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JAN., 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

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I will send the REVIEW with—

Gleanings.....	(\$1.00).....	\$1.75.
American Bee Journal....	(1.00).....	1.75.
Canadian Bee Journal....	(1.00).....	1.75.
American Bee Keeper....	(.50).....	1.40.
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Apiculturist.....	(.75).....	1.65.
Bee-Keepers' Enterprise..	(.50).....	1.40.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

CHICAGO III.—We are selling a little fancy comb honey, but the market is very quiet. We quote as follows: Fancy white, 15; No. 1 white, 14; fancy amber, 13; No. 1 amber, 13; No. 1 dark, 10; white extracted, 6; amber extracted, 5½ to 6; beeswax, 20 to 22.

J. A. LAMON,

Jan. 2. 44 & 48 So. Water St., Chicago, Ill.

CHICAGO, Ill.—The Chicago market has plenty of honey, and 14c seems to be the outside price obtainable. Any thing that will not grade strictly No. 1 must be sold at 12 to 13. Large quantities have been sold, but the supply is at present in excess of the demand. Extracted fluids ready sale at 6 to 6½ for Northern honey; Southern, in barrels, 5. Beeswax, 22 to 24.

Dec. 19.

S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

CHICAGO, Ill.—The market is quiet, as it usually is at this time of the year. We quote as follows: Fancy white, 15; No. 1 white, 13 to 14; fancy dark, 10 to 12; beeswax, 20 to 22.

R. A. BURNETT & CO.,

Jan. 2. 161 So. Water St., Chicago, Ill.

KANSAS CITY, Mo.—The demand for all kinds of honey is very light. We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 13 to 14; fancy dark, 10 to 12; No. 1 dark, 10; white extracted, 7 to 7½; amber extracted, 6; dark extracted, 5; beeswax, 20 to 22.

CLEMONS-MASON CO.,

Jan. 2. 521 Walnut St. Kansas City Mo.

MINNEAPOLIS, Minn.—The market is very weak at present, but, evidently will be better later on. We quote as follows: Fancy white, 16 to 17; No. 1 white, 15; fancy amber, 13½ to 14; No. 1 amber, 12; fancy dark, 10; white extracted, 6½ to 7; amber extracted, 6; dark extracted, 5½.

J. A. SHEA & CO.,

116 First Ave., North, Minneapolis, Minn.
Jan. 2.

NEW YORK, N. Y.—The demand for comb honey has almost ceased, while the market is yet well stocked. In order to move round lots, the prices given must be "shaded." Extracted is in fair demand, but the supply is abundant. Beeswax meets with a ready sale at the prices given. We quote as follows: Fancy white, 12 to 13; No. 1 white, 11 to 12; fancy amber, 11; fancy dark, 10; white extracted, 6 to 6½; amber extracted, 5½; dark extracted, 5; beeswax, 26 to 27.

HILDRETH BROS. & SEGELKEN,

Jan. 2. 28 & 30 West Broadway New York.

BUFFALO, N. Y.—The honey market is quiet, stock on hand is liberal and trade light, except on the second grade which is now moving off more readily on account of the lower price. There is also an excellent demand for buckwheat honey of which there is a light supply. A liberal supply could be handled here very satisfactorily. We quote as follows: Fancy white, 14 to 15; No. 1 white, 12 to 13; fancy dark, 10 to 11; No. 1 dark, 8 to 9; white extracted, 6 to 7; dark extracted, 6; beeswax, 25 to 30.

BATTERSON & CO.

Jan. 2. 167 & 169 Scott St., Buffalo, N. Y.

Muth's HONEY EXTRACTOR
PERFECTION
Cold-Blast Smokers,
Square Glass Honey Jars, Etc.

For Circulars, apply to CHAS. F. MUTH & SON,
Cor. Freeman & Central Aves., Cincinnati, O.
Send **10c.** for Practical Hints to Bee-Keepers.

1-93-tf.

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Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars, or to correspond with any one thinking of buying such a machine.

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Are not always the result of the same cause. They may come from starvation; from poor food; from improper preparations; from imperfect protection; from a cold, wet, or possibly a poorly ventilated cellar; etc., etc. Successful wintering comes from a proper combination of different conditions. For clear, concise, comprehensive conclusions upon these all-important points, consult "ADVANCED BEE CULTURE." Five of its thirty-two chapters treat as many different phases of the wintering problem.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

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Superior Quality; Price Low.



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WHOLESALE.

Everything used in the **Apiary**
Greatest variety and largest stock in the west.
New catalogue, 60 illustrated pages, free.

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Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address
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Doolittle's Queen-Rearing Free!

We have some of G. M. Doolittle's "Scientific Queen-Rearing" book (170 pages) in paper covers, a copy of which we will mail **FREE** to the New Subscriber who sends us \$1.00 for the **Weekly AMERICAN BEE JOURNAL** for one year. This same book in cloth binding sells for \$1.00, but we give to a New Subscriber one of the paper bound edition for **nothing**. Order quick, if you want one. They will all soon be gone. A sample copy of the "Bee Journal" is sent free on application to the publishers.

GEO. W. YORK & CO., 56 Fifth Ave., Chicago, Ills.

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We have just completed several new and expensive automatic machines that will turn out sections that *in point of quality cannot be excelled*. They are sanded and polished on both sides, and are of an absolutely uniform thickness from end to end. Samples and prices in quantities on application. Speak quick if you want to lay in a stock of these fine sections, as our stock of lumber is low.

A. I. RO. T, Medina, Ohio.

Sections!

Southern Bee-Keepers, ••

Why send W—A—Y out West for your Supplies? We can furnish them as low AS ANY ONE, (quality considered) and ship direct by water, which means low rate. We keep a large stock on hand and fill orders promptly. Circulars on application.

I. J. STRINGHAM,
105 Park Place,
NEW YORK CITY.

Special prices on foundation until March 1st.

Please mention the Review.

Italian Queens AND NUCLEI.

Five and Three-Banded, bred in separate yards twelve miles apart. Warranted Queens, 75 cents each; three for \$2.00; tested, \$1.00. Good's introduced cage sent extra with each queen. Strong Nucleus with warranted queen, 2-frame, for \$2.00; 3-frame for \$2.50; 4 frame for \$3.00. Safe arrival guaranteed. Special prices on large orders.

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J. H. GOOD,
Nappanee, Ind

FOR ALL KINDS of BEE KEEPERS SUPPLIES.
ADDRESS LEAHY MFG. CO. HIGGINSVILLE MO.

AT THE WORLD'S FAIR THE PORTER BEE ESCAPE received the ONLY AWARD (Medal and Diploma) given an escape. The most practical Bee-keepers everywhere use and recommend it as a great labor saving implement and as the best. Circular and testimonials free.

PRICES:—Each, postpaid, with directions, 20 cents; per dozen, \$2.25, and YOUR MONEY BACK IF NOT SATISFIED. Order from your dealer, or, if more convenient, from the manufacturers,

R. & E. C. PORTER, Lewistown, Ill.

The Bee-Keepers' Review.

ENTOMOLOGY
A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. VII. FLINT, MICHIGAN, JAN. 10, 1894 NO. 1.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

(Read at Michigan Convention.)

APICULTURAL WORK AT EXPERIMENT STATIONS.



IF I appear to any to go into devious paths in a brief treatment of the topic assigned me it is owing to the latitude which the topic itself gives me. And first I ask, do bee-keepers want it? that is do they want

that sort of work at the stations? I am sometimes in doubt about it. I judge somewhat from the course of my own feeling in the matter. Before I became connected with the work and began to study into it I was not inclined to esteem it over highly but now if I were to express my thoughts and feelings freely you would no doubt think me on the verge of the domain whose inhabitants are called cranks. Such is the effect of contact and acquaintance. Now while the great body of bee-keepers has not the enthusiasm which close contemplation begets yet if called upon they would vote pretty unanimously in favor of the work.

Then the question suggests itself why would they vote for it?

Provision has been made by the general government by which the agricultural college of each State is to receive annually a certain sum of money to be devoted to the support of an experiment station in the interest of agriculture and kindred pursuits generally. This sum was to be in the first instance, as I understand it, \$15,000.00 and after that to be increased by the sum of \$1,000.00 each year until the amount of \$25,000.00 is reached which is then to remain fixed at that point. That is, that is to be the course of affairs unless the ideas of economy of the present administration at Washington require that this money be kept in the general treasury. This is a considerable sum of money and apiculture is equitably entitled to all and more than it is now getting in this State.

Now is it simply because they are equitably entitled to it that the bee-keepers would claim a just share to be devoted to apicultural work? like a school boy unwilling that his fellow should use his sled whether he wants it himself or not. Or is it because they feel it is not only their right but to their advantage? Have they such a lively faith in the probable value of result that they will scrutinize and study them? That bee-keepers should have an active interest in these matters is of the utmost importance if the works to go on. Those in authority are generally quite ready to be directed by the will of those they serve if they can learn certainly what that will is.

