot to dissolve all the sugar. The sugar should be poured in slowly, and thoroughly stirred until all is dissolved. The syrup should then be fed in a lukewarm condition.



THE ALEXANDER METHOD OF CURING BLACK BROOD; HOW TO GET THE LARGEST NUMBER OF LAYING QUEENS NECESSARY.

In reading GLEANINGS I am interested in Alexander's plan of curing black brood, and its discussion. I have practiced the same for three years, and know it is a success when properly handled; but the thing that puzzles me most is to get the laying queens at that time of the season. Last spring three-fourths of my first queens were not fertilized. I should like to have you state through GLEANINGS how such an extensive bee-keeper as Mr. Alexander handles this part of his business. He says, "Requeen the other half with laying queens," etc., and that is just what I want to know about.

Fridley, Minn., Nov. 21. L. H. HOYT.

[You do not make it clear whether this method of cure was applied to foul brood or black brood. In the absence of any statement, I should have assumed that you refer to black brood except for the fact that there was little or none of that disease in your State. If this treatment will work with foul brood as well as black, then we may be on the threshold of a new era in the treatment of brood diseases.

In an article that was published in a

previous issue, from Mr. Samuel Simmins, of England, he says he has tried a treatment like the Alexander, and found it to be effective with foul brood. If this is true, it is rather unfortunate that we did not discover the fact sooner, and thus save thousands and perhaps millions of otherwise good combs that brought only a tithe of their real value when rendered up into wax.

The rearing of queens, and having an abundance of them, is very simple as Mr. Alexander manages. This he will shortly explain.—ED.]

AMOUNT OF HONEY A FAMILY WILL CONSUME IN ONE SEASON.

I have often seen estimated of amounts of honey a colony of bees would *make*, but never an estimate of how much a family would *eat*. We are new in the bee business, but this year five of us bid fair to consume 300 lbs. of honey. Is this a fair average for that number of persons?

Our bees hummed merrily in a small patch of cow-peas this summer. Are they of any value as bee-pasture? E. P. COLTRIN.

Terre Haute, Ind.

[Yes, in some localities. But, say—as a honey-eating family you surpass any other I have heard of. Can any other family beat it?—ED.]

A LARGE NAIL FOR A HIVE-TOOL.

The best hive-tool that I know any thing about is a 60-penny spike. Hammer and file the point flat and sharp; cut and flatten the head correspondingly to make a projection on each side, and you have a good pry and a good hook.

F. C. THOMAS.

Spring Valley, O., Oct. 16.

[I have used twenty-penny spikes for handling frames, with a good deal of satisfaction. The head made a very convenient hook for lifting up frames, and the straight round body of the nail when entered between the frames made a very convenient and serviceable pry. It is the cheapest hive-tool that has yet been suggested, but it is not suitable for prying covers loose from the hives. No doubt a larger nail hammered out as you describe would be better.—ED.]

SUGGESTIONS IN FAVOR OF THE DOUBLE GROOVE AND WEDGE FOR HOLDING FOUNDATION IN FRAMES.

In reply to Mr. Wood, p. 1083, I will say I believe that, after he gives them a more thorough trial, he will be just like some of the rest of us—he will have no other. My first experience was like his, for I happened to get some frames from a company that did not do straight business, and sent out wedges that were entirely too small.

A bee-keeper told me this year that the foundation would not stay in the frames; but I found out that she put the wedge and foundation both in the same groove—simply

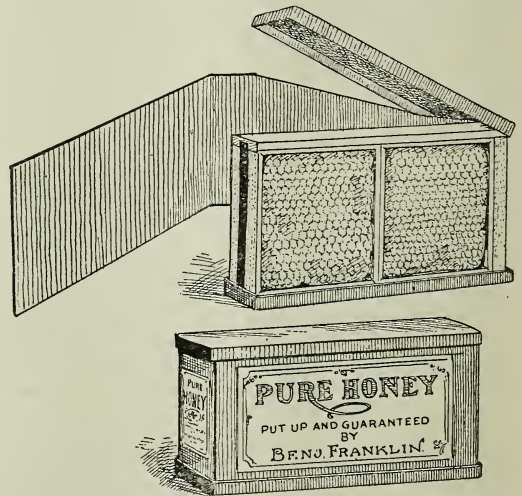
didn't know how. Let me tell you how I go about it. I first lay the foundation on the table, draw a knife-blade along on the edge to smooth it down so it will go into the groove easily. I then set the frame on the table, top-bar down; drop the foundation in them; start one end of the wedge in the opposite groove; take a pair of common horse-shoe nippers, and put it out of sight easier than I can tell it, and you can't shake the foundation out.

R. G. WOOD.

Prowers, Colo.

A PASTEBOARD CARTON HOLDING TWO SECTIONS OF HONEY.

I wish to give you a description of my comb-honey package of which I am sending you a sample. I first sold my comb honey by putting it in paper bags, but found once in a while I would hit a cell in getting them out, and so set the honey running. I found I must get up something better. It occurred to me that pasteboard fixed on would protect the honey all right, so in the morning early I fixed up some like the sample, without the caps, but I think the caps would be better. I think perhaps you could get up a carton that would be just the thing, as I am bound to put my honey up in this style another year, for I can sell two boxes as easily as



one. By having the pasteboard tacked fast at one corner I can swing it back like a door, and expose both sides to view. I like to sell it in the night, as the honey, by holding up to the light, shows off finely. I sold most of my comb honey in these packages for 30 cts. per package, dark honey at that.

BENJ. FRANKLIN.

Franklinton, N. Y., Oct. 3.

[It may be that we ought to supply a carton holding two sections. We will take the matter under consideration. But it would be far cheaper to make a regular carton than to make one on the plan given above. You are, no doubt, correct in saying that you can sell two sections as easily as one.—ED.]

SHOWING LIVE BEES IN A STORE WINDOW.

After reading the article on creating a market for honey, page 1074, I took up the Rochester *Herald* of this morning, and cut out a clipping from an advertisement of a large drygoods firm in Rochester. It seems to me that it would take very little persuasion to induce some leading merchant of each

A Swarm of Bees.



—immune to stings practically.

It is an interesting exhibit. Pure honey to take home with you at reasonable cost.

Did you ever have a chance to observe honey bees closely? There is a swarm of them on rear Basement landing. Caged of course, you won't be stung. The apiarist enters the cage and mingles with the bees with impunity

large city and village to give up one large window to a swarm of bees and a display of honey for a week. The merchant would be only too glad to advertise the fact in the daily papers, because of the attention it would draw to him and his business.

Oct. 25.

JOHN T. GREENE.

[We see no reason why this should not be a very good way to advertise, for such demonstrations cost little and accomplish much. When the average person becomes interested in bees he generally wants some honey. In many cases this could be made right in a show window. The clipping referred to is shown in reduced form. I have been thinking for some time of testing the possibilities of advertising honey by making demonstrations in show-windows, and we expect to make such demonstrations soon ourselves.—Ed.]

SHIPPING BEES.

I should like to ask for information on shipping some bees. 1. Would it be best to ship by freight or by express? 2. How should they be fixed? 3. What is the average cost of shipping bees by freight? 4. How is the northern part of Arkansas for bees?

J. E. RICHARDS.

Carlisle, Ind., Nov. 9.

[1. If there are more than two colonies I would ship by freight.

2. Frames should be securely fastened if unspaced. The covers should be separated from the hive-body by means of strips of broken sections $\frac{1}{8}$ in. thick. This will leave an air-gap between cover and hive of $\frac{1}{8}$ inch all around, and yet this gap will prevent the escape of bees. Of course, the cover should be nailed down. In warm weather, wire cloth should be used in place of the cover.

3. Freights will vary a good deal according to the road. You had better consult your local railroad agent.

4. I do not know much about the northern part of Arkansas; but I should suppose the territory would be good, for South Nebraska is an excellent bee country, and the northern

part of Arkansas would not be materially different.—Ed.]

WANTS INFORMATION CONCERNING PUNIC BEES.

Who has had any experience with Punic bees? If any have, please tell me what it was and how obtained. I have received some circulars from England, in which they are praised very highly; and if they are any thing like what they are claimed to be I certainly want to try them. I am not satisfied with my Italians. Every year I have bought from one to ten common colonies of bees, and they always store more than the Italians, winter better, and never spring dwindle to the extent the Italians do.

The price asked for a tested Punic queen is high; but if they are as claimed it would be all right.

W. R. CLAUSSEN.

Waupaca, Wis., Oct. 31.

[I would not advise you to invest very much in Punic bees. The reports in this country have not been altogether favorable to them. Our own experience with them was decidedly unsatisfactory. The bees we had were great propolizers, not particularly gentle, and black.—Ed.]

HOW TO GET RID OF ROACHES.

I have been a reader of GLEANINGS ever since I have kept bees, and do not know how to do without it; but there is one thing that neither GLEANINGS nor the A B C book has told me, and that is, how to rid my hives of roaches. This season they are worse than ever. There will be a dozen or more on top of the mat over the supers; and when I open the hive they dart down into the hive like a flash. I have used borax and electric paste, but fear to use too much poison for fear of killing the bees.

MARY WOOD.

Centralia, Ill., Oct. 25.

[While cockroaches may be annoying, yet I do not remember to have seen any reports where they actually did any harm to the bees. I do not know of any way to get rid of them except to poison them by placing the destructive agent where they can get it but not the bees. Perhaps some subscriber in the South can help us out.—Ed.]

CORK SAWDUST AS A PACKING MATERIAL.

Why isn't it a good plan to use cork sawdust instead of chaff or other material in double-walled hives? Surely it is better, for it is lighter and dryer. All grocers will give it away. They get from five to ten bushels yearly, and throw it out. I use it and find it good.

S. W. WORREL.

Patton, Pa., Nov. 18.

[Cork dust is the very best material; in fact, it has generally been placed at the head. But it is usually not available, except at exorbitant prices, for most persons.—Ed.]

BITTER HONEY.

I send you a sample of bitter honey which my bees have been gathering ever since the 10th of July, and up till now. They have gathered this honey from a plant that we call bitterweed. The bloom resembles the dog-fennel bloom, except it is yellow. This bitterweed is one of the greatest honey-plants in this country. It begins to bloom about July 1, and blooms till frost kills it. While this bitterweed is blooming, an ordinary colony of bees will gather, in about 40 days, enough honey to fill 12 L. frames. If this weed would make sweet honey, the bee business would pay big. The only time we have any good honey is from March until the first of July, and the first of July we take off all the good honey, if there is any, and prepare for the bitter honey. This season, up to July, my bees hardly made enough honey to do them; but as soon as the bitterweed came in it was not long before they were well supplied with honey.

I should like to know if there is some way to take this bitter taste out of the honey. If there is I should like to try it. I have tried boiling, but the bitter stayed there. The only thing I see that it is fit for is winter feed. This bitterweed surely has got me discouraged with the bee business. I have invested \$140 in it this year, and have sold \$4.05 worth of honey. Isn't that "fine" for a beginner?

I have sent you a sample of bitterweed also, but I would advise you to be careful not to drop any seed; for if the bitterweed gets a start in your locality your bees will make bitter honey, and your cows will give bitter milk. Cows eat the weed like grass, and the milk will be unfit to use.

CHAS. MOELLER.

Florence, Ala. Nov. 22.

[Friend M., the plant you inclose was sent to the experiment station at Wooster, but Prof. Selby, the botanist, says it was not in determinable shape. But he was able to make out that it belongs to the *Composite* family.

This matter has come up several times in years past. There is no method of taking the bitter taste out of the honey. Getting it thoroughly ripened, either in the hive or by artificial means, greatly improves it. Where the bitter taste comes from hoarhound the honey has been sold as a cough remedy at the drugstores. Do not be discouraged about your bitter honey. It makes the very nicest kind of honey cakes; and if you offer it to any baker who makes honey cakes or jumbles he will tell you it is just what he wants. When made up into cakes the flavor is not unpleasant. On the contrary it has a distinct aromatic taste, and I think you will find it all right for your bees to winter on.—A. I. R.]