Can the work be made of real value ?

Take one item. For myself I have become more and more impressed with the importance of a thorough knowledge of foundations designed for use in sections for the production of comb honey. Much has been guessed but so far as I can learn little is yet *known* on this subject. In the experiment of which I recently gave an account one of the objects aimed at was to determine if possible if there was a difference among them and if so what kind was of such a nature as to enable the bees to work it down most nearly to the thinness and character of natural comb. To me the results were very satisfactory and encouraging and this not because one kind was shown to be better than another but because it appeared that a method had been hit upon by which the relative value of foundations could be practically determined. But this it seems is only a beginning. Now that a door is open many other questions come up at the very threshold and press for a solution. What makes the difference among foundations? Is it the character of the machine used in making or the character of the wax or is it the method of the dealing with the wax? Then if comb from foundation is made as thin as the natural comb, is it still more tenacious or is it equally friable and tender? Again it is well understood that the natural comb is not composed entirely of wax but that other substances are combined with the wax. Can any thing be done to imitate the natural comb in this, and so make foundation even less subject to the charge of being an adulteration than it is at present? This suggests the matter of economy of wax in the use of foundation thus: What is the per cent. of wax wasted, not to say worse than wasted, when so made into foundation that the septa of comb resulting is 60 per cent. thicker than the septa of natural comb? or to put it in another way: If foundation whose septa the bees will work down to a thickness of 90-10,000 of an inch is worth 60c. what is that worth whose septa the bees will work down to a thickness of 60-10,000 of an inch? Probably from twenty-five to forty per cent. more. If a man needs much foundation this should touch him at the tenderest point.

I try not to be carried off my feet by enthusiasm, perhaps, nevertheless, I may be. What do bee-keepers who stand off at arm's length think of the value of such investigation?

It will not do to say it is better not to agitate these and such like questions, it will only call the attention of consumers to the defects of comb honey as now produced and injure its sale. It can hardly injure the sale of honey for consumers to know that we are trying earnestly to improve its quality, but if on eating it a heavy wad of wax forms in the mouth, that will do the work though the eater may hardly know exactly why. Nothing finds so ready a market as goods that gave a fine sensation to the palate in every particular. We are bound to make our comb honey equal in every respect to that produced by the bees unaided by foundation, if we can.

I can think of nothing that would have a greater tendency to popularize the work of the station and to excite the interest of the bee-keeping fraternity in it than to enlist as many as possible in the matter of making suggestions as to subjects and methods of experiment, but more especially as to *methods*. Subjects are plentiful and easily discovered but simple and satisfactory methods are of an slow to suggest themselves. I meditated upon the matter all summer before a practical plan for the comparison of comb made from different foundations presented itself; to another mind the first thought would have been the right one. Now I am at work endeavoring to discover a method of procedure for determining the cause of the wintering trouble. I want it to be so plain that every one will recognize it as the right one and be compelled to accept its utterances as final. It is hardly necessary to say that it is still undiscovered but perhaps our own journal, the REVIEW, might furnish us the key by means of a symposium of numerous brief articles addressed to this one point.

Finally, as a closing paragraph, I want to take this opportunity to make a suggestion to the apicultural journals of the country—I am no journalist—I make no professions of knowing how to conduct a journal and am not going to offer any advice on that point, but I wonder if some of them without detriment to themselves could not give a little more active assistance in sustaining the work by an effort to create a more general interest in its behalf. For that purpose probably nothing could be better than candid criticism.

Some Things California Bee-Keepers Do
Not Want.—A Bee-Convention is
One of Them.

"RAMBLER."

Lives there a man with soul so dead
As never to himself hath said
"It's kinder lonesome in this shed."



EDITOR of
the RE-
VIEW:—I re-
ceived your
letter some
days ago in-
quiring in re-
lation to the
extent and
whereto of my
rambling. In
reply I would

say that I am still walking around on the golden sands of California. And when I say golden, I mean that if there is little or no gold under our feet here in this particular locality, there is an appearance of an abundance of it, for in the disintegrated granite from which this soil is largely composed the little golden appearing scales of iron pyrites are plentiful and if all of these scales were gold we could easily gather our riches by the handful. In my writings now and then for the REVIEW I believe you requested that I should touch upon the needs and necessities of California bee-keeping. I find, however, that the needs and necessities are so few that I have been somewhat nonplussed for material in that line. Now, *some* of our writers, instead of keeping silent would have kept right along with their twaddle just the same and with but little benefit to the fraternity. Now the Rambler does not wish to insinuate that his letters do not partake of just as much twaddle as the other fellow's, but this time, twaddle or no twaddle in our little apicultural duck pond, I will look at the needs and necessities of California bee-keeping in a reverse order, or, in other words, what we do *not* need.

No bee-keeper that has not been in California can realize the amount of trouble and anxiety that is taken away from the business by the absence of the wintering problem. The entire absence of this problem as known in the frigid Northern States reduces the pursuit here to such a simple nature that people with no knowledge of bees whatever and who have never read a book or a journal

upon the subject take up bee-keeping and make a success of it; even women and boys come up smiling with their tons of honey. It is natural then to suppose that an industry into which people can enter so easily and which engages the attention of so many hundreds would feel the need of several associations. It seems, however, that the machinery of organization is something they do not want, for in all our vast State with its great resources for honey there are but two small local organizations and one State Association, the latter having only about sixty members when it should have six hundred. The State Association was evolved from the So. Cal. Association and the evolution was of such a volcanic nature that a local paper called the condition highly bumfuzzling, and there is some of this condition manifesting itself up to the present time.

The reasons why bee-keepers here do not want an association are various. In the first place there are very few enthusiasts in the business; of course these are members. There is also but little sentiment, and but few that care to spend five or ten dollars to go to the convention in order to talk and shake hands. The *material results* are what they are looking for. After a convention has been held the invariable question from our neighbors who do not attend is: "Well, did you *do* anything down there of benefit to bee-keepers?" The essays and discussions are looked upon as of but little account, but an addition of a cent or a fraction thereof to the price of honey, or the obtaining of supplies at a lower figure would be the benefit these persons are looking after. Even in the convention there are those who wish to conduct it as a buying and selling institution, forgetting that such an organization would have to be organized upon a different plan.

Another reason why many Californians do not want an association is that the sociability of the occasion goes against their nature. Spending much of their time in a lone cabin on the plain or on the mountain they become averse to society and are not given to much talk; and they are entirely out of their element in a convention.

In fact, the attitude of the most of our bee-keepers toward an association is much like the attitude of the producers of another great staple in our country. The papers have been telling us lately that "Hay is king;" or, in other words, that the hay crop

is the most important in the United States. It interests every agriculturist and every owner of horses or cattle, and is a commodity having an enormous sale. Still, who ever heard of a convention of hay makers? The king of crops seems able to take care of itself without the intervention of an association. The seed is sown, the elements being favorable, the hay grows, modern machinery puts it in the barn, and it is then forked out every day to the stock.

It is the same with our honey production—Problem—A passably remote place in the foot hills; bees in movable frame hives, passably decent; extractor, tank, gasoline cans, and a knowledge and courage to take the honey when it comes. Of course there's no use for a hay convention or a bee convention.

BLOOMINGTON, Calif. Nov. 8, 1893.



Why Given Foundation Went Out of the Market.—A Caution in Regard to Wintering Bees in Heated Repositories.

C. C. MILLER.



FRIEND Hutchin-
son:—In Decem-
ber REVIEW you ask
for criticism, and
say, "If you like the
REVIEW, say so."
Well, "so." Not
that I think it can't
be improved, for I
am expecting occa-
sional surprises in
the way of improve-
ment, but I don't

know that I know enough to suggest the improvements. Perhaps you might have Hasty write up what's going on in two weeks, and issue an extra. Then you might keep on being as fair as you have been. If you'll do those two things you needn't stop my paper.

You seem to be aiding and abetting Bro. R. L. Taylor in stirring up a question that appeared to have been settled. I mean foundation made in a press as compared with that run through rolls. Years ago I got Given foundation from Heddon. The wax in it was softer than in any other, or at least it seemed so to me. The reason given for

the greater softness of walls, that the side walls are not subjected to pressure, may be correct. Is it not just possible that there may be an additional reason in the sheeting of wax in such thin sheets? With the Given press there is nothing except the melted wax thrown into the press and then the wax pushed up loosely in the side walls.

[Beg pardon friend Miller, but the wax is sheeted the same for a press as for a mill. There is no melted wax thrown into the press. Aren't you thinking of the efforts to make fdn. with plaster molds?—ED.]

Then Heddon stopped making the Given, and I couldn't get any elsewhere. The Dadants said they had never been able to make any that was satisfactory. I don't know in exactly what respect, but I suspect they could not make it of the uniform character that can be made by running through a mill. Our best foundation makers take a pride in sending out foundation every inch of which shall be of the same thickness. I doubt if a sheet of Given was ever made that did not have some part thicker or thinner than the rest. I doubt if as nice looking foundation can ever come from a Given press as from a mill. But if the bees will take to it and work it more readily, making the thick as thin as desired, then we may forego the matter of looks before it is made into comb.

For some reason, possibly because it is easier for each man to make his own foundation, presses seem to be more popular in France and Germany than here. But bee-keepers in this country, as a rule, prefer to buy rather than to make their foundation, and I think that is wise. If there should be sufficient demand for the Given, undoubtedly the manufacturers would produce it, even though it would have to be furnished at a higher price, and without any guarantee that every inch should be same as sample.

On page 348 friend Spaeth introduced a subject that some time ago awakened a great deal of interest in Germany—Pastor Weygandt's method of wintering by winter heating. But I can hardly share in the confidence in the method that friend Spaeth shows in his closing paragraph, from the fact that outside of the inventor and some others there does not seem to be as much confidence in the system as there was a year or two ago. I think likely that if you should ask the leading German bee-keepers about it now, their answer might be something like this:

"Yes, Pastor Weygandt is a good man, and has made a success with his system, but others do not succeed so well, or else the trouble is too much for the gain, and it is hardly advisable for you in America to meddle with it until more of those who have tried or are still trying it in Germany pronounce it an unqualified success."

MARENGO, Ill.

Dec. 18, 1893.



Wants the Review to Get the Best Correspondents and Indulge in no Side-Issues.

Why the Given Press was Dropped.

JAMES HEDDON.

Error may endure for a night, for a night,
Truth cometh with the morning light;
Error may endure for a night, for a night,
Truth cometh in the morning.



IF I understand you correctly, you want us to tell what we think of the REVIEW. I cannot now think of anything I can say other than perhaps to throw in a little prevention against what might happen if we don't stiffen up your

spine once in so often, that you may not fail to keep out of your journal the writings of those whom you believe to be dishonest, visionary, impractical or inexperienced. Besides this we do not want articles too technical; winding about through labyrinths of science, until the practical, money-making honey-producer loses the trend of the writer and his own patience.

I want to say to friend Murray, of Elkhart, Ind. that I stand corrected, and if I could remember what celebrated professor it was that I got my chemical terms from, that told us that the principal elements of honey were oxygenous and nitrogenous I would correct him also. But, as it makes no difference whatever in regard to the principles and facts that I stated in my article, nor with my experiments which I recited to convince my fellow bee keepers of what I felt sure of, viz., that sugar syrup would winter bees without loading the intestines with faecal

matter, it seems to me that Mr. Murray's one and one-fourth column article is devoted to chemistry, rather than bee-culture.

My object in taking a bee-journal, is single to a practical dollar and cent success. I indulge in other kinds of literature. I read poetry, history, news, law, medicine, electricity, astronomy, geology and metaphysics, quite extensively, and I can buy ten times more thought in any one of these several lines, for \$1.00, than I can get out of your journal, and I don't want you to devote any of your space to picture-taking, gardening, nor even religion, as I know where I can get all these things on other and special dishes, for much less money than they are or can be furnished by any bee journal. Go right on Bro. H. showing your religion in your practice of candor and giving us two or three dollars worth of literature for one dollar and continue the modesty of sinking self beneath some other things of more importance to your readers.

I like the REVIEW from purely selfish motives. It puts clothes upon my family and self, brings food into the house and aids us in procuring many of the luxuries of life, by giving us plain and correct directions for getting more money out of the bee business than we could otherwise do.

I must not close without mentioning the immense value (to me) of your reports of friend Taylor's experiments. And, by the way, you asked how it was that the manufacture of the Given press was discontinued? You ask this after stating that experiments have shown that the Given foundation is the best of all. Let me tell you. Great advertising facilities will sell a poor article for a larger price than a better one can command. For many years Bro. Root, himself deluded, spread broad-cast the delusion that the Simplicity hive was better and more practical than my modification of the L. hive. He sold ten of them to every one that all sold of the Heddon L. hive. Finally, with the aid of many leading bee-keepers, the great truth of the comparative worthlessness of the Simplicity dawned upon our very busy friend, and he sent me \$100 as a present and token for being right, as well as, perhaps, a sort of "beg pardon" for his being wrong. But wrong as he was, he could and did spread the wrong ten or twenty times as fast and as far as I could spread the right. He and others did the same thing regarding the Given foundation machine, so that when Mr.

Given died no good business man not owning a widely circulating bee journal, wished to venture his money in the dissemination of a truth against a wide-spread and energetically pushed error. The same thing is now being done regarding other important articles of apiarian manufacture. But I have made this article long enough, and will wait to see what others think.

DOWAGIAC, Mich. Dec. 20, 1893.

[Friend H. :—There are some phases of bee-keeping that cannot well be discussed without bringing in the intricacies of chemistry and other sciences, and I am glad that we have in our ranks men who are capable of threading the labyrinths. Then, again, when one man corrects another I think it well to give proofs and reasons even if a little space is used in so doing.

I agree in thinking it best that the discussion of side-issues be kept out of class journals; but here is a point: the editors of other scientific journals, and of some other magazines, seem to sit in a sort of holy of holies, their individualities shrouded in mystery. They are unapproachable. The editors of our bee journals are just common folks like the rest of us. Most of them are bee-keepers themselves. They attend the conventions and visit their brother bee-keepers. We get them by the hand and become acquainted with them, and, to a certain extent, are interested in them and their joys and sorrows, and I believe we enjoy occasional glimpses of them on the play ground as well as in the workshop. If I am wrong in this belief, or if I have misunderstood the meaning of friend Heddon, no one is more anxious than myself to be corrected.

Regarding the Given press, I believe that the Roots *did* give it a trial and failed, but others have succeeded, and, if I remember aright, Ernest Root has told me within the last year or two that at subsequent trials they succeeded better, or else that the success of others led them to think that *their* trials were too hasty and imperfect. He told me something of this sort and said that they were thinking seriously of again giving the press a trial with a view to making the machines for sale if they could succeed in making them work satisfactorily. If I have not reported the matter correctly I shall be glad to be corrected. I sincerely hope that some one will take up the manufacture of the press and of the foundation made on the press. I understand that the Roots are con-

sidering the possibility of so changing their mills that foundation with a thinner septum can be made on them, but I believe that thinness of septum is not the only point of superiority possessed by the Given foundation.—ED.]



A Western Man's Experience With Foul Brood.—When Hives Need Boiling and When They May Not.

ELMER TODD.

AT the end of an editorial on foul brood in the August 1893 REVIEW, page 236, you say, "Let's hear from others." I have had four year's experience with it. My favorite cure is the McEvoy method with the exception that I boil the hives then the cure is certain every time. At the time the above mentioned editorial appeared I had a colony infected with it that I had found about two weeks before. I did not clean it up when found because there was no honey coming in and no prospects of a queen and the colony was strong enough to keep out robbers. Between you and me I believe here is no danger of its spreading, unless it is carried by some carelessness of the bee-keeper himself, as long as a colony can repel robbers and the hives are not close enough together for the bees to mix.

After reading your editorial I went to this colony and shook the bees off the combs; about one-third into the old hive and the remainder into a new hive on a new stand. The next day the bees were about equally divided. I let an old queen run in with the queenless half on the new stand. She was from a colony where the bees had raised a young one and both had been living peaceably together for seven weeks. There was no honey coming in when I shook off the bees, so at the end of four days, as they had not commenced to draw out the starters, I fed them about one quart of honey in two days, and then let them go four days more, at the end of which time I shook them off upon full sheets of foundation. Both halves were handled just alike, one after the other, and fed from the same honey. Now the disease showed in the dirty hive, in its pronounced form, in just three weeks from the time the bees were given full sheets of foundation.

The reason why I failed to cure it in the old hive may have been on account of the propolis. There was lots of it. Or it might have been from the chippings of brood caps as I noticed the bottom of the hive was strewn with them. Whatever the cause, it re-appeared, I am sorry to say, because I use chaff hives and it is quite a job to boil them.

The half on a new stand raised a young queen from the first eggs and is stronger now in bees than the old one and has not yet shown any signs of the disease and probably will not, for it should have shown disease about the same time as the one in the old hive. In most instances it appears in from three to six weeks after inoculation, provided there is brood in the hives at the time.