E. W. ALEXANDER'S PLAN OF CURING BLACK BROOD INDORSED.

I have just read the article of E. W. Alexander on the cure for black brood, p. 1125.

In 1903 the bee-inspector of this county inspected my bees and found a number of diseased colonies. I gave him two queens and a card of diseased brood, about three inches square, which was sent to Prof. Moore, of Cornell University. In examining the combs left I found them in a foul condition, although the hive was full of bees. Not deciding immediately what to do, I left them a few days, intending to burn them, but decided to let them rest for a while. In the mean time I had two small swarms of bees from other hives. I put one in each diseased hive and they made me some surplus honey. I could not continue my line of work in the winter of 1903, and so several of these colonies died. I should have said that, when I put swarms in the hives, the bees cleaned the combs very nicely.

I would say, in conclusion, that I think the disease is leaving us in this section the same as with Mr. Alexander. He is only about ten miles from me. From 45 colonies I was reduced to 7, but now I have 100.

A. L. FISHER.

Central Bridge, N. Y., Nov. 6.

THE DOUBLE-GROOVE-AND-WEDGE PLAN OF FASTENING FOUNDATION; THE LESSER WAX-MOTH.

I note what Delos Wood has to say, p. 1083, about the double-groove-and-wedge plan of fastening foundation in the frames. That's funny! I have yet to find the frame that suits me better than the thick-top-bar Hoffman frame with the double groove; for whenever you have to put in new foundation it is very handy to pry out the wedge and clean out the groove, and then it is ready again. In fact, it is the only frame I use.

Regarding the smaller wax-moth, I will say that I never saw one here until this year. They evidently came with some Italian colonies that I had shipped from Texas. This moth has been the most persistent this year of any that I have ever seen.

J. L. BARKLEY.

Bargain, Miss., Oct. 20, 1905.

CATCHING SWARMS BY PUTTING DECOY HIVES IN TREES.

We now have 80 colonies of bees. We secured 42 of these colonies by placing boxes in the trees. We have practiced this for three years. We simply fit up boxes as we would for hiving bees, with a support for the comb and honey. Many bees are uncared for and glad to find homes, and we sometimes secure prime swarms. It might be well to add a little foundation. This may prove of interest to our bee-keeping friends. We consider it of value to us. In this way we can run our bees for honey and still increase our swarms. Seven colonies have been secured this year.

Williams, Neb.

MRS. JOS. LAMB.

[This plan of catching swarms in decoy hives will work in some localities, and where it succeeds bees can be procured very cheap-

ly. To make the plan a success there must be plenty of wild bees or else some old-time bee-keepers who are so careless as to let their swarms go.—Ed.]

QUEEN-BREEDERS' CATALOG.

Inquiries frequently come to this office for the names of queen-breeders of various races and strains of bees; and, in order that reliable information may be given, I am preparing, in co-operation with the American Breeders' Association, a catalog of queen-breeders.

There is a catalog of considerable size in this office; but, in order that no queen-breeder of any importance be omitted, I would respectfully request all breeders, having one hundred or more queens for sale annually to the general public, who see this notice, to send me the following information as accurately as possible: Races bred; annual output of each race, and number of mating-yards. For my personal information I should be glad to learn the method of queen-rearing used, the number of breeding-queens of each race used, and the number of colonies in each yard from which drones are allowed to fly.

Hereafter all persons requesting information concerning dealers in any strain will be given the names of the four dealers nearest to the address of the inquirer. This will, I believe, be a fair way of giving the information without favoring any breeders, and will repay the breeders for their trouble in answering these questions.

E. F. PHILLIPS,

Acting in Charge of Apiculture.

Washington, D. C., Jan. 8.

THE SMALL BABY NUCLEI UNSATISFACTORY.

I read your article on baby nuclei, pages 1243 and 1244, and found it to correspond a good deal with my experience, although a good deal of the trouble described I blame on robbery and exposure of those little things to all kinds of weather. I think that this season I shall overcome robbery as well as exposure. The entrance has been too large for so few bees to defend it. I cut the entrance down to two $\frac{1}{4}$ -inch round holes $\frac{1}{8}$ -inch apart. I placed above the holes a little piece of wood, or flap, so that I can close up one or both of these holes, as it might be deemed necessary. The exposure I overcame by setting the nuclei in a small jacket hive, open in the front.

C. H. W. WEBER.

Cincinnati, O., Dec. 11.

SHIPPING FRAMES OF BROOD AND BEES FROM THE SOUTH.

Several years ago a friend of mine in the South sent me some frames of brood obtained by placing one comb in a hive on the same day so as to have it all hatch as nearly as possible at the same time, sending them to me so as to reach me a day or so before the brood was due to hatch, which was about the

time my bees were taken from the cellar. There were just bees enough sent with the brood to keep it warm; and when it reached me I put one frame of the brood in each of my colonies of bees, which at that time had just been taken from my cellar. Talk about bees booming, those stocks not only had the bees that hatched from the brood given them, but they seemed to raise twice the brood in the next four weeks that the others did in the same yard. They had young bees to nurse the brood at a time when they otherwise would have been destitute of them and at a time when in the whole season they need them the most. Instead of the inevitable "spring dwindling" it was a case of spring booming.

Well, why did I not try it again? I just didn't, that is all. I had other irons in the fire, and neglected to do so; but I have thought about it every spring, and am satisfied that it could be done to advantage. Now for a little free advertising. Who is the one in the South to furnish us frames of brood?

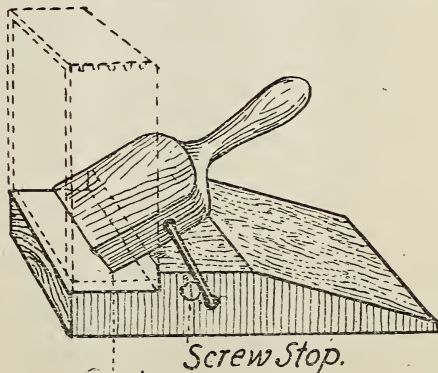
D. S. HALL.

South Cabot, Vt.

[We are glad to give space to this, even if it does savor of free advertising for some one in the South. A good frame of hatching brood with a few bees given to a colony not very strong in the spring would give it a wonderful impetus. The up-to-date queen-breeder of the South should be ready to meet this demand by announcing the fact before spring.—Ed.]

A PARKER FOUNDATION-FASTENER IMPROVED.

With a Parker foundation-fastener fixed as shown in cut, it is much easier to get starters in the center of sections. Any one who has ever used the Parker foundation-

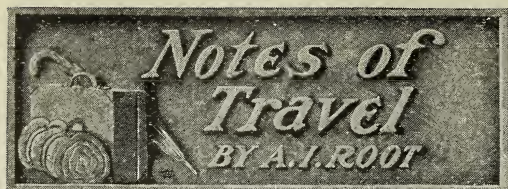


fastener knows how much trouble and time it takes to get starters in the center.

Gatesville, Tex.

W. F. MORGAN.

[A fastener arranged in this manner would undoubtedly be more satisfactory; but wouldn't two nails driven in at the right place make as good a guide? If they were driven in far enough they would be out of the way. Then, if sections of different widths were used, the nails could be drawn and set in a new place.—Ed.]



OFF TO FLORIDA.

On the afternoon of Dec. 12 we left our northern home. It was after dark when we reached the vicinity of Pittsburg, and I was more impressed than ever before by the tremendous manufacturing business done along the valleys of the river leading into this smoky city. The belching flames from the blast-furnaces made us think at first the town was on fire; but we soon found there was almost a continual succession of these "fires;" in fact, the towns seemed to run together, and streams of molten iron were first seen on one side of the railway and then on the other.

At Washington, D. C., we were met next morning by Mr. Leslie Martin, who is connected with the Apiarian Department, who very kindly showed us around as far as our time would permit between trains. As the greenhouses were near our station I began to be very happy in viewing what the government had collected from far and near; but Mrs. R. soon began to scold. The houses were too hot; and as I had not told her to bring her rubbers she found the houses altogether too wet. We soon found some not so "tropical," and where the men had not yet done their morning watering. Of course, I had seen before the most of the plants; but I found some that amply repaid me for my visit. *Ipomea Briggsii* is one that especially pleased me. It is a vine that was trained overhead on the rafters; and not only is the foliage attractive, but it has the rare quality of furnishing buds, flowers, and fruit that are always handsome. Most plants, to look neat and tidy, must have the dead and dying bloom renewed almost daily. One who cares for geraniums, roses, etc., has, of course, noticed this. Not so with this ipomea. It is always neat and tidy-looking, without daily trimming up.

The government apiary has been for some time testing Caucasian bees, and Mr. Martin is inclined to give them more credit as honey-gatherers than we have done so far. He also says that, when crossed with Italians and other bees, the effect seems to be pretty constant in making all races more gentle to handle. I brought along with me, in a two-frame nucleus, our last imported Caucasian queen. I had some trouble in getting permission to take my hive of bees into the sleeping-car, until I reached the Seaboard Air Line R. R. On this road there was not a particle of objection; but the conductor asked many questions about the new races of gentle bees, and seemed to feel their road was honored in having so important a per-

sonage as "her majesty" numbered among his passengers.

From Washington, D. C., to Sarasota, Fla., this road seemed to be up to the times in making every thing pleasant for those who patronized it.

VENTILATION AND RAILWAY TRAVEL.

As we approached Jacksonville the weather was so exceedingly "summery" outside we persuaded the colored porter to shut off the steam and let the pipes get cold. He said he would be "awful glad" to have it cooler, but some passenger was almost always sure to object. We finally all got to bed, and went to sleep in a cool, well-ventilated car. Mrs. Root had *also* got to sleep, but about midnight I heard the steam-pipes snapping, and knew we should still have it "too hot for any thing." The porter did "make it hot" for the passengers, but Mrs. Root, when she "caught on," made it "still hotter" for the porters. Of course, they explained that somebody was cold, and they had to obey orders; but Mrs. Root consulted the other women in the car, then she voiced a protest from all the ladies, and the steam was shut off once more. Does some one ask right here how the poor porter can suit everybody? Well, I would have a thermometer on board, and this should indicate the temperature within certain limits. When the majority, however, want it beyond these limits, let them have it. On this road the porter often inquired of the passengers if the temperature was to their liking. Just one more illustration:

When near Sarasota we changed cars. This last car had no ventilator open at all; and as there was a warm driving rain the windows were all closed. A carful of people rode all of half an hour "corked up tight" in a land of perpetual summer and summer flowers. Nobody seemed to know how to reach the ventilators, and I suggested we were so near our destination we could stand it with the rest. Finally the conductor came into our car, and Mrs. Root was made happy by seeing *all* the ventilators open. I can't recall just how she expressed it, but it was to the effect that the balmy air that poured through those ventilators was like a "breath from heaven." A youngster had been "howling" ever since we got on the car, but stopped almost instantly. His parents had been dosing him repeatedly with some sort of medicine, but it did no good, and Mrs. Root declares it was the bad air and *nothing else* that made him sick, and they, in their want of knowledge, gave him drugs (perhaps injurious) instead of letting him have "God's pure air."

OUR "ROBINSIN CRUSOE" ISLAND.

"How much to take us to Osprey in the morning?" I asked of a livery-man as we got off at Sarasota.

"Four dollars."

"But you carry a daily mail. Can't you take a heavier rig, and make it a little less?"

"I could make it a dollar less; but the mail

must start at half-past six, and you wouldn't want to go that early?"

He didn't know us as *you* do, dear reader, did he?