After removing the foul combs from the above colony I spread some papers on the floor and removed the combs to the honey house to keep them secure from robbers. The next morning I brushed what young bees had hatched into a comb basket and dumped them into an empty hive giving them two combs partly filled with unsealed honey, also dropping in a six-day-old virgin queen. I continued to brush off and add the young bees to them each day until they had all hatched, adding more combs as they needed more room, and kept them confined four days from the time the first lot was put in. It was my intention at the time to put them through the shake-off process and then unite all three when fall came, if they were all clean, but the queen was laying before the brood had all hatched out of the foul combs and I concluded to let them be until the disease appeared although the chances were small as a bee not over twenty-four hours old appears to retain all the honey, it removes from a cell. This colony, when I examined it last (October 26) showed no signs of the disease.

The above experiment is right in line with one I had tried two years before which was this: I had a colony that I had suspected for four months of having the disease; the larva would die and soften but not lose its shape or color and would then be removed by the bees. It would not draw out on the head of a pin and had no glue pot-odor, but at the end of four months, just before the fall honey flow, it showed both of these unmistakable symptoms. After they had got the combs about two-thirds built and filled with honey but none sealed up (there were

twelve L. frames in this brood nest four of which they had built and had never had any brood in them) I went to it and removed three of these four combs and shook the bees off from them into one of Doolittle's nucleus boxes and formed a small colony of them. The bees shook off were hanging to the bottoms of the combs and were part of the comb building force of the hive. I hived them on three combs partly full of sealed honey. They wintered successfully and built up the next spring and finished 160 one-pound sections, eight unfinished, and furnished three L. combs of sealed honey out of their brood nest, besides having enough for winter. They have not to the present day shown the first sign of foul brood.

Last summer I used the old hives in making a cure of a colony that I had divided, for experiments, into four three-frame nuclei just as the disease first commenced to show in the pronounced form. I left one of the nuclei on the old stand in the old hive, the other three occupied clean hives about two weeks before removing the foul combs to cure them. It was successful in all four cases but the disease had just commenced to show in a few cells, from one to three in each comb.

From what I have seen, I believe it is safe to use the old hive *where the disease is just beginning to show*, but *unsafe* where it has been in progress for some time and the bees have got the dried up contents of the diseased cells strewn on the hive bottom and mixed up more or less with the propolis.

We have another source of contagion here that I have never seen mentioned before and one that is able to carry the disease long distances: it is small remnants of colonies ranging from a teacupful up to a quart of bees that have dwindled with the disease and then deserted their hives. They are not small after-swarms because they come out of swarming season and are accompanied by an old ragged winged queen in the most of cases. I had three such last season and four this, that I know of, come into the yard and try to unite with clean colonies. Apparently they were all killed off but not before they gave up some of the honey they brought with them as is proven by the disease appearing in from three to six weeks in the colony where they tried to force an entrance. Two of them clustered this year, so I gathered them in before they had done any mischief.

In treating foul brood I always wait until the weather becomes settled in the spring. If I see it's likely to get the start of me I feed enough honey to keep up brood rearing, mixing carbolic acid with the honey at the rate of one part acid to 500 of honey. This keeps it in check.

YORK, Neb.

Nov. 10, 1893.



What Specialty, Black Bees, Buckwheat, an Out-Apiary and "Grubs" Can Do in Wisconsin.

G. L. HEAD.

O mighty grub! thy sin is sweet—
The farmer slain for bee man's meat.

MR. EDITOR:—Your favor of the 10th inst. is just received and in reply I will say—I have been in the bee business in a small way, for six years; starting with twenty colonies. The first four years I worked for comb honey, the fore part of the season and extracted the dark honey that came later.

The average yield for these years is 76 lbs. per colony, spring count, about one-half being comb. The last of the four years we had no light honey and I extracted 85 lbs. per colony. I then disposed of my other business and started an out-Apiary ten miles from the home yard and concluded to run for extracted honey exclusively. I succeeded in wintering and *springing* 109 out of 127 Summit yard and 55 at home.

I fed 100 pounds of sugar last spring at the Summit yard and some honey in the comb here at home.

The flow commenced June 12th and resulted in some swarming.

That you may better judge of the run I had I will give you the amounts I put down each time I went through both yards. The first amount put down is the total for July 15th and for four times I extracted before then.

RECORD, 1893.

July 15th	7000 clover.
July 21st.....	2000 mixed.
July 27th.....	3000 basswood.
Aug. 14th.....	2000 buckwheat.
Aug. 25th.....	2000 "
Sept. 18th.....	1000 "
Total.....	17,000

We had a killing frost August 27th which cut my buckwheat crop short fully one-half. There were 200 acres of buckwheat in sight of the home yard.

I must tell you about a phenomenal swarm hived June 17th on worker combs.

RECORD OF SWARM HIVED JUNE 17TH.

WHITE HONEY.

June 21st.....	43 pounds.
" 27th.....	45 "
July 2nd.....	40 "
" 8th.....	57 "
" 15th.....	31 "
" 21st.....	37 "
" 27th.....	40 "

DARK HONEY.

Aug. 11th.....	37 "
" 31st.....	54 "

Total..... 384

From June 27th to July 8th they also built a full set of half-size combs which I had to have done to give them room. They were pure blacks.

I use a hive 16x20x9½ inches deep taking thirteen frames in the brood chamber. I used ten above this season and like the extra-thick combs.

Of course, I use queen-excluding honey-boards as I think they are indispensable in the production of extracted honey.

I cannot tell how far my management went toward getting such a crop, but I devoted my whole time to the bees. I hived all of my swarms on narrow starters, except the one I weighed the honey from, but as that was a wonderful colony from the time I brought them out of the cellar I didn't think the combs I hived them on had much to do with the yield.

I might add that the flow came with such a rush that I had to extract before they did much capping though I got about sixty lbs. of wax.

I sold the 5,000 pounds of buckwheat honey to McNay, of Manston, and have sent the most of the balance to commission men of Chicago.

One of the reasons I got so much more honey this year than usual is this: The grub-pest last year ate up all the sod and last spring white clover came up all over the district that the grubs devastated and if that continues to flourish as it did the past season I see no reason why I should not get as good or a better yield next year, as basswood did not yield nearly as heavily as usual and frost cut the buckwheat crop short.

(Of course, what I have written is not for print, as I do not aspire to be a writer, but

you are at liberty to make any extracts from this you please and if you wish to ask me any more questions I shall be glad to answer them if I can.

I have about a dozen colonies of Italians at the Summit yard but they were not "in it" with the blacks this year.

LA VALLE, Wis.

Nov. 15, 1893.

[I believe some one once took me "to do" quite severely for asserting that when the flow was abundant and near at hand, no bees surpassed the pure blacks as noney gatherers. This experience of Bro. Head's is only one of several that confirms me in that belief. When the flow is scanty and must be searched for far and wide, the "shoe is on the other foot."—ED.]



Advantages of the House-Apiary for Wintering and "Springing" Bees, and for Stimulative Feeding.

B. TAYLOR.



FRRIEND Hutchinson:—I am greatly pleased with Mr. C. Spaeth's article in the December REVIEW explaining editor C. Weygandt's method of caring for bees in Germany. The reason I am pleased is because his experience and ideas exactly

coincide with my own experience. You know it gives any person pleasure to know that others searching in quest of the same facts as themselves have reached the same conclusions. You know I have been saying for some time that the "house-apiary had come to stay" and that the time was not far distant when most of the bees in professional hands would be kept in that way, as it gives a better chance of caring for bees properly and cheaply through the entire year than any method yet in practice. So I concluded to prove the faith that is in me by explaining to your readers just what I have done to carry out the new method. In the course of his remarks in the article referred to Mr. Spaeth says:

"The wintering trouble and cause of bee diarrhœa is solved by Rev. C. Weygandt,

of Flacht, Germany, editor of the *Bee*, a monthly bee paper. He has made the most thorough experiments for years, and has solved a good many riddles, mysteries and problems that still puzzle a good many bee-keepers and papers. I do wish you could read two books which he published three or four years ago on those subjects. The name of those works are: 'A Small Contribution to Promote Bee-Keeping.'

He kept a good number of bees in his study room, where there was a coal stove burning all winter. The entrances of the hives were left open, the openings being two to three inches wide by one-quarter inch high. He had holes made through the window case or a channel under it. The bees wintered splendidly and came out strong and very healthy.

For years he closely observed bees in winter and tried all kinds of experiments with them. He found out what was the life element that must be taken into account if we want safe wintering. This life element is *pure, dry, warm air*, and good food, which, of course, also includes bee bread.

He found out that dampness and cold combined kill the most bees; causing indigestion, catarrh and inflammation of the bowels or diarrhœa. He cured the worst kind of diarrhœa in a warm, dry, pure air, and with clover honey. Some will say, it is not a disease. They know not what they say. Smell it once, he says! Does it smell like healthy feces? It nearly knocks one over, it will take your breath away.

Some bees will show much more uneasiness after a few month's confinement than others under the very same conditions, from such bees he would never breed.

After all these experiments he built a bee house which is a model, and not after very many years, all our Northern bee-keepers will have one like it, or similar to it."

He found the life element in safe wintering is *pure, dry, warm air, and good food*. You will remember, Mr. Editor, that in an article on dysentery, which I wrote some months ago for the REVIEW, I laid down exactly this same doctrine, pure, warm air and good food, as the true remedy. That the house-apiary is the best place to secure these conditions I have no doubt and I will try to tell the readers of the REVIEW what I have done to carry this theory into effect in the Forestville Apiary for the winter of 1893-4, both in the house-apiary and wintering cellar.

In our house we can put the colonies in winter quarters in one-half day's work without lifting a hive or disturbing a bee. In this method of wintering the bees are not confined to the hives at all: the entrances are left open as in summer, and the bees can fly out at any time when the weather is warm enough, and we firmly believe they will come through the winter in better health than

if confined without a flight for four or five months. For out-apiaries the house has many advantages, especially for extracted honey, for with this we may safely dispense with a constant attendant. The house can be locked against intruders, no wintering cellar is required, and the house need not be more costly than an open yard, and I know that first-class results can be produced.

My new feeders are the first ones with which I was entirely satisfied. They are simply wooden boxes four inches square and six inches deep. The bottom is of tinned wire cloth $\frac{1}{4}$ inch mesh, with a $\frac{1}{4}$ inch square strip of wood nailed around the outer edges to raise the wire cloth bee-space from the bottom. The feeder proper in which the syrup is poured is a round tin cup $3\frac{1}{2}$ inches in diameter and $5\frac{1}{2}$ inches deep, the bottom being of cotton sheeting held in place by a band of tin like an old fashioned milk strainer. This cloth can be removed for cleaning and replaced. The cup has no cover. A cup is set in each little box with the cloth bottom directly on the wire cloth bottom of the box, and the box packed in the sawdust right over the center of the hive and cluster of bees. The cover of the hive is removed and a square of burlap spread in its place with a square hole cut in it under the feeder thus giving the bees an opportunity to suck the feed through the wire cloth of the box and through the cotton cloth bottom of the tin cup, without leaving the cluster, and I can feed in the coldest weather if need be.

These tin cups are removed from the boxes when packed for winter and the boxes filled with waste paper. Each box has a cover. As soon as the weather is warm enough for the bees to fly nicely in the spring I will give each colony a few ounces of sugar syrup each evening regardless of their having stores in their hives below. By feeding in the evening all excitement is prevented and the bees are ready to go to the fields for pollen or honey during the day. All danger of robbing is removed and I have fed twenty-four colonies in five minutes by the watch. Each colony in the yard will have one of these feeders packed over the top of it when removed from the cellar.

Mr. Spaeth says of Mr. Weygandt :

"He has no spring dwindling. As soon as the bees bring in natural pollen, he commences stimulative feeding, and breeding once commenced in good earnest never is checked by cold spells or poor weather. He

has giant colonies at the time of fruit bloom and of rape, which is one of his main crops.

Some brag that they winter their bees with success in the old way. But it is one thing to winter bees that just pull through and are kept busy till the latter part of June getting ready for the harvest, giving no spring surplus whatever ; and another thing to bring out very strong, rousing swarms which give the least work for the bee-keeper but the most pleasure and profit.

He claims that it pays to have such a house and saves time, money and work."

In my judgement, here is the key to successful surplus honey production. Stimulative feeding, if done properly, is of great value, but the feed must be offered in a way that the bees can get it without leaving the cluster, so that when once started the bees will get their daily supply regardless of what the weather is outside.

The house-apiary offers perfect conditions for practical stimulative feeding far greater than is possible in single hives, in the open yard, and the new handy feeder is perfection for giving the feed. No heat escapes from the hive and the bees cluster permanently right up to the bottom of the feeder, and will take the feed on days so cold that not a bee would leave the cluster in search of the needed supply.

I have said that the house is adapted to the needs of the professional honey producer and it is the ideal for the city or country business or professional man who wishes to keep from ten to fifty colonies for pleasure and profit, and it will not be many years until such houses will be numbered by the thousands. The house-apiary has come to stay.

FORESTVILLE, Minn.

Jan. 1, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS:— \$1.00 a year in advance. Two copies \$1.90; three for \$2.70; five for \$4.00; ten or more, 70 cents each. If it is desired to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing, otherwise it will be continued.

FLINT, MICHIGAN JAN. 10, 1894.

VERMONT bee-keepers will hold their annual convention January 24th and 25th, at the Van-Ness House in Burlington.

THE AMERICAN BEE JOURNAL comes out with some new departmental headings.

GLEANINGS is now "leading" most of its matter, greatly to the improved appearance of an already handsome journal.

"PULLED" QUEENS have been talked about considerably of late. They are simply queens ready, or nearly ready, to emerge from the cells, and if not "pulled" too soon they are just the same as any queens, and that is all there is to it.

"R. L. TAYLOR," so writes W. C. Frazier, "is making an eminent success in his experiments, and is setting a pace that will worry the next man into whose mouth there may happen to drop the same kind of a plum." Mr. Frazier thinks it would be desirable for Mr. Taylor to test the different strains of Italian bees, viz., imported, golden, and dark.

THE CANADIAN BEE JOURNAL, with a commendable and timely stroke of enterprise, brings out half tone illustrations of seventeen of the most prominent members of the Ontario Bee-Keepers' Association, accompanying them with brief and well written biographical sketches and items of interest in regard to the annual meeting of the Association, held at Lindsay the 9th and 10th of January.

THE PROGRESSIVE is adopting, to a certain extent, the "special topic" feature. The January No. discussed "What Shall Bee-Keepers do Winters?" Dairying, teaching school, both day and singing schools, "canvassing," caring for poultry and writing bee-keeping articles for the agricultural journals are among the things recommended. The February issue will be devoted to a discussion of "Full Sheets of Foundation Versus Starters."

THE AMERICAN BEE-KEEPER, agreeable to promise, shows improvements with the January issue. Among other things, it contains an excellent article from C. W. Dayton on bee escapes which I shall probably copy before the arrival of the "escape season." Like most of the other journals, it has added a department for short, newsy items, calling them "Current Comments." The batch in the present number is very readable.

DOOLITTLE cell-cups are approved by J. B. Case, a queen breeder of Port Orange, Florida. He has the cells built in upper stories of strong colonies, with queen-excluding metal between the upper and lower stories. He writes *Gleanings* that the great strength of the base of the cells enables him to take them off the sticks, put them in the hives, cage them, or handle them in various ways with no danger of injury. He saves the cells from his best colonies when they swarm, but fails to see that the queens are superior in any way to those reared in the cups.

THE ORANGE BLOSSOM HONEY arrived in time for the convention. While it has an orange flavor, I must say that I should prefer clover honey for a steady diet. Quite a number have asked that samples be sent them. In reply I will say that I will put a pound in a Muth jar, pack the bottle in a box of sawdust and send it by express for twenty-five cents. The receiver to pay express charges. This will allow all who wish to sample the genuine, California, orange blossom honey. Don't call this an advertisement in the reading columns, as I am making nothing out of the transaction.

H. P. LANGDON in a private letter says, among other things, that when his non-swarmlers are put on at the *right time* they are a practical success, at least, with his house apiary. He says he has no fault to find with Mr. Taylor's giving a report just as the trial with them was made, but he thinks that allowance ought to have been made for the "week or ten days that the bees had been swarming." He closes his letter with the very fair and philosophical view that "In good time it will take the place that it deserves; I know that it enables me to work the house without loss, so, if it will not work with the public, I am content as it is." He mentions, incidentally, that the house apiary is a poor place for mating queens, and he is obliged to rear his queens at home.

BEE JOURNALS are seldom discussed at bee conventions; there being a feeling that it is not good taste—that the commendation of one journal is a reflection upon the editors of the others. Hives, smokers, honey-knives, comb foundation of the different makes, non-swarmlers, self-hivers, in short every thing pertaining to bee culture are freely

discussed with no consideration whatever for the feelings of the inventor or manufacturer. Where is the consistency? Then, again, one journal may excel in one particular, another in some other direction, and the bringing out of these points might not be any disparagement to any journal, yet would aid bee-keepers in their choice of journals. This idea that a bee journal, or some feature of it, must never be commended, criticised, or discussed in a convention is more a fashion than one of good sense.

PREVENTING SWARMING BY WORKING SEVERAL COLONIES TOGETHER.

Many of the visitors at the World's Fair must have seen the long box of thick combs in the New York exhibit of honey. It was sent there by Mr. F. H. Cyrenius, of Oswego, N. Y. In a recent letter he has the following to say in reference to the manner in which it was secured, and the effect of the proceeding upon the swarming propensities of the bees engaged in the work:—

“I am not sure but in securing the building of the combs in the long box that you saw at the fair, that I made a useful discovery, viz., that by setting two or three hives side by side, with a queen excluder over each, and a surplus case long enough to cover all, swarming may be prevented. This box, as well as several others, were thus arranged, the colonies made very strong, and everything made favorable for swarming, which was daily expected, but did not occur. Perhaps the bees think they have too much room to need to swarm.”