We had a beautiful ride past and through orange-groves and other tropical vegetation; and when we reached Osprey (twelve miles) we found one of Mr. Shumard's sons waiting to take us over to "our island." When friend S. told us (see p. 135³, Dec. 15) that it was only ten minutes' sail over to the post-office, I thought it was probably only under the most favorable circumstances he could do it; but "Jesse" made it in just *seven* minutes. I have always longed for a more intimate acquaintance with sail-boats, especially little crafts to carry, say, half a dozen people, and here was my chance.

Orville and Jesse Shumard are two young men, eighteen and twenty years of age. Their occupation is principally fishing, and each one has a sail-boat of his own, and it is really a pleasure to see how those boys handle their respective boats, especially when there is a pretty high wind. They have made the trip to the postoffice in only *five* minutes; but it takes an expert to do this and not upset or take in water.

On the way over, Mrs. Root and I were astonished to see fine large fish jumping out of the water all around us, and, later on, I saw a school of fishes just coming into the bay from the Gulf (of Mexico) that made such a "demonstration" one or two large fishes (say 2 lbs. and over) were up in the air *all the time*. Sometimes there were half a dozen or more several feet in the air. Now, if I were not *sure* you all know I tell the truth, even if I am telling "fish stories," I might hesitate to tell what comes next. The Shumards are not only an interesting but a remarkable family. Besides the boys mentioned, there are two bright girls, nine and eleven years old, named Clara and Flossie. With the older one, Florence (seventeen), they three go to school in a boat a mile and a half from home. Well, the two little girls, one morning before school, caught fish enough to sell for \$2.40; and Clara (only 9, mind you) caught with a cast-net, at one haul, *one hundred and six* fish, all big enough to eat.* Of course, she was lucky enough to be right on the spot near a school of fish. This was on the Gulf, and the fish were so thick when a wave threw them up on the beach they could hardly all get back into deep water. These jumping fish *sometimes* jump into the boat. They haven't jumped into our boat (not yet); but one day Thomas McAulay (the son-in-law) was walking along the beach on the Gulf when a fish of about 2 lbs. was thrown up by a wave; and before it could get back he kicked it up on dry land, and brought it in just in time for dinner.

By the way, our dinner on that first day included a soup made from little shellfish about the size of beans. I have written these up before, as some of you may remember. Well, I still consider them the richest, most

* It took *both* girls to pull in the net, for there were toward 100 lbs. of fish.

nourishing, and most appetizing food, especially in the line of soups, of any thing the kind Father has provided for his children. Every wave that comes up from old ocean brings up in the sand thousands if not millions of these tiny oysters (or perhaps, more properly, clams); and if you scoop them up with the sand in a sieve the sea water will wash the sand out and leave little closed shells of various sizes and forms, and of the most brilliant and enticing colors, rivaling all the tints of the rainbow. All you have to do is to rinse off the salt water, and cook them just as you would cook so many beans, only they cook about as quickly as oysters, and taste much like them. The shells are strained from the soup with a colander. The people here call them donaks. There are enough here along the Gulf of Mexico to feed untold thousands if not millions of people.

Before I get through with fishes as food for mankind I want to give you an illustration of the steps that often occur between the *producer* and *consumer*. On the Pullman dining-car I had a very fine blue-fish for dinner—price 50 cts. I did not order any thing else, not even tea or coffee; but the fish alone made a very good dinner. It weighed, when caught, perhaps 2 lbs. Well, the Shumard boys get for just such fish at wholesale, just as they come out of the salt water, *two cents* per pound, by the 100 lbs. or ton. They are purchased by a boat that comes along daily, carrying ice, and they turn them over to the fish-dealers, who in turn supply the retailers, and so on to the consumer. I suppose the profits are all right, or about right; for if you want a nice fish served up to you in *good style*, without even stopping your train for dinner, and then have all the fixings quickly swept out of your way and put away, you must *pay* somebody for doing it. If you prefer making a short cut, and dropping all these "middle men" with their profits, just come out on our island and play "Robinson Crusoe" just as Mrs. Root and I are planning to do. Before you can do *this*, however, you will have to invest something like a hundred dollars in a cottage, and things to take up even "*light* housekeeping."



VERTIGO, OR FALLING SICKNESS.

I have mentioned before that my malarial attacks usually occur in July and August—the same season of the year that I had the severe attack something over a dozen years ago. Well, at the time of Huber's wedding, last September, Mrs. Root and I came back to Ohio for three weeks. Toward the end

of that time I began to complain, and said I should have to go back to the cabin in the woods or else I should have trouble. One morning I woke up feeling a little strange, but about as well and strong as usual. When I attempted to stand up on the floor, however, a strange darkness and dizzy feeling came over me. I walked a little way from the bed, sank down on the floor, and called for Mrs. Root, saying, "Sue! come here quick. Call the children, and have the doctor sent for as soon as possible. I guess my lifework is about over."

"No, your lifework is not over. Why do you talk so? This is nothing unusual. It will pass off in a few minutes. Do not be worried. We will get you out all right without any doctor."

"But I tell you I *won't* get out all right. You had better get a doctor here as soon as possible. This is heart disease or apoplexy, or something of that sort. Oh dear me! our Michigan trip is all up now. I shall never see the cabin in the woods again."

But Mrs. Root strongly insisted that I was borrowing trouble needlessly. She declared I would be as well as ever in an hour or two, and that we would make our Michigan trip all right, etc.

Oh how many times Mrs. Root's good common sense has quieted my nerves and pulled me up in a similar way! I found out pretty soon that I was all right if I kept my head bent over pretty well toward the ground; but just as soon as I raised it up the dizziness returned. I tried a drink of hot water, but when I straightened up it was just the same. Then I tried a cup of strong tea. That did not do a bit of good. The next dose was some beef tea made of Liebig's extract of beef, and at the very first spoonful relief came. Then I drank half a cupful of the beef tea, straightened up, put on my clothing, and was all right. As I had never had any experience of that kind, I was a good deal frightened; and as soon as I could I went for Dr. Kellogg's big doctor book. Mrs. Root said she thought I would find it described under the head of vertigo. Sure enough, that hit it exactly. The book said that a little nourishing food would give immediate relief. It also stated that three out of four cases, or something like that, were caused by malarial troubles. I ate a pretty good square meal, and went about my work as usual. I felt only some slight symptoms during the day, and a little the next morning, but none since. In a couple of days we were off for Michigan, and I enjoyed better health for three or four weeks than perhaps I ever had before; but I was out of doors nearly all the time.

Now, friends, I agree with you it is a bad plan to be talking over our aches and pains, and telling people about them (especially when they do not wish to listen); and I have given the above only because I think it may help somebody else. I have seen people drop down suddenly from heart disease, apoplexy, etc., and I could not get it out of my head that I was going the same way, whereas there was nothing the matter, except a

little indigestion, probably caused by malaria and an empty stomach, as would be quite natural in the morning. Perhaps a glass of milk might have answered the same as the beef tea; but my opinion is that it would not. When I was so seasick on my way to Bermuda I was pretty comfortable, as you may remember, while lying on my back with my head down low; but just as soon as I attempted to rise up, or even to put a pillow under my head, the nausea returned. Well, the first thing my stomach would receive after that terrible ordeal was a cup of beef-tea, and the steward informed me that it was the very best remedy with a great majority of their passengers. It is not at all expensive when you consider what a very small quantity makes a good cup of beef tea—not much more expensive, in fact, than tea or coffee; and hereafter we shall keep a little, just for sickness, in our household or take it along when traveling. I think we may say, as with lemons, it is one of God's remedies. Of course, one can make beef broth of a little meat; but it takes more time, and it is often quite important that the remedy be something we can get hold of in an instant.

MORE ABOUT NITRO-CULTURE.

When this matter first came up you remember I said in GLEANINGS that I was sure it was a humbug, or at least partly so, especially so when they claimed it required a different kind of bacterium for each kind of clover and each kind of beans, and all that; but as it was so strongly indorsed by the Agricultural Department at Washington I was forced to give in, at least to some extent. It now transpires that one of the government officials owned stock, or at least his wife did, in the company that was offering bacteria at \$2.00 per package, sufficient to inoculate an acre; and instead of giving the public the reports of all trials made all over the United States—good, bad, and indifferently—this public official sent out only the most favorable ones. In the circulars that were sent out from the National Nitro-culture Co. they had testimonials from prominent people. Among them was Edward F. Dibble, a well-known New York seed-grower. In fact, they claimed him as being the heaviest purchaser of their commodity; but Mr. Dibble says, in the *National Stockman and Farmer*, as follows:

In each case nitro-culture has not given us or any of our growers one single bean more than we would have obtained if there had been no nitro-culture used; and on several fields and tests where we planted seed treated with nitro-culture and untreated seed, the untreated seed has given better results. That, in a nutshell, is the history of our experience up to date, and the farmers of America can take it for what it is worth, and it should be worth a good deal considering the nitro-culture company say that we were their largest customers, and therefore gave it a more comprehensive test.

Things have certainly come to a very bad pass when there is work of this kind in the Department of Agriculture. The worst part of it is, the official who *owns up* to the fact as stated above is *still retained* in the Department.

Hatch and Brood

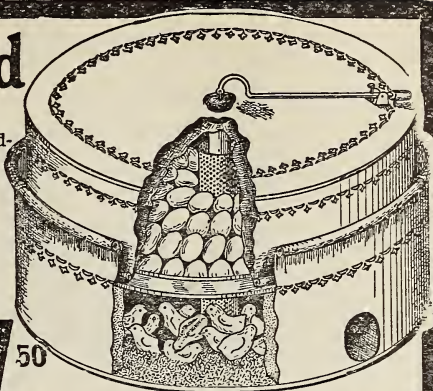
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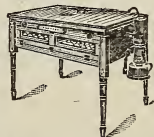
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We want to send you the 'Old Trusty' Book. You ought to read it before buying an incubator, because it has more every-day "chicken sense" in it than any catalog you have ever seen. 300 good pictures. It tells **why** "Old Trusty" does such good work—**why** it hatches so many and so good chicks—**why** it is so easy to operate—**why** it is so economical. It's sold on 40, 60 or 90 days trial, freight prepaid. Write to us.

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We Pay the Freight.

A Free Book About

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We issue the best book ever written on incubators—written by a man who has spent 24 years in perfecting them—by the man who made the Racine. It tells facts that you must know to get the right incubator. Don't buy without reading it, for the book is free. We Pay the Freight.

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GEM INCUBATORS AND BROODERS

Time tested and proven success; thousands in use; sold direct to you at wholesale prices. You get the maker's guarantee and save the middle-man's profit. The *Removable Chick Tray and Nursery*—a feature no other has—explained in catalog. It's free. Write for it today.

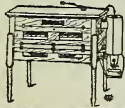
Gem Incubator Co., Box 53, Trotwood, O. \$4⁸⁸ up



BANTA Incubators & Brooders

Backed by 14 Years of Successful Use by

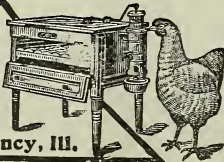
poultrymen all over the world. No guesswork. They are automatic in regulation and ventilation. Fully guaranteed to give YOU satisfaction. (Send for free book. BANTA-BENDER MFG. CO., Dept. 23, Ligonier, Ind.)



\$12.80 For 200 Egg INCUBATOR

Perfect in construction and action. Hatches every fertile egg. Write for catalog to-day.

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at Small Cost with Wilson's Phosphate Mills

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It gives the prices paid for eggs and poultry week by week for the past three years. It tells how and when a hatch taken off each week in the year could be most profitably marketed. It shows how you can make \$2.00 on a large winter roaster. It tells what profits can be made with each of the popular breeds, and the costs of production.

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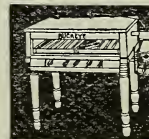
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SUCCESS INCUBATOR

A wonderful hatching machine. We want you to try it and will make it easy for you to do so. We will send one freight paid, and give you

60 DAYS' FREE TRIAL

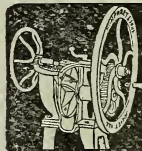
—time enough to take off two good hatches. If it doesn't suit you, if it doesn't hatch right, send it back. Could we make such an offer if we did not know what the "SUCCESS INCUBATOR" will do for you? Write for free illustrated catalog. American Brooder Co., Box 94, Racine, Wis.



\$1. PER MONTH

to \$2. per month rents any incubator. Rent pays for it. We Pay the Freight. 40 Days Trial at same prices. Buy plans and parts and build one. Prices, ready to use: 50 egg \$5.00; 100 egg \$9; 200 egg \$12.75 Brooders, \$3.50 up. Guaranteed. Catalog free.

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MORE EGGS-LESS FEED OPEN HOPPER. Humphrey Bone and Vegetable Cutter

will double your egg yield and cut your feed bill in half. Guaranteed to cut easier and faster than any other. Trial offer and catalogue free. Humphrey, Mine St. Factory, Joliet, Ill.



THE DANDY BONE CUTTER

will double your egg yield. Thousands of poultry raisers say so. It costs less, turns easier, cuts faster and lasts longer than any other. Price \$5.00 up. Sold on 15 Days' Free Trial. Send for book and special proposition.

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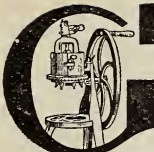


GREEN BONE MAKES EGGS


Lots of them, because it is rich in protein and all other egg elements. You get twice the eggs, more fertile, vigorous chicks, earlier broilers, heavier fowls, bigger profits.

MANN'S LATEST MODEL BONE CUTTER
cuts all kinds of bone, with adhering meat and gristle easy, fast and fine. Automatic feed, open hopper, never clogs. Can't freeze.

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of Prize-Winning Poultry for 1906. This book is printed in several Beautiful Colors and is larger than ever. Contains a Fine Chromo of lifelike fowls. It illustrates and describes 60 varieties of poultry, ducks, geese, pigeons, etc. It shows best equipped poultry yards and houses—how to build houses; cure for diseases; Best Lice Destroyer how to make hens lay; poultry supplies and all kinds of information indispensable to poultry-keepers. Prices of eggs and stock within reach of all. Send 10 cents for this noted book.

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about good wheels and good wagons that will save you a lot of work and make you a lot of money—the

ELECTRIC STEEL WHEELS

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By every test, they are the best. More than one and a quarter millions sold. Spokes united to the hub. Can't work loose. A set of our wheels will make your old wagon new. (atalogue free.

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Don't Fool

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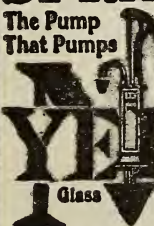


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The Pump That Pumps



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Store Ladders, Etc.


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of all kinds. Write for Circulars and Prices.

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with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—"Stayon." Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.

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HEAVIEST FENCE MADE

All No. 9 Steel Wire. Well Galvanized. Weighs 1/2 more than most fences. 16 to 85c per rod delivered. We sell all kinds of fence wire at wholesale prices. Write for fence book showing 110 styles. The Brown Fence and Wire Co., Cleveland, Ohio.

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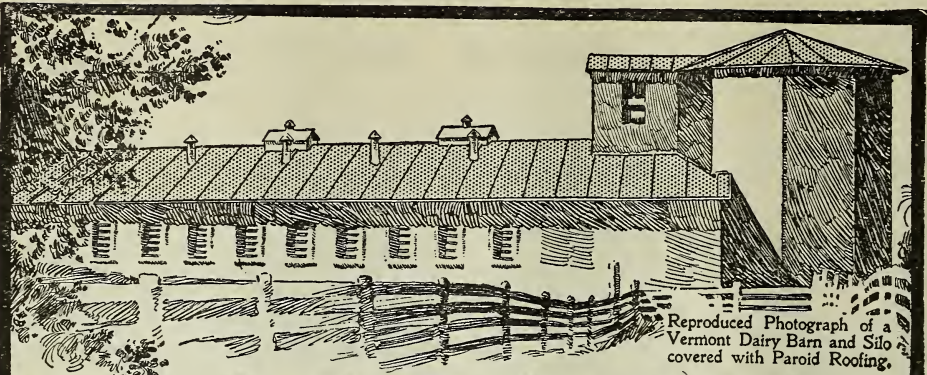


Closely Woven. Can not Sag. Every wire and every twist is a brace to all other wires and twists full height of the fence. Horse-high, Bull-strong, Pig-tight. Every rod guaranteed.

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and sold direct to farmer, freight prepaid, at lowest factory price. Our Catalogue tells how Wire is made—how it is galvanized—why some is good and some is bad. Its brimful of fence facts. You should have this information. Write for it today. Its Free.

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Reproduced Photograph of a Vermont Dairy Barn and Silo covered with Paroid Roofing.

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The roof that lasts and anybody can lay. - Thousands of the most progressive farmers, dairymen, poultrymen, as well as railroad companies and the U. S. Government are using Paroid for roofing and siding in preference to all others, because they have proved that Paroid is

**The Most Economical
The Most Durable
The Most Satisfactory**

Of All Ready Roofings.

This Is Why: It is made of extra strong felt, with an extra good saturation which makes it proof against sparks, cinders, water, heat, cold, acids and gases. Light slate color; contains no tar; does not run nor crack and does not taint rain water.

Don't be put off with a cheap imitation. Get the economical Paroid—the roof that lasts.

Send for Free Sample and name of nearest dealer. Investigate for yourself. For a 2 cent stamp we'll send new book of complete plans for poultry and farm buildings.

F. W. BIRD & SON, Makers.

(Originators of the free Roofing Kit—fixtures for applying in every roll)

East Walpole, Mass.,

Established 1817.

Chicago, Illinois.

HOW You Get This New TONGUELESS Disc Harrow FREE

It's this way—

An entirely new feature is embodied in the construction of this Harrow.

The Forward Truck, without any Tongue, positively relieves the horses of all Neck Weight and Side Draft, and allows them free, easy movement. They have just an even, steady pull.

Why should a team, that is already having a hard time to work and travel on rough, uneven ground, be hampered and annoyed by the Threshing of a Tongue, and by the weight of a Harrow Frame?

There is absolutely no reason for it.

To give you a chance to examine this Harrow for yourself, and to prove to you that it is exactly as represented, and that it will produce the results claimed for it, we will send any size you select, on a 30 Days' Approval Test, *all Freight Charges Prepaid*.

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See What Mr. Weaver says:

Dexter Mo., Oct. 26, 1905.

American Harrow Co., Detroit, Mich.

Gentlemen: We are pleased to write you that the No. 1418 Tongueless Disc has been received and thoroughly tested, and found not wanting anywhere.

We have at last a long felt want supplied—a Tongueless Disc. We have concluded that the draft of this harrow is one-fourth less; three horses will draw this harrow with as much ease as four horses will any tongue disc made. We have often wondered why a tongueless disc was so long in getting made. We are surely pleased, and trust you will never make anything but Tongueless Discs.—Yours respectfully,
L. F. WEAVER.

This Harrow is built on right principles

—No Side Draft.

—No Neck Weight

—No crowding of team in short turns

—Just even, steady pull.

—Front Truck carries weight of Frame, and controls movements of Harrow.

—Ball bearings take the end thrust

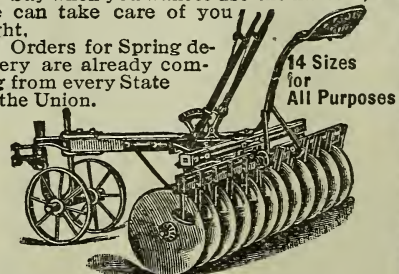
—Double levers make handling easy.

All our output goes direct to the farmers on the 30 Days' Approval Test Plan, with time to pay if you wish.

The Detroit Tongueless Disc Harrow is protected by exclusive patents and manufactured and sold only by us. Write today for booklet giving full description and prices that will please you.

Say when you want to use the harrow, so we can take care of you right.

Orders for Spring delivery are already coming from every State in the Union.



AMERICAN HARROW COMPANY
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No. 60 Iron Age Pivot Wheel Cultivator

The Best Farm Help.

All farm help is scarce; Good farm help is scarcer. The user of Iron Age Farm and Garden Implements *owns* the best help in the world and has less help to hire.

IRON AGE Implements

No. 6 Iron Age Combined Double and Single Wheel Hoe, Hill and Drill Seeder



Earn a profit on every day's work in any field or garden. The No. 6 Combined Tool shown will at a *single operation* open the ground, plant and cover seed in hills or drills with any desirable spacing between seed. A slight adjustment fits the same tool to roll, rake, hoe, plow or cultivate. The No. 60 Riding Cultivator is another famous labor saver. Our NEW IRON AGE BOOK illustrates Seeders, Wheel Hoes, Cultivators, Horse Hoes, Fertilizer Distributors and a full line of Potato Machinery consisting of Planters, Sprayers, Cultivators and Diggers. Sent **FREE**.



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SPECIAL TOP BUGGY TO ORDER

2-year guarantee. Sold or 30 days free trial. 100 points of superiority. Tell us what style vehicle you want. Send for 1906 catalogue free.

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H. C. Phelps, Pres.
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Send your name and address at once and you will receive by return mail sample copies of the BEST FRUIT PAPER and full particulars about the "Bro. Jonathan Fruit Books," which may be secured free.

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Thousands of the best fruit-growers and farmers read the **Southern Fruit Grower** because they find it the most helpful fruit paper published. Contains 24 to 40 pages of valuable fruit and farming information every month. 50c a year. Send 10c and 10 names of fruit growers and get it 6 months on trial. Sample free. The Southern Fruit Grower, Box 1, Chattanooga, Tenn.



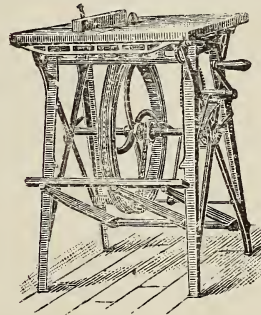
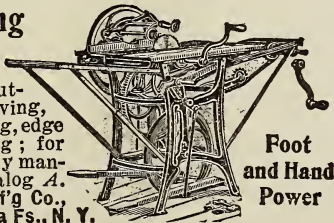
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See how closely it is woven. Sold direct to the farmer at factory prices, on **30 Days Free Trial**. Your money back if not satisfied. Write today for free Catalogue.

COILED SPRING FENCE COMPANY
Box 101 Winchester, Indiana

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'g Co., 44 Water St., Seneca Falls, N. Y.

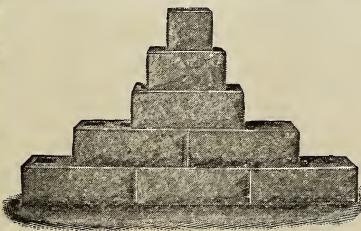


BARNES' HAND and FOOT POWER MACHINERY

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

MACHINES ON TRIAL

Send for illustrated catalog and prices. Address **W. F. & J NO. BARNES CO.** 545 Ruby Street, ROCKFORD, ILLINOIS.



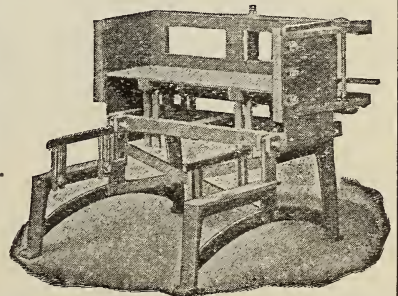
makes from 25 to 35 blocks. Write for descriptive circular and list.