WINTERING BEES IN A WARM ATMOSPHERE.

Dr. Miller is rather inclined to throw cold water upon the warm-atmosphere-method of wintering bees. On the other hand I have received several letters giving this plan a favorable mention. Aside from that given by Mr. B. Taylor in another column, the most positive report is furnished by Mr. F. H. Cyrenius, of Oswego, N. Y. He says: “I have two colonies wintering in a warm room where the temperature is from 60° to 70° most of the time, and the bees are doing nicely. They are quiet and make no attempt to fly unless the weather is suitable. They have an entrance under the window sash and can fly any time if they choose.” Of course it is not yet spring, and we shall all be inter-

ested in knowing how the bees “come out,” but I feel more and more as though we ought to have some comprehensive, exhaustive and extensive experiments upon these points of temperature, ventilation, moisture, etc.

FOUL BROOD.

Foul brood is receiving considerable discussion in the *American Bee Journal*. Mr. Corneil is showing the apparent fallacy of the chain of reasoning whereby Mr. McEvoy attempts to prove that foul brood may originate in dead brood. J. A. Green argues that it is possible that foul brood germs are in the air, and find in the dead brood the proper food and condition for their propagation. I do not understand why the germs would not find as favorable conditions, or if not so favorable, at least sufficiently so, in healthy brood. Mr. Corneil advances one idea, however, that to me seems unreasonable. He says:—

“It is not because the infected honey the bees carry with them is all consumed in four days that Mr. McEvoy's method cures, but because during the interval between shaking the bees on starters and the first appearance of young larvæ requiring to be fed—an interval of about ten days under Mr. McEvoy's treatment—the diseased nurses either die off, or become too old, or too sickly to continue to act as nurses.”

The nurses are the youngest bees in the hive, and would be the last to die off. If the nurses become too old to act as nurses, there are certainly no younger bees to take their places. Possibly Mr. Corneil's idea is that not all of the bees of a colony are diseased (their bodies infested by the germs of the disease) and that those diseased will die off in the time that will elapse after the bees are shaken from the combs and the hatching of the first larvæ. This would leave only healthy nurses. But why the older bees should be more free from the germs than is the case with the younger bees I am at a loss to understand. Another point: If the infection of the brood results from the diseased condition of the nurses, it seems to me that all, or, at least nearly all, of the brood would become diseased at once. If only a part of the nurses were diseased, it seems to me that the haphazard way in which they feed the larvæ would bring about a diseased condition of *all* of the larvæ. This is not the case, as only a *few* diseased larvæ appear at first. This idea was advanced to me by

Mr. R. L. Taylor when in conversation with him at our late Michigan State meeting. Mr. Taylor says that the first year that foul brood appeared in his yard a swarm from a foul broody stock was freed from the disease simply by hiving it upon foundation and letting it alone. This was the "pole star" that guided him into the harbor of success. It appears unreasonable to suppose that all of the diseased bees would die off in the four or five days that must elapse before the hatching the first larvæ. There is no one in our ranks that takes more pains to be accurate than does our Canadian friend, S. Corneil, and I shall be glad to have him explain more fully in regard to these points.

CONSIDER THE LOCALITY.

There is no question that in a great many cases the prevention of swarming is desirable. In out-apiaries and in the home-apiary when the owner must be away during the middle of the day, there is no doubt of the desirability of preventing swarming. Whether more honey will be secured by the prevention of swarming has been discussed at great length, but the disputants have in most instances overlooked a most important factor, that of location, or, to be more exact, the time and duration of the honey flow. In those localities where the flow is early and short, as is often the case at the North, there is not time in which to bring the colonies up to the swarming pitch, allow them to swarm, and then wait for the old colony to build up into working condition. To secure the best results, every means possible must be used to foster and build up the strength of the colonies, that they may be ready for the early harvest; and when it comes, best results are secured if the bees attend strictly to the work of storing the surplus, and let swarming alone.

In those localities blessed with a continuous flow, or where there is a late harvest, better results are obtained by allowing at least one swarm from each colony, as there is time for both the parent colony and the swarm to get themselves into good condition for the later yields, when there are two colonies instead of one to gather the nectar. If the locality is overstocked, this brings in another factor, and, in that case, swarming might be undesirable.

The decisions in regard to the size of hives, or of the brood nest, also of contraction of

the brood nest, should also be influenced by the locality. With a short, early harvest, it is not good management to use a hive so large that harvest is well past before the hive, or, rather, the brood nest, is filled. In such a locality, the small brood chamber hive comes out ahead, because it is so quickly filled with bees, brood and honey, and the bees are then ready for the sections before the harvest is past.

Contracting the brood chamber of a newly hived swarm is in the same line: it secures the work of the swarm in the sections before the harvest is past. In those localities where the flow of honey lasts for months, or there is a heavy fall flow, there is time to fill a large brood nest and then put some honey in the supers afterwards. In other localities, if a swarm were given a ten-frame L. hive as a brood nest, it would do but little more than fill the brood nest ere the harvest would be over.

The man who understands his own locality and the hives, implements and management best suited to it should not forget that there are other localities to which his requirements would not be adapted.

WHAT ARE THE OBJECTS OF INTEREST NEAR WHERE YOU LIVE?

Since the announcement that I should travel some among bee-keepers next summer, quite a number have written and asked me to give them a call: and some of the friends have incidentally mentioned objects of interest, natural scenery, industries, etc., that may be seen near their homes. This reminds me that I have not told *all* that I expect to do while on these trips. Of course, the primary object of the "outing" will be to visit bee-keepers and thereby gather items of value to my apiarian readers; but such trips must necessarily be somewhat expensive: probably I could not afford them were it not that I expect to photograph and "write up" for other magazines or journals some of the interesting things that I may run across while on my wanderings. You will now see why I am pleased to have the friends mention any thing in this line that may be found near their homes. Perhaps some of you will say "there is nothing of interest near my home." Perhaps there is, only you have not thought of it. There is an old but true saying that "one-half the world does

not know how the other half lives." It is equally true that one-half is always interested in knowing something of the life of the other half. You have become so accustomed to the every-day sights of your life that they do not strike you as interesting. When I came to turn my attention to the matter I was surprised to find how many things there were that might be of interest to people in other parts of the country, or in the large cities. For instance there is the process of brick making: "From Clay to the Finished Brick," as I would head my article. Then there is the manufacture of lumber. The great mills of Saginaw are interesting objects to one who has never seen one in operation. Then there is the process of salt making, seen by comparatively few people, which may be seen at Saginaw, in all of its details. Even the matter of clearing a field of pine stumps is not without interest. I have seen many fields that were almost completely covered with the removed stumps, the great number of octopus-like roots forming a picturesque scene for a photograph. Then I have seen these fields after the roots had been cut from the stumps, and the bodies of the stumps rolled into line, making a fence that is "horse high" and "bull strong," although it requires considerable work and ingenuity to make it "hog tight." Before the winter is over I expect to photograph and write up "fishing through the ice," describing the catching of minnows for bait, their preservation alive until wanted, the manner of setting the hooks, etc., etc. I mention these things simply to show what apparently trivial things may be of interest to those who have never seen them. When on my way to Canada, next summer, my first stopping place will probably be at Port Huron, where the tunnel under the St. Clair river, the engine used to draw the cars through the tunnel, etc., will receive the attention of myself and camera. Of course, I shall be glad to hear from subscribers in regard to objects of interest in their localities. Don't think this or that is not worth mentioning. It may be the very thing that I would most desire to see.

THE MICHIGAN STATE CONVENTION.

The attendance at the State convention just held in this city was a little better than that of last year at Lansing. Considering the short time that has elapsed since the

grand gathering at Chicago, and the "hard times," it is not surprising that the crowd was not a large one.

SELLING HONEY WITHOUT EMPLOYING COMMISSION MEN.

For several years Mr. Byron Walker, of Evart, Michigan, has made quite a business of selling honey direct to retailers. He has had sufficient experience to enable him to profitably sell not only his own honey, but to buy and sell honey at a profit. He admits that not every one is adapted to the business of salesman. He had one man in his employ a month without his making a sale. A salesman must be able to convince buyers that his goods are better or cheaper, or both better or cheaper, than can be bought elsewhere. Grocerymen are usually busy, and it requires tact and patience to talk with them and secure orders. He admitted that some commission men were honest and honorable, but his experience with them had been such that he believed that many of them secured 10 or 15 per cent. instead of the customary 5 per cent. He stated that he could usually buy honey cheaper of commission men than of producers. He had tried to buy honey of some man and failed. Later he bought the same honey of a commission man for less money. From this price must then come freight and commission. In one instance he bought fine white comb honey for only 12 cents, and was allowed to go through the cases and select only such sections as suited him, leaving the second class to be sold to some other customer. The commission man has not the incentive to get a good price as has the producer. In selling a crate of honey the odd ounces are sometimes disregarded, and for this reason it is advisable to change some of the sections for heavier or lighter ones until each crate contains an exact number of pounds. Quite a number reported the getting of good prices when selling honey through commission men, and some advised the limiting of the price when consigning the honey.