Medina Concrete Company

Medina, Ohio

These Blocks

were made on one of our \$50 concrete building-block machines. Prices range from \$50 upwards. Every machine complete with all parts ready to go to work, and guaranteed to give satisfaction. Two men make from 100 to 150 of these blocks per day. One barrel of Portland cement.

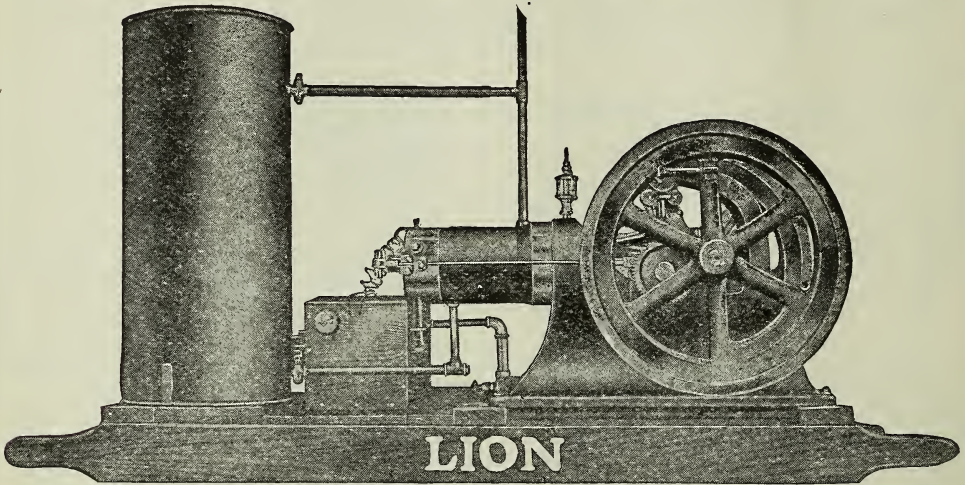


YES! WE ARE SELLING GAS AND GASOLINE ENGINES.

DIRECT FROM FACTORY TO USER.

The secret of our success in this field, hitherto unoccupied, is the extraordinary pains we take in teaching the purchasers of "Lion" engines how to operate them intelligently.

THIS ENGINE IS NO EXPERIMENT.



The "Lion" Gas and Gasoline Engines are simplicity simplified; they are used for all purposes where power is required, and will be found the most economical in operation.

WRITE US A LETTER LIKE THIS TODAY.

LYONS ENGINE COMPANY, Lyons, Mich.

Gentlemen: I am about to purchase a gas or gasoline engine for..... purposes, and wish you to send me full particulars about your approval offer as advertised in "Gleanings in Bee Culture." Yours very truly,

Name..... Town.....
 State..... Street No. or P. O. Box.....
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When writing, please state definitely for what purpose you wish to use this engine, and whether gas or gasoline for fuel. This information is very important to us.

Send for descriptive catalog and further information in regard to our special "installment plan" of purchase. If you are thinking of buying a gas or gasoline engine, it will be worth your while to see how cheaply we can sell you a high-grade engine.

LYON ENGINE COMPANY, Lyons, Michigan

PLEASE REMEMBER WE SEND THE ENGINE, NOT THE ENGINE AGENT.

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Subscriptions may be sent to one or different addresses. We make a specialty of quoting prices on your own combinations. We will meet or beat the price of any agency or publisher. **FREE:** Send us any three clubs at advertised prices and we will give you any magazine of Class A free. Catalog Free. Agents wanted.

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Gleanings in Bee Culture.....\$1 00 } **Our Price, \$2**
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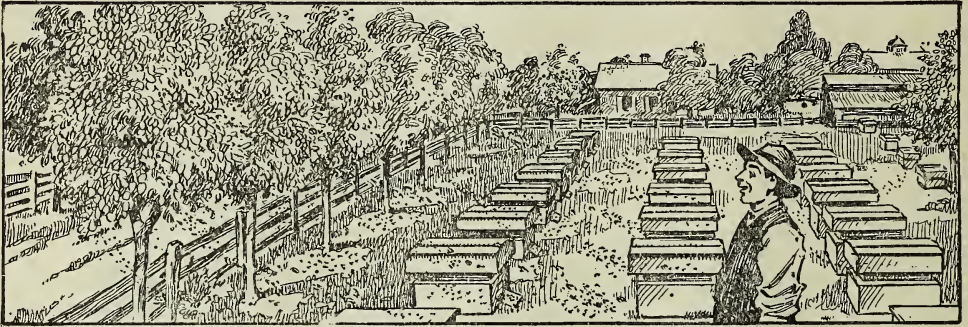
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<u>100</u>	Choice	6 to 12 in. high,	\$ 3.00
	Basswood	1 to 2 feet high,	5.00
	Trees	2 to 4 feet high,	10.00

Where cash comes with order we add 10 extra trees free. If preferred the money can be paid to express agent in the spring after the trees arrive at express office in GOOD CONDITION. No matter how far you live from us we guarantee

SAFE DELIVERY

These basswood trees will go fast at our special prepaid price, and our advice is that you order at once, as offer may have to be withdrawn later on.

ORDER them direct from this advertisement. If you have no ground to plant on get your neighbors to let you plant them along their fences.

We have been in the nursery business for over a third of a century, and are reliable. Our catalog, with 42 colored plates, and plain descriptions of our HARDY "BLIZZARD BELT" fruits, ornamentals, evergreens, etc., is free for the asking. Write to-day.

The Gardner Nursery Company,
Box 748, Osage, Iowa.

BURPEE'S Farm Annual for 1906

"The Leading American Seed Catalogue."

Mailed FREE to all who want the BEST SEEDS that Grow!

This *Thirtieth Anniversary Edition* is a bright book of 168 pages and tells the *plain truth*. With Cover and Colored Plates it shows, *painted from nature*, Seven Superb Specialties in Vegetables of unequalled merit and Six Novelties in Flowers, including LUTHER BURBANK'S *New Floral Wonder*.

WRITE TO-DAY!—the very day you read this advertisement. Mention this paper and address **W. ATLEE BURPEE & CO., Seed Growers, PHILADELPHIA, PA.**

A MILLION DOLLAR CONTEST TO INCREASE GRAIN GROWERS' PROFITS!

FOR PARTICULARS, SEE OUR CATALOGUE, PAGES 2 AND 3.

Special Premiums also for Vegetable and Flower Seed customers this year. Genuine gifts to our patrons to introduce varieties of rare merit obtainable only of us. Ladies, especially, read page 4 of our big free catalogue. **FREE**

No matter whether you are a small or large user of seeds, or whether you buy *Field Seeds, Vegetable or Flower Seeds*, get Northrup, King & Co.'s *Free Catalogue* and read all about these wonderful offers. Write for this 1906 Seed Encyclopædia *before you make any plans* for buying your 1906 supply of seeds for the *farm, garden or lawn*.

Northrup, King & Co's Interesting Seed Catalogue is FREE!

"The Million Dollar Contest to Increase Grain Growers' Profits" is the most colossal undertaking of the kind ever conceived. It puts a fortune in the way of thousands of seed users. It's too great to attempt to describe here. Read about it in our free book.

It will be money in your pocket to see *this Catalogue first!*

It is not only an illustrated Encyclopædia of Seeds, but a veritable gold mine of Liberal Inducements and Big Premium Offers.

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For twenty-two years Northrup, King & Co. have been developing new and improved varieties, and the 1906 Catalogue offers a wide range of exclusive specialties.

Our "Sterling Brand" on a package of seed means an absolute *guarantee* that they must prove of satisfactory purity and germination TO YOU, or they may be returned at our expense, and money will be refunded without "IF OR ANDS."

Every Vegetable and Flower Seed we sell warranted for quality and germination.

"PEEP-'O-DAY", the Sensational Early New Sweet Corn, from ten days to two weeks earlier than any other sort, and the sweetest of all Sweet Corn is meeting with a phenomenal sale. "PEEP-'O-DAY" is wonderfully productive, giving *almost double the yield per acre* of any other variety, and so tender, juicy, sweet and delicious that no other Sweet Corn compares with it. Try it this Season!



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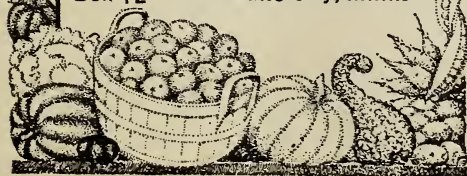
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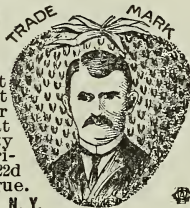
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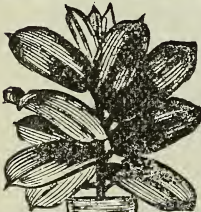
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Advanced Bee Culture

is now out. It contains over 200 pages, is beautifully bound and printed, and profusely illustrated. Nearly all of the engravings are from photographs made by myself. As most of you know, photography has been my hobby for a dozen years. I have studied it as you study bee-keeping; and this book contains between 50 and 60 of what might be termed the gems of my collection.

I try to say it with becoming modesty, but, in my estimation, this book is the masterpiece of my life. It is the result, the ripened fruit, so to speak, of 30 years of actual work in the apiary, of extensive travel among bee keepers, of attending many conventions, of reading all of the bee books and journals, and of editing the Review for 18 years. If this book could have been put into my hands 25 years ago, and I had followed its teachings, I might now have been the owner of several apiaries, been free from debt, and had a few thousands of dollars in the bank; but, of course, much that it contains was not known 25 years ago.

By the way, I am starting in *now* to carry out its

P. S.—Just at present, each new subscriber for 1906 receives the back numbers of the Review for 1905, free of charge. Two or three of the issues are getting pretty low; but whatever numbers of 1905 may be left, when a subscription is received, will be sent out.

teachings, to put them into actual practice, by starting in to establish a series of out-apiaries in the raspberry region of Northern Michigan; and the vim and courage and delight with which I am taking up this work is a surprise even to myself. I shall puff the smoker, wield the honey-knife, and whirl the extractor *with my own hand*. I shall feel one degree closer to my readers, in that I shall be a honey-producer with the rest of them.

No, the Review won't be neglected. There isn't space to mention all of the schemes that I have thought out to keep it up to the top notch while I am enjoying this work; besides, I shall be able to bring to my editorial work a freshness and reality that can come only from actual work in the apiary.—*Extract from an editorial in the Jan. Review.*

The price of Advanced Bee Culture, postpaid, is \$1.20; or I will send the Review for 1906 and the book for only \$2.00.

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We have bought a number of these guns and are giving them away. We guarantee you can earn one in a day easily. Many have earned one in an hour. No cheap pictures or jewelry to sell. Our plan does all the work. Simply say you want a gun and you will be surprised how simple our offer is and how easy it is to get the gun. Do not delay or somebody will get ahead of you. Write today. We refer you to any bank in Des Moines. We are a responsible firm and do as we agree. Never will you have another chance so don't delay. Write at once.

DESCRIPTION.—Single barrel, take-down pattern; choke-bored, insuring superior shooting qualities; automatic shell ejector; case hardened frame, top snap action, rebounding lock, walnut stock, hard rubber butt, reinforced breech, 12-gauge, 28 or 30 in. barrel. Will shoot any shell made, Winchester, U.M. C., etc. Every detail perfect. Can be taken down instantly into two pieces. Write for book telling what dozens of men and boys say of this gun. Write today.

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Extracts from Recent Letters from Our Subscribers.

The holiday number is rich.
Pierce, Neb. GEO. E. TAYLOR.

Xmas GLEANINGS is a peach, it is just chock full of good things, every bee-keeper in the world should have a copy.
W. E. TRIBBETT,
Spottswood, Va.

There is only one fault to be found with GLEANINGS: it comes only twice a month instead of twice a week.
W. H. MESSENGER.
Port Richmond, N. Y.

GLEANINGS is much appreciated at our home, and we desire to congratulate you on the interesting make-up of this indispensable journal.
FRANK G. ODELL.
Lincoln, Neb.

Please mail at once about 6 or 8 copies of GLEANINGS of Dec. 1st. I wish some of our prominent educators to see that article, page 1252. We are all very much pleased with it.
W. E. TRIBBETT.
Spottswood, Va.

I write to congratulate you on the beautiful copy of GLEANINGS which has just arrived. It is the best and most beautiful copy that has come into our office so far this year. Many thanks for your magazine, which we always enjoy looking over.
ANNIE W. CLARK,
Pres. Ohio W. C. T. U.
Columbus, O.

Your Christmas number of GLEANINGS has just come to hand, and I must say it is a beauty. My wife is especially delighted with the sprig of clover on the front cover. It certainly is a work of art. I have merely had time to glance through it, but am especially pleased with the half-tone reproductions. I judge from the opening lines in Our Homes that your father has not yet gone to Florida. It brought a smile to my face when I noticed how, like Tom Lawson, he is crowded over into the advertising pages for a finish.
WALTER B. HOUSE.
Oberlin, Ohio.

Your Xmas cover is very pretty.
GEO. N. WANSER.
Cranford, N. J.

Please send me two additional copies Christmas GLEANINGS. They will make nice presents for distant friends.
F. H. DRAKE.
East Brookfield, Mass.

Your Christmas number of GLEANINGS is a beauty, both inside and out.
H. A. SURFACE.
Pres. Pa. State Bee-Keepers' Ass'n.
Harrisburg, Pa.

I am one of your old subscribers (since '88 I think) and beg to say that I highly appreciate your beautiful and valuable Xmas number.
Winchester, Va. JNO. S. COE.

Being a subscriber myself of your valuable paper GLEANINGS, and after having read the last copy I decided to show it to some of my friends. They at once showed themselves to be very enthusiastic about it, and directed me to subscribe for them—three in all. N. PETERSON.
Minneapolis, Minn.

Permit me to congratulate you on the selection of the Christmas cover. If you will furnish us a half-tone of it thirteen ems wide, we shall be pleased to use it in the January number of White's Class Advertising. We are going to say something about it.
WHITE'S CLASS ADVERTISING.
Chicago.

Allow me to congratulate you upon the excellence of the Christmas number of GLEANINGS. It was the most interesting, valuable, and far away the handsomest issue of any bee-journal ever given to the public. I wish you a happy and prosperous new year. May God's best blessings be your portion. You have always treated us all so well that in the hours of the new year you come to our minds, and we have for The A. I. Root Co. nothing but love and the hope that all may be well with its men and women during the year.
THOS. F. RIGG.
Iowa Falls, Iowa.

The beautiful Christmas number just received. It is fine.
Union, N. Y. F. J. NICOLA.

I congratulate you upon your success with the Christmas number of GLEANINGS.
G. W. BENTLEY.
University of Tenn., Knoxville.

I have a queen that came from your place. She started in May with one frame of bees, and she put me up three supers of sections besides her stores for winter. She went into winter quarters with a solid hive of bees. Now don't forget and count me out on that Christmas number.
S. V. LABREE.
Nantasket, Mass.

The Christmas number I consider worth the subscription price—not on account of any one article, but the fine halftones and general make-up, and the natural and life like front cover.

Don't encourage the importation of the stingless bee. We have English sparrows enough here now.
ELIAS FOX.
Hillsboro, Wis.

I am very much interested in GLEANINGS and would not like to do without it. We have a few swarms of bees, and since I have been reading GLEANINGS I can see where we can do very much better with them than has ever been done before. I can see that they have been shamefully abused both winter and summer, which will not happen again.
Concord, Mass. C. A. THOMAS.

"Gleanings in Bee Culture" comes to us in a Christmas number in an exceedingly artistic and handsome colored cover and with rich contents that justifies its very handsome enclosure. It is a very practical publication on the subject of the bee and bee culture, and is regarded as a standard authority on its subjects. The present number, like every issue, is most creditable.

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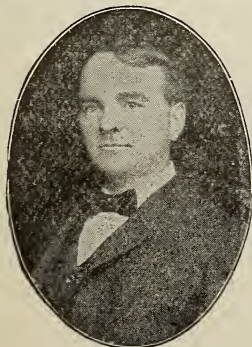
Owes its REPUTATION entirely to its MERITS, and our PERSISTENT EFFORTS to MAKE the BEST and KEEP it the BEST. It is *tough, clear, and perfectly transparent*; has the *natural sweet odor of pure wax*, and the *color of the brightest and lightest lemon and orange*. We make a *specialty of working wax into foundation for cash by the tens, hundreds, and thousands of pounds*, and we are in the best shape to attend to all orders promptly, our capacity being 1500 lbs. daily. *Full and complete line of supplies, and the best only*. Do not fail to write for *samples of our foundation, descriptive catalog, prices, and discounts*, stating quantity of foundation wanted, wax to be worked, and list of other supplies, and prices will be accordingly. Beeswax always wanted.

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The 8-frame Dovetailed hive, 1½-story, at \$1 each, any frame, any cover, etc.; 10-frame, \$1.10.

No. 1 white basswood standard-size sections, at \$3.25 per 1000; No. 2, \$2.75 per 1000.

I will take you, Mr. Bee-keeper, into partnership. There are three conditions, viz. 1st—Cash to reach me not later than Jan. 30, 1906. 2d—You subscribe for Rural Bee-keeper one year, \$1.00. 3d—You pay me a commission for my services, viz., 10 per cent on all orders for \$50 or less; 8 per cent on \$50 to \$100; 7 per cent on \$100 to \$200; 6 per cent on \$200 to \$300; 5 per cent on \$300 to \$500; 3 per cent on \$500 to \$1000; 2½ per cent on all orders over \$1000.

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Dovetailed hives, eight-frame, 1½-story, \$1.30; 10-frame, \$1.45. No. 1 sections, \$3.75; No. 2, \$3.25. Foundation, smokers, etc., reduced. Berry boxes, crates, boxes, etc., kept in stock. Honey wanted. Twenty-four page list free.

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Something New in Honey-jars...

Cook's Square Jar combines a new feature that improves the package and reduces the cost, and is the best and cheapest 1-pound glass package made. Send for circular and full catalog of hives, bees, and useful implements. . .

J. H. M. COOK, 70 Cortlandt St., New York

The Oldest Supply-house in the East, and only Reliable goods sold. 10 cents brings sample jar by mail.

Smokers at Wholesale

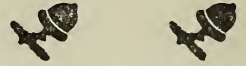
for a short time only. Hives, sections, foundation, and all bee-supplies at bottom prices; circular free.
Arthur Rattray, Almont, Mich.

NOTICE!

The firm of Cooley & Deuel has dissolved partnership. D. Cooley will continue to sell bee-supplies. All orders will receive prompt attention. Address all orders to D. Cooley, - - Kendall, Mich.

WE WANT NAMES. Send us the names and addresses of fifteen good farmers and fifteen cents—stamps taken—and we will send you the Farmers' Call for two years. The Farmers' Call is 25 years old, weekly, more than 1200 pages a year. Sample copy free.
Address FARMER'S CALL, Quincy, Ill.

Bee-supplies



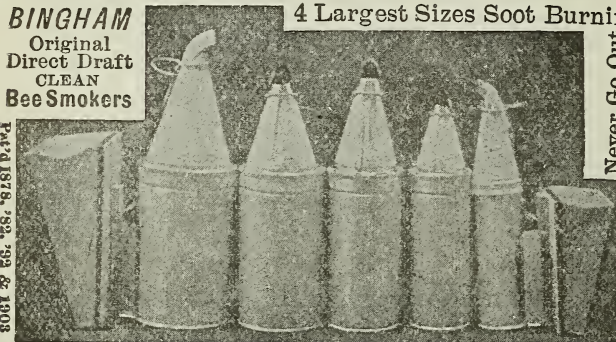
We manufacture every thing needed in the apiary, and carry a large stock and great variety. We assure you the best goods at **LOWEST PRICES**, and our excellent freight facilities enable us to make prompt shipment over fifteen different roads, thereby saving you excessive freight charges as well as time and worry in having goods transferred and damaged. We make the Alternating, Massie, Langstroth, and the Dovetail hive.

Our prices are very reasonable; and, to convince you of such, we will mail you our free illustrated and descriptive catalog and price list upon request. We want every bee-keeper to have our catalog. **SPECIAL DISCOUNTS** now. Write to-day. Address

Kretchmer Mfg. Co., Council Bluffs, Iowa

BINGHAM
Original
Direct Draft
CLEAN
Bee Smokers

4 Largest Sizes Soot Burning



Tin 4-in. Smoke Engine 3½-inch 3-inch 2½-inch 2-inch Wonder
Prices—\$1.50; \$1.10; \$1.00; 90c; 65c by mail on receipt of price.

Pat. 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100

Never Go Out
And last from 5 to 21 years

BINGHAM was the FIRST

to invent and make a bee-smoker that would burn sound wood, and go all the time without puffing. It has been the *World's Standard* for 26 years. Bingham invented all the patented improvements in bee-smokers, and uncapping-knife for his own use in his own apiary.

Oxford, O., Sept. 30, 1878.

Your smoker has been in daily use for months in a friend's apiary. He is enthusiastic in its praise, and, after seeing how greatly it facilitates the handling of bees, I heartily endorse all he says of it. **L. L. LANGSTROTH.**

ONLY BINGHAM SMOKERS
Have These Latest Improvements.

WISCONSIN BASSWOOD FOR SECTIONS

We make them and the very best of Dovetailed Hives, Shipping-cases, and a full line of bee-keepers' supplies always on hand. We make very prompt shipments. Let us hear from you.

MARSHFIELD M'F'G CO.
MARSHFIELD, WISCONSIN.

A Prosperous

Season is yours.....

if you take time by the forelock, and be prepared for the season when it comes. **DON'T** put off ordering your supplies until you need them. Order now, and get the discounts.

I have a full line of Root's Goods, and sell them at factory prices and discounts. Send me a bill of what you want and let me tell you what I will deliver them at your depot for. Send for my 36-page catalog—it will be sent free—also a full description of the Hilton Chaff Hive and Supers, with a comparison made by the Michigan State Agricultural College between the single and double walled hives. All free for the asking. Cash or goods in exchange for wax.

Geo. E. Hilton, Fremont, Mich.

ABOUT DISCOUNTS

EVERY bee-keeper in the United States should fully understand the advantages of the early-order discount offered by all the dealers in Root's Goods.

There are three ways they affect you personally.

First.—You save money on every dollar's worth of goods you purchase before the rush season. Just for convenience in figuring we will assume that you will need \$100.00 worth of supplies.

The discount for January is 6 per cent. If you put off ordering until April 1st you obtain no discount. Thus, for being three months forehand you save \$6.00; and \$100.00 drawing 4 per cent interest for this time would earn only \$1.00. But you earn six times as much—24 per cent. Worth while now, isn't it?

Second.—You have losses in more ways than mere money. During the next few months you will have times when you have ample opportunity to nail your hives and fit your supers—time enough to do a first-class job of it. After April 1st every thing is hurry, hurry. Wasn't that the case last year? Now imagine your hives all stacked up ready for new swarms, and supers ready to go on at a moment's notice. All ready! That's what makes a successful bee-keeper. Twenty-four hours' waiting would mean a great difference in the crop. Worth a little thought just now—no?

Third.—You save annoyances all around. If you wait until April 1st, every chance is

that you will fail to receive your goods promptly. The agent will be out of goods or the factory behind with orders, or the railroads will be unearthly slow in delivering the goods; bees swarming; honey rolling in; no supplies. Ever been in such a pinch? Just think, too, how much trouble you will save other people. Why not try the safer plan this season?

You have nothing to lose. Almost any one can figure very close his needs only 3 months in advance. A few extra supplies will keep without deterioration till next season. Better sure than sorry.