HONEY FLORA OF NORTHERN MICHIGAN.

According to a paper from the Hon. Geo. E. Hilton, the Northern portion of Michigan furnishes excellent locations for the raising of honey. The willow, maple, raspberry, clover, basswood, willow herb, aster, and golden rod, furnish an almost continual flow from early spring to frost. There is also to

be found that desirable condition in which the country is only partly cleared. Mr. Walker said that the willow herb, that was looked upon as a never-failing source, had failed the past year.

EXPERIMENTAL WORK IN APOICULTURE.

The Hon. R. L. Taylor read the essay that appears this month under the head of "Work at Michigan's Experimental Apiary." There was a unanimous expression of interest in the work and a resolution was passed asking the State Board to continue the experiments with Mr. Taylor in charge, also asking that the decisions in regard to line of experiments to be performed be left with the executive board of the Michigan Bee-Keepers' Association, in consultation with the apiarist.

THE FUTURE OF THE SUPPLY TRADE.

Mr. M. H. Hunt, of this State, has had quite an experience as a dealer in and manufacturer of supplies. He commenced in a small way and has gradually built up a trade that has reached \$10,000 a year. He has discovered that the small manufacturer, with poor and limited machinery, cannot compete in price or quality of goods with the larger concern having superior machinery and skilled workmen. He thinks that the small manufacturers will find a more profitable field in selling the products of the larger concerns. He cites the case of the small cabinet shops that a few years ago were scattered over the country. They have all disappeared so far as manufacturing is concerned. The large factories are making all the furniture, and as a result we get better furniture for less money. He predicts the same future for the supply trade. Thus does specialty always win.

EXHIBITING HONEY AT FAIRS.

Another man who is always on hand at conventions, Mr. H. D. Cutting, was kept away this time by the sickness (La Grippe) of three members of his family. He sent a good paper showing that a great many people bought honey at the fairs that had never before bought any. Sometimes the sale of a single section led to the sale of a case of honey. Dealers reported an increase of demand for honey because of the attention that had been called to honey from its exhibition.

MOISTURE IN BEE CELLARS.

Mr. S. Corneil, of Canada, sent a paper entitled "Moisture in the Bee Cellar; What

it can do and What we can do." As he has so fully stated his views upon this subject, in the REVIEW, it will scarcely be worth while to go over the matter again. In a large repository for storing away a large number of colonies there should be special arrangements for ventilation, and he recommended the Smead system of ventilation. Mr. Taylor did not agree entirely with Mr. Corneil. His cellar was well ventilated. The chimney extends down to the bottom of the cellar, and has an opening at the bottom. Usually, the bees have wintered well, but not always. He thought the conditions, so far as moisture and ventilation were concerned, were the same each year. He had also had bees winter well when the inside of their hives was dripping wet and the combs covered with mould.

HONEY A FANCY ARTICLE—ITS ADULTERATION.

Mr. Heddon had been expected to be present, but the appointment of his assistant editor, Mr. H. A. Burch, to the postmastership of Dowagiac, left so much on his hands that it was impossible for him to leave. He sent a paper, however, in which he strenuously opposed the idea that honey will ever become staple. He asserted that it will always remain a fancy article and advised beekeepers to do all in their power to put it up in fancy shape and bring it before the public in that condition. He then very vehemently opposed the stir that is continually being made by bee-keepers in regard to adulteration. As he has done before, he argued that the hue and cry was doing far more damage, by prejudicing the public mind, than is the adulteration, because adulterators are not so foolish as to put upon the market an unpalatable compound. He referred to the change in the constitution of the Bee-Keepers' Union which allows the Union to prosecute adulterators, as an unwise change. Manager Newman had declared that in the present state of the art of chemistry, analysis was not sufficient proof of adulteration, besides, where there are laws, they are so varied that the Union found it impossible to cope with the supposed practice.

That bee-keepers should pay no attention to the adulteration of their product is not to be expected, but, unless they can do something to stop it, I must say that I agree with Mr. Heddon that the continual agitation of the subject only arouses suspicion in the minds of consumers and thereby injures the pursuit.

In reply to an inquiry, Mr. Taylor, President of the Union, said that there had been complaints of adulteration brought before the Union, but, from lack of evidence, there had been no prosecutions.

PREPARATIONS FOR WINTER.

Bro. Holterman, of the *C. B. J.* sent a paper on the subject of preparing bees for winter. Many of us, he said, were satisfied if we could bring out a hive in the spring containing life. If the hairs of the bees would only turn grey with age, they would tell a different story. There is, however, another index: compare our crops from year to year with those of our neighbors. There should be early preparation, strong colonies with bees in the full vigor of life and plenty of wholesome stores. With the present prices for bees in the spring, he did not believe that it was profitable to winter bees for the purpose of selling them in the spring. He would destroy the poorest in the fall. If bees need feeding in the fall, he would not feed direct to the needy stocks, but select the strongest of those doomed to destruction, feed to them, letting them store it in an extra set of combs, and then give the filled combs to the needy colonies. He thought that by this method there would be less loss of stores and vitality. He would contract the brood chamber to suit the size of the colony.

The evening session of the first day was held at the home of the REVIEW where baby Fern insisted upon taking a part in proceedings, and the members present were given an opportunity to "sample the fair nectar of the California orange blossoms," to quote from one of the "resolutions" passed.

The next meeting will be held in Detroit, and, as Mr. Hunt is President, we may rest assured that the arrangements will be all that could be desired.

EXTRACTED.

Two Queens in One Hive Not Always a Success.

This matter of having two queens in one hive, with a division board of perforated zinc between, or of a solid division board, but the bees mixing at the entrance, has been discussed quite a little the past season. Nearly all the reports have been that of success, and for that reason I feel like giving

the following from the pen of Mr. Corneil and published in *Gleanings*:

"During the past two or three years the *British Bee Journal* has been full of what is, in England, called the 'Wells plan.' Mr. Wells puts two colonies into the same hive in the fall. They are separated by a wooden division-board about three-sixteenths of an inch thick, perforated with holes a little too small to allow a bee to pass through. The perforations are almost half an inch apart. The bees use the same entrance, the members of each family taking their own sides of the division board.

At the beginning of the honey flow, in the following summer, queen-excluding zinc is placed over the frames, and surplus chambers are put on in which the bees of both colonies work in common, without fighting, and, I believe, without the loss of many queens. The amount of surplus obtained is regarded as the product of one hive; and when compared with the surplus stored by a colony having only one queen, is, as might be expected, larger; but I do not recollect seeing any evidence that it is more than twice as large.

As I use the closed-end Quinby frames, and I needed to give the plan a trial was the perforated division board; so in the summer of 1892 I arranged eight colonies in four pairs on the above plan. After leaving them about a week, to get the same scent, I put sections on two of the double stocks, and the other two I ran for extracted honey. There was no fighting, but in 12 days the perforations in the division boards were mostly filled with propolis. Those worked for comb honey swarmed early, both colonies at the same time, and then they sulked and gave me little profit. I gave eight combs, 10x16 inches, inside measure, to each of the colonies run for extracted honey, for a brood-nest, and over the queen excluders I placed two stories of 16 combs each, making 48 combs in all. These colonies seemed to do pretty well for a while; but on examination I found three out of the four queens missing, although there had been no swarming.

Having taken the notion to run two families side by side, I started about 20 nuclei at the side of as many populous colonies; but instead of using the perforated division boards I used thin solid boards, having two rows of perforated queen-excluding metal at the bottom, a strip of the metal being tacked on each side of the wood to keep the queens from 'touching noses.' The queen-cells hatched all right enough; and as the bees had their own entrance in a different direction from that used by the bees of the main hive, I expected to have the young queens successfully fertilized; but before the time came, when they might be expected to be laying, they mysteriously disappeared—killed, as I supposed, by the bees of the main hive.

My son and I decided, on finding our queens all gone, that working bees on the twin-hive principle would not pay us; so we separated our colonies, and have not tried it since.

From the experience I have had I would advise bee-keepers not to risk too much in working two queens in one hive."

I could never see any advantage in the Wells system that might not be gained by simply reducing the size of our hives. Putting two queens in a large hive is simply increasing the "queen power," if the expression is allowable, and reducing the size of a single hive does the same.

Detecting Adulterated Honey.