But how can the manufacturer and agent afford to give such liberal discounts? It's very plain. Under ordinary circumstances 75 per cent of their business comes within four months of the year. That is 25 per cent in 8 months. Those eight months are a worry. Then they need money, work for their employees, room for the stock which they must carry. That's why they need your orders then, and are glad to pay for them—just what the discount is.

The discounts are as follows:

January, 6 per cent; February, 4 per cent; March, 2 per cent; after April 1, no discount. These discounts apply to all goods listed in general catalog intended for next season's use.

Let's co-operate!

6 per cent

The A. I. Root Co. Home office Medina, Ohio, U. S. A.

10 Vine St., Philadelphia, Pa.

Branch Offices in United States

44 Vesey St., New York City

1100 Maryland Ave., S. W., Washington, D. C.

1024 Mississippi St., St. Paul, Minn.

144 E. Erie St., Chicago

1635 Genesee St., Syracuse, N. Y.

Mechanic Falls, Maine

Wants and Exchange.

Notices will be inserted under this head at 15 cts. per line. Advertisements intended for this department should not exceed five lines, and you must say you want your advertisement in this department or we will not be responsible for errors. You can have the notice as many lines as you like, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, will be charged our regular rates of 20 cts. per line, and they will be put in other departments. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—Given foundation-press.
F. W. LESSER, Sta. A, Syracuse, N. Y.

WANTED.—A pony planer for hive-making.
CHAUNCEY YATES, Randall, Montg. Co., N. Y.

WANTED.—To pay cash for comb and extracted honey.
L. H. ROBEY, Worthington, West Va.

WANTED.—To exchange stock of groceries for bees or small homestead.
A. E. SHAW, Boscobel, Wis.

WANTED.—To exchange ginseng seed for any thing I can use. Make offers.
FRANK ERKEL, Le Sueur, Minn.

WANTED.—To correspond with parties having bees to sell in carload lots for May delivery. Quote prices and give particulars.
H. & W. J. MANLEY, Sandusky, Mich.

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

WANTED.—Honey, wax, slumgum, or supplies, in exchange for standard-bred White Wyandottes.
H. E. CROWTHER, No. Kingsville, Ohio.

WANTED.—Raw furs of all kinds. The highest cash prices paid. Prices on application. Goods held separate if you wish.
O. H. MORLEY, Hector, N. Y.

WANTED.—Old books on bee culture, especially from foreign countries. Please state titles, authors, year of publication, edition, binding, condition, number of pages, and price wanted.
A. L. BOYDEN, Medina, Ohio.

WANTED.—Any bee-books, except Quinby's and Miner's, published in U. S. A. before 1857. Advise titles offered, dates, condition, etc. Card to
COL. WALKER, Leeford, Budleigh-Salterton, Eng.

WANTED.—Old combs or slumgum from solar extractors. Will pay for the amount of wax secured less the cost of time in rendering. None can be used after Feb. 15.
THE A. I. ROOT CO., Medina, Ohio.

WANTED.—Partner in bees, poultry, and small fruits. Exceptional opportunity with small investment for right man; or will sell.
J. E. THOMPSON, Carpentersville, Ill.

WANTED.—To exchange, fish gig, net, torch, Jack Frost ice-cream freezer, bicycle, gun, violin, and Indian relics, for eight-frame L. hives and P supers, or Hoffman frames with drawn comb.
W. O. HERSHEY, Landisville, Pa.

Help Wanted.

WANTED.—Competent bee-keeper. Single man; one that can do farm work also. Employment the year round. State age, and wages desired.
W. P. SMITH, Penn, Lowndes Co., Miss.

WANTED.—Experienced bee-keeper (married man preferred), one accustomed to large apiaries. We will keep satisfactory employee by the year. Address with age, experience, wages asked, and references.
DR. GEO. D. MITCHELL & Co., Ogden, Utah.

WANTED.—Young man to look after bees and garden by the month or year. A good permanent position to right party. Please give salary required, and references.
E. B. ROOD, Bradentown, Florida.

WANTED.—One man March 1st, two June 1st, to work with bees, season 1906. Applicants please state age, experience, and wages wanted.
W. HICKOX, Berthoud, Colorado.

WANTED.—To engage with some one (Texas preferred) who has bees or capital to invest in bees in a partnership. I have experience in Texas and Cuba, both in honey-production, increase, and queen-rearing. References furnished.
C. E. M., care of GLEANINGS, Medina, Ohio.

WANTED.—A competent, active, up-to-date bee-keeper—single man, one familiar with artificial increase, queen-rearing, etc. Must be able to accomplish results, both in shop and apiary, or one anxious to learn. State age, experience, wages, etc.
HENRY STEWART, Prophetstown, Ill.

WANTED.—Last year my students helped to secure a harvest of 60,000 lbs. of honey from 296 colonies, spring count. I can take one or two young men, able-bodied, using neither tobacco nor liquor and of good habits (none other need apply). They must be willing to work right along. I will give board and washing; and if student does well and I do well, will give something more.
R. F. HOLTERMANN, Brantford, Ont., Can.

For Sale.

FOR SALE.—Fifty stands of bees; have not time to attend to them.
A. WATKINSON, Corning, Cal.

FOR SALE.—150 colonies of bees, 30 in Danz, and balance in Root eight-frame Dovetailed hives, at \$3.50 per colony complete, in excellent condition for winter; heavy stores; a great bargain for the price. If interested, write for further particulars.
W. M. BAILEY & Co., Spartanburg, S. C.

FOR SALE.—500 colonies of bees located in the best sweet-clover belt in the U. S. Will take \$1500 for the outfit. Reason for wanting to sell, too much other business. If I do not sell shall want a good man to run them next season.
W. N. CANNON, Greenville, Ala.

FOR SALE.—Root's bee-supplies at factory prices: full colonies Italian bees; queens in season (catalog free); Plymouth Rock chickens and eggs; incubators, brooders, poultry food, etc.
H. S. DUBY, St. Anne, Ill.

FOR SALE.—Different kinds of cow peas, stock peas, etc. Write for prices. Buy now before they advance.
E. R. MILLER, Hearing, Norfolk Co., Va.

FOR SALE.—If you want an illustrated and descriptive catalog of bee-keepers' supplies for 1906 send your name and address to
FRANK S STEPHENS,
(Root's Goods.) Faden City, W. Va.

FOR SALE.—Eight acres on foothills, 'twixt orange and sage; 105 stands bees, three stories; good bee-house, etc.
J. C. HALL Co., 29 Nordina, Redlands, Calif.

FOR SALE.—4500 Root's No. 1 polished sections, 4¼x 4¼x1½, slotted, for \$13.00.
R. S. CHAPIN,
593 Junction Ave., Detroit, Mich.

FOR SALE.—Bee-keepers' supplies. Root's goods. Root's prices. Free catalog.
F. R. DANIELS,
117 Florence St., Springfield, Mass.

FOR SALE.—My home, apiaries, and best equipment in the State. Will lease bees with complete working outfit, even to living-rooms for apiarist. Four hundred to eight hundred colonies. I furnish supplies.
R. C. AIKIN, Loveland, Colorado.

FOR SALE.—Three untested Italian queens for \$1.00 after July 1, if ordered new; warranted pure mated, 10 cts. extra. Satisfaction, or money back. Only 300 at this rate. All you want as long as they last. Orders filled in rotation. Particulars free.
S. F. TREGO, Swedona, Ill.

FOR SALE.—Five acres, well improved, half in fruit, and bearing; 70 colonies of bees; good alfalfa location; a healthy location for asthma or lung trouble. If you mean business write **WM. WORDEN, Manzanola, Colo.**

FOR SALE.—Or will exchange for eight-frame hives and bee-supplies, fine mounted game heads, birds, mammals, fur rugs, etc. **ERNEST L. BROWN,**
The Minnesota Taxidermist, Warren, Minn.

FOR SALE. 100 colonies bees, all in good shape to be delivered in March or April; also beeswax, etc.; honey in 60-lb. cans (linn and white clover).

J. B. MURRAY, Ada, Ohio.

FOR SALE.—Western bee keepers, if you use foundation or have any beeswax you wish made into foundation, write to the Delta Apiaries, Delta, Colo., for free samples and prices; 25 years' experience; big discount from ruling prices, and on this winter's orders.

FOR SALE.—To highest bidder, about 70 hives of bees in Danzenbaker and Langstroth hives. Must sell at once as other duties require all my attention.

R. E. PITTMANN, Grifton, N. C.

FOR SALE.—Weed-process foundation business; a rare chance to buy a foundation business with good growing established trade; price \$800.

H. F. HAGEN, Denver, Colo.,
Or The A. I. Root Company, Medina, Ohio.

FOR SALE.—Leaming corn, White Wyandottes, Barred Rocks, Queens. Circular.

J. F. MICHAEL, Winchester, Ind.

Special Notices.

INCREASE.

Third edition. This is the first of a series of papers on apiculture by Swarthmore, and has proved to be his most popular book. It tells of a safe method of forming new colonies without breaking up working stock. Colonies formed on this plan will work like new swarms and store surplus. This third edit on is printed on tinted paper in two colors, with a striking cover, making a handsome book. The price is only 25 cts. postpaid.

ADVANCED BEE CULTURE.

New edition. Exhaustive review of this book is given in editorial, pages 71. We expect our supply within a few days, so that the book can be obtained promptly from Medina, or any branch house or agent within a short time. Price \$1.20 postpaid.

Convention Notices.

The Colorado State Bee-keepers' Ass'n convention will be held in the Chamber of Commerce, Denver, Jan. 30, 31, 1906. This will be during "farmer's week," when many farm organizations meet in the city, and low railroad fares are assured. As usual we expect a good convention—possibly some new features, such as a competition in putting up sections and putting in starters.

R. C. AIKIN, Sec.

THE MICHIGAN STATE BEE-KEEPERS' CONVENTION.

Michigan State bee-keepers will hold their annual convention Feb. 1 and 2, in the parlors of the Blackman Hotel at Jackson. The Michigan Dairymen will hold their annual convention at the same time in Jackson, and the holding of the two conventions at the same time secures sufficient attendance to allow the railroads to give reduced rates—one and one-third fare, providing that your fare going to Jackson amounts to seventy-five cents. When you buy your ticket ask for certificate on account of Michigan State Dairymen's Convention, and when the Secretary of that Association signs your certificate, you can secure your return ticket for one-third fare.

WHO WILL BE PRESENT.

The following bee-keepers have promised to be present: **E. R. Root, Medina, Ohio; Geo. W. York, Chicago, Ill.; W. Z. Hutchinson, Flint, Mich.; R. F. Holtermann, Brantford, Ont.; A. G. Woodman, Grand Rapids, Mich.; E. D. Townsend, Remus, Mich.; W. J. Manley, Sandusky, Mich.; C. A. Huff, Clayton, Mich.; Edward**

Wilson, Whittemore, Mich.; Clyde English, Manchester, Mich.; A. H. Guernsey, Ionia, Mich.; Floyd Markham, Ypsilanti, Mich.; W. D. Soper, Jackson, Mich.; Jay North, North Adams, Mich.; Albert E. Wurster, Ann Arbor, Mich.; L. A. Aspinwall, Jackson, Mich.; O. H. Townsend, Otsego, Mich.; G. A. Bleach, Jerome, Mich.; Clyde Cady Grass Lake, Mich.; John M. Rey, Saginaw, Mich.; A. D. D. Wood, Lansing, Mich.; Geo. H. Kirkpatrick, Rapid City, and others.

TOPICS THAT WILL BE DISCUSSED.

A kink in feeding back unfinished sections; management of out-apiaries; the control of increase; use of the queen-excluder in producing extracted honey; is foreign honey affecting the prices of our honey? what section is best to use? what is the best way of ripening honey? what kind of bees are the best? do we need more inspectors in Michigan? shipping-cases for comb honey; selling honey at retail; grading and shipping comb honey; how to take different kinds of extracted honey separate, and yet have well-ripened honey; best methods of making increase; best temperature for a bee-cellar; upward ventilation vs. none; wintering bees in the cellar; can bees have diarrhoea when pollen is kept out of their reach? producing both comb and extracted honey in the same super; advertising the more general use of honey; does it pay to buy queens at a fancy price to improve our stock? why control of increase is desirable, and how shall it be done.

PRIZES THAT ARE OFFERED.

For the best ten pounds of comb honey, \$5.00 in supplies at catalog prices by The A. I. Root Co.

For the best ten pounds of extracted honey, \$5.00 in supplies at catalog prices by G. B. Lewis Co.

For the best ten pounds of beeswax, \$2.50 in supplies at catalog prices by A. G. Woodman.

For the most practical new invention, \$2 50 in supplies at catalog prices by M. H. Hunt & Son.

For the best pound section of honey, one copy of new edition of Advanced Bee Culture by W. D. Soper.

To each one winning one or more of the above prizes, one year's subscription to the Review by W. Z. Hutchinson.

To each one winning one or more prizes offered above, one year's subscription to the American Bee Journal by Geo. W. York.

The first session of the convention will be held at 1:30 P. M., Thursday, Feb. 1. A good crowd and a fine time expected.

ELMORE M. HUNT,
Bell Branch, Mich. Acting Sec'y.

BOOK ON POULTRY DISEASES FREE

Conkey's book on Poultry Diseases sells for 25 cts. Full of information on housing, feeding, sickness, and how to care for the flock. Will help you to make money. Send 4 cents to pay postage and the names of two other poultry raisers, and we will send you a copy of this illustrated book of valuable information free.

G. E. Conkey & Co., No. 80, Ottawa Bldg., Cleveland, O.

If You Want the Bee-book

that "covers the whole apicultural field more completely than any other published," send \$1.20 to :: ::

Prof. A. J. Cook, Claremont, Calif.

— FOR HIS —

"Bee-keepers' Guide"

Liberal Discount to the Trade.

BANAT BEES.—Before you buy imported Italian, Carniolan, Cyprian, Caucasian, or Banat queens, get my prices and the way I will get the queens. I have kept Banats three seasons, and consider them the only non-swarmer bees known, and one of the gentlest and best of bees. Eggs for hatching from Partridge, Silver, Buff, Silver-penciled Wyandots; Indian R'nners, and Buff Orpingtons; Dutch High-protein seed corn next fall.

L. A. LOWMASTER, Upper Sandusky, Ohio.

PRINTING - PRINTING

100 XXX envelopes (white or blue), note-heads, art circulars, or business cards, 30c; 250 labels, 24c; neat work; postpaid. **ORVIL KIGER, Burlington, Iowa.**

CAUCASIAN QUEENS.

Guaranteed mated to pure Caucasian drones. Good honey-gatherers. Gentlest bees in the world. Can be handled without veil or gloves.

Notice the distinct gray bands on my strain of Caucasians—can be easily distinguished from other races. I am breeding queens from a mother of wonderful gentleness, whose bees have never stung me, even when I have put them to tests that would have infuriated the gentlest of Italians. I have no mismated queens for sale—only pure Caucasians; and I guarantee every queen sent out to be mated with a pure Caucasian drone. There are very few imported Caucasian queens in this country; I am the owner of two from which I shall breed. Price of Queens, \$3.00 Each.

Place orders now with P. O. money-order, as queens will be shipped first to those who place their orders now.



D. E. LYON, Ph. D., MATAWAN, N. J.

TWELVE YEARS' EXPERIENCE WITH BEES.

Now is the Time to Plan

for the coming season, and you are bound to need queens to replace those that are old and worn out. Many of my customers have written me that the queens bought of me were the only ones that gave any surplus the past poor season. You had better plan to supply yourself with a lot of those fine young queens from the Laws apiaries, and double your crop of honey.

I AM BREEDING THE LEATHER AND GOLDEN ITALIANS,

also the Holy Lands. So many calls have come for Carniolans that I have added this splendid race to my list, and there is no doubt that the Carniolan, or the Carni-Italian cross, will cap their honey whiter than any of the Eastern races. I am not only prepared to furnish you with the best bees and queens in existence, but in any quantities, large or small, from one to a thousand queens. Nuclei and full colonies in season. I also offer another car of bees the coming season.

PRICES: Queens, each, \$1.00; six for \$5.00. Breeders, each, \$3.00. Write for quantity lots.

W. H. LAWS, BEEVILLE, BEE CO., TEXAS.

All the year round.

We are prepared to supply queens any month in the year. We have secured the services of one of the best breeders, and use select imported stock. Prices as follows:

Untested Italians	66
Tested	\$1 00
Select tested	1 50
Extra select	2 50

We do not guarantee impossibilities, such as sending queens to cold climates in winter, but for any reasonable distance and time we guarantee safe arrival. Write for further particulars.

A. GOMES CASSERES,
15 Orange St., Kingston, Jamaica.

CAUCASIAN QUEENS!

Caucasian bees are the gentlest of the PROFITABLE HONEY-PRODUCERS. A trial will convince you. Have your queens, both Caucasians and Italians, bred and mated to order, and then you will have what you want. Address

Robert B. McCain, Yorkville, Ills. R. F. D.

Same Old Place

is where you get the best of queens; untested, \$1.00; \$4.25 per 6; \$8.00 per dozen. Tested, \$1.50; best breeders, \$5.00. Absolute satisfaction and safe arrival guaranteed. Carniolans, Cyprians, Holy Lands, Italians.

The JENNI ATCHLEY CO.,
Box 18, Beeville, Bee Co., Tex.

ITALIAN QUEENS AND GLEANINGS.

For \$1.00 I will send GLEANINGS one year, new or renewed, and give one of my choice untested Red-clover Queens. Queens sent after May 1st.

W. T. CRAWFORD, Hinston, La.

PURE ITALIAN QUEENS.—From red-clover and five-banded breeders. Untested, 75c; select untested, \$1.00; tested queens, \$1.50; select tested, \$2.50. Safe arrival guaranteed.

H. M. PARKER, JR., James Island, S. C.

The Best Fruit Paper

is The Fruit-Grower, published monthly at St. Joseph, Mo. The regular subscription price is a dollar a year but if you will write for free sample copy and mention this paper, you will receive a proposition whereby you may secure it one year WITHOUT COST. Every one who has a few fruit trees or a garden, should read

THE FRUIT-GROWER
ST. JOSEPH, MISSOURI

Every issue is handsomely illustrated and from 32 to 64 pages a month are filled with interesting matter pertaining to fruit-growing and gardening. The first four issues of 1906 will be handsome special numbers devoted to the following subjects:—January, The Horticultural Societies; February, Spraying; March, Gardening; April, Small Fruits. Any one of these numbers will be worth a dollar to you. We publish the "Brother Jonathan Series" of fruit books. Send your name and

learn how to secure these books free.
Fruit-Grower Co. 152 S. 7th, St. Joseph, Mo.



Save Money on Your
BEE-SUPPLIES

I ship several cars of
the celebrated Root
goods to Kansas City

every year, and save hun-
dreds of dollars for our cus-
tomers in Kansas, Nebras-
ka, Missouri, etc. Let me
save you a few dollars on
your goods. Write me at
Main Office. Catalog, in-
formation, etc., sent free.

Carl F. Buck

Augusta - : - Kansas

Before you **B**uy your next
Bee-supplies **B**e sure to

send for our new revised catalog.
We are the oldest bee-supply
house in the West. We under-
stand the needs of both the vet-
eran and the novice in bee-keep-
ing. Our prices are as low as
any one's for the same quality.
Discount for early orders. We
give you quick service and low
freight rates.

Italian Queens and Nuclei

a specialty. Send for our special
queen list "B" for particulars.



John Nebel & Son Supply Co.
High Hill, Montgomery Co., Missouri

At St. Louis

A complete line of Root's Bee-
keepers' Supplies. Unexcelled
shipping facilities for reaching
the Middle West.

ADDRESS

Blanke & Hauk
Supply Co.
202-204 Market Street
St. Louis, Mo.

ALSO MANUFACTURER OF AND DEALER IN

Dairymen's
and Poultrymen's
Supplies

Low freight. . . Prompt shipments.
Factory prices. . . Write for catalog.

Send Us Your Order

THE
COLORADO
BEE-KEEPER

IS THE man we are interested in,
whether he has one swarm or five
hundred. If you are that man, we
are talking to you.

The goods we sell were made in
Ohio. You live in Colorado.

The point is this:

We cut out the distance, and bring
your goods home to you - and they are
Root's Goods too.

Just now we are interested in get-
ting our catalog into the hands of
every bee-keeper. It is YOURS for
the asking.

Your order to us, small or large,
means prompt service and Root Goods.

The L. A. Watkins
Merchandise Company
Denver, Colorado

SUPREME EXCELLENCE

is only another name for OUR Make of


BEE-KEEPERS' SUPPLIES

Have you ever used them? If not, give us a trial order this spring. We will do our best to please you. Our prices are as low as any; and if our goods aren't as we claim you'll not have to pay for them.

We Allow Usual Discount for Early Orders

In January, 6 per cent; February, 4 per cent; in March, 2 per cent. Our large illustrated price list and copy American Bee-keeper free.

The W. T. Falconer Manufacturing Co. Jamestown, New York

 The *American Bee-keeper* for January contains excellent photographic illustrations of Artificial Honey-Comb made over 30 years ago in New England, together with illustrations of the implements used in making, and a portrait of the inventor.

Dadant's Foundation

Bee-keepers like it or they wouldn't buy it. It excels. Sample free. Over 100,000 lbs. sold in 1905. Beeswax wanted at all times. Revised prices on foundation for 1906.

Grade	Size, and Sheets per Pound	In lots of			
		1lb.	5	10	25/50
Medium Brood...	7¼x16¾ 7 to 8	55	53	51	49 48
Light Brood.....	7¼x16¾ 9 to 10	57	55	53	51 50
Thin Super.....	3¾x15¼ 28	62	60	58	56 55
Extra Thin.....	3¾x15½ 32	65	63	61	59 58

Bee-supplies of All Kinds

DISCOUNT FOR EARLY CASH ORDERS
January six per cent; February, four per cent; March, two per cent; after April 1st, no discount.

Wax Worked into Foundation.
Twenty-eighth Year.
We Guarantee Satisfaction.
Send for Our 1906 Catalog.

Dadant & Son, Hamilton, Ill.

GET YOUR SUPPLIES FROM DES MOINES

Twenty-one years ago I launched the bee-keepers' supply business at this place. It was considered a doubtful undertaking by many; but, as the saying is, I was "next to" the business, being a practical bee-keeper, and having had experience in this line. My early expectations have been more than realized. By correct business methods, treating everybody square and honorably, putting out only the best goods, and carrying a complete stock, it has been my pleasure to see the business grow each season. I am proud of the fact that my new building is the first and only one of its kind built for the apiarian trade in the West.

My Responsibility

This magazine will go into the hands of many new parties who have not dealt with me before, and for the benefit of such I would assure you of my responsibility by referring you to the Des Moines National Bank or any other bank of the city; and in addition to this I would state that my business represents many thousands in building and stock.

Shipping Facilities

By looking at a map you can see at once the great advantages we have. We can reach almost any point with direct lines with our seventeen railroads and five express companies. You get your goods from here more cheaply, in many cases, than over circuitous and expensive routes, even though the shipping-point is more adjacent.

I Allow

the early-order discounts. Beeswax wanted at all times, and highest prices paid. Write for catalog.

Jos. Nysewander, Des Moines, Iowa
665, 567 West Seventh Street