If there is any one thing that we need to "go slow on," and be sure we are right before we go ahead, it is in the matter of detecting honey adulteration. The foremost chemists of our land are beginning to admit that in some instances it is exceedingly difficult to determine to a certainty in regard to the purity of some samples of honey. Years ago Mr. Muth's honey (a sample) was pronounced "probably impure." Mr. Muth's reputation saved him, although this report caused him much annoyance and some loss. But suppose Mr. Muth had had enemies who would have rejoiced in his downfall, how would the case have been then? I am not pleading for adulteration, but it is a terrible thing to accuse a man of a misdemeanor of which he is not guilty. How would you feel, my friend, to be brought into court and fined for the adulteration of honey, when the only evidence was the analysis of the honey, and that analysis performed perhaps from the formula of some old chemical work? These thoughts are brought to mind by reading the following taken from the *American Bee Journal*.

"A case of alleged adulteration of honey recently came up in the Cleveland courts, and the seller of the product was fined. The item reads thus: 'George G. Willard, of Cleveland, O., has been arrested and fined \$70.85 (including costs) for selling adulterated honey.' The court relied for its decision upon the report of a chemical analysis of the honey itself. Mr. Willard claims that he did not adulterate it, but sold it just as it came from the bee-keeper in whose apiary it was produced.

Owing to the unreliability of chemical tests of honey, it behooves every honest honey-producer to carefully mark or label each package of honey he produces and sends out from his apiary. Verily, there are interesting times ahead, if courts in cases of alleged honey adulteration are to base their decisions upon the results of so-called chemical tests. The Bee-Keepers' Union may have to step in and help in these matters."

One year ago the constitution of the Bee-Keepers' Union was so changed that it could

use its funds and influence for any purpose in furthering the interests of apiculture. The principal idea in view in making this change was that it might thereby fight adulteration. It will be a little remarkable if its first work in dealing with the matter should be *defending* bee-keepers who are unjustly prosecuted for adulteration.

A Condensed View of Current Bee Writings.

E. E. HASTY.

AM not going to be contrary this time about that station report in last REVIEW. I thaw out. If I don't mind I shall actually get enthusiastic and say that it is a real nice and valuable piece of work. After the foundation man had stuffed us until we almost thought the bee was nowhere compared with "our extra-thin," it is pleasant to have it authoritatively proven that the bee in person is just nicely leading the race, so far a delicacy of work goes. And it's quite instructive to see that flat bottomed foundation, although much the lightest of all while in the sheet, comes in *seventh* in a class of nine as to weight of wax in the finished comb base. Presumably the little creatures tinker at it and punch it, because it don't look natural, and put on more wax while doing so. As the micrometer measurements give it a little higher standing (fifth instead of seventh) probably the added wax is stuck into the angles.

And what do these dry tables say? Washburn says, I can read a single ten thousandth. Beal, although a college man at work at his regular business, says, five ten thousandths is close enough for me, and ends all his figures with 5 or 0. This reviewer rather admires his candor. Both find great *variation* of thickness in some of the samples. Very likely bees part of the time *plaster* instead of annealing the surface they think too hard and smooth. Both find natural bases uniform in thickness. And as one says 50 and the other 57 the 7 seems to be the "personal equation" of the two men, one looking to see how *thick* it is, and the other looking to see how *thin* it is. Or perhaps Beal mentally tossed a copper whether to say 50 or 55 and the wrong figure got it. The uniformity of natural comb extends, I am quite sure, only to comb made in the same batch. At least

occasional pieces of natural drone comb are built atrociously thick and heavy.

Many folks will be enabled to use their last year's foundation with lighter heart after reading this report. Old very nearly as good as the new (as long as it don't get daubed with propolis.) And now for the Given press again, eh? We used to hear that Given foundation was better than roller foundation, but we had settled back in our chairs thinking that probably that was "all in the eye" of the man who wanted to sell presses. Instead of a renewed attempt to peddle the presses why not have a few of the best possible presses made, and used by the great manufacturers? They can then sell the product side by side with that of the roller mills, charging a small advance in price. In the course of time, if people generally become convinced that such a course is best, the roller mill can be retired altogether. Moreover I think an inventor only a mere trifle smarter than Edison might invent rolls that would turn off sheets with just as plastic a surface as the press gives. But let's have no more "say so" without the proven reality—had too much of that already.

THE PROGRESSIVE.

The *Progressive* calls it "Ueberwinterung der Bienen," and prints the article in geese tracks. Nice way to avoid disgusting southern readers who don't want to hear about "Wintering Bees," but I'll just go and tell. And how does the *Progressive* get along since last inspection? Nicely holding its own, thank you. Friend Leahy has taken to himself a mate, not in the usual way, but in a way that even Rambler and myself can approve. So the journal has an "EDITOR" and an "EDITOR" now—the added pen being no other than our friend E. F. Quigley, the former editor. Welcome, and congratulations!

One little individuality in which this journal stands alone is that it has a regular poet, and a good one. Note the strength of the lines below.

"Who art thou? And we hear him say
(In icy tones we all remember)
I am the brother of fair May
And June—the year's last born, December."
WILL WARD MITCHELL.

S. E. Miller's notes from the Star Apiary continue. As one cannot eiptomize a string of items it must suffice to say that they are good. Somnambulist, not quite so happy as usual for December, did a specially excel-

lent piece of work in the November number, in the word painting of Chicago day at the World's Fair.

"The street cars were not street cars at all, but simply great balls of people, held together by some strange cohesion. * * Conductors climed all over the passengers, and tramped upon toes promiscuously, in their frantic efforts to collect fares. * * I am still alive, and any of you can go in my place next time."

Beg pardon for trying doggerel on the situation so eloquently set off in prose, but this seems about the size of it—

The crowd, a sea, its waters gone,
Naught but six feet of human eels;
Each street car was a human swarm,
A clustered swarm of bees on wheels.

E. T. Flanagan finds stealing a sad drawback on out apiaries. Mrs. Hallenbeck tells with simple grace how she came to be a bee-keeper. J. W. Rouse advises attending farmer's institutes. C. W. Dayton essays the not very difficult job of an interesting article about California bee-keeping—

"Losses by starvation are as extensive in California as losses from wintering in the north. Starvation culls out the poorest working colonies, while winter losses take good and poor alike." *Progressive*, 224.

This indeed is a very valuable salvage to offset starvation losses, the decided improvement of the stock. Winter losses fail to accomplish this. One kind of winter losses, in fact, works the other way and destroys the best colonies—the winter starvation of those colonies that are too free to put their honey in the sections. J. B. Dann adds an item to a matter we decidedly need to know about, the diarrhoea of starvation. His case was in July. Perhaps famine made them seek and eat unwholesome things, which otherwise they would not have touched.

The *Progressive* copies but little, only the Michigan reports in this number. When a journal gets so as to never copy anything merely to fill up, but only when there is something which its readers could not well afford to miss, then it steps from a lower to higher class.

Friend A. F. Brown seems to be the progressive "king bee" of migratory bee-keeping.

"I have followed this system two years making from three to four moves each year, covering distances of from 20 to 300 miles, by cars, boats and teams, and I have fully demonstrated it to be a practical success, by securing three good surplus crops in one season" *Progressive*, 208.

But some of us sleepy old chaps would not enjoy having an invisible policeman always calling out from the almanac and saying "Move on, move on!"

Friend Conser (November *Progressive*. 207) thinks he has found how to have all brood combs attached at the bottom. Put on two bottom bars with a bee space between. Reckon he's "a mile off." It is not because bees *want* another space there, but because of their constant habit of running to the bottom to pinch off a little wax when they need some to use, that combs so generally do not touch the bottom bar. Even when the keeper takes pains to cut away and fill in solid with cut comb, in a few years the little "snipes" will have the bottom open again—all lugged off piece meal.

I have for some time felt that something ought to be said about the Conser system of non-swarmer, as the power to suppress swarming is so greatly longed for. Emphatically, however, it is the actual reported results—real non-swarmer, in swarming territory, side by side with other bees that did swarm plentifully, that must settle the matter. Arguing the scheme is little better than mere "yawp." Who has had half his bees swarm terribly, and half refrain on account of the Conser method? Most of us will save our cheers till we hear from him. It strikes me that the leading idea, constant supply of empty combs for the queen, and the sealed brood removed to emerge elsewhere, can be licked into shape in a better method than that which Mr. Conser uses. Alas, the empty comb will probably have to be put in more frequently than one would wish to visit an out-apiary! And maybe—yes, a swarm of maybees—so much tinkering would stimulate swarm fever more than keeping the queen busy would cool it.

THE PRACTICAL BEE-KEEPER.

How great is Canada to have room for a baby in its shanty, besides that lusty short boy the *C. B. J.*! All the same, talent and tact, and persistent well doing and waiting (patience-on-a-monument variety) will make a successful journal. And building cheaply and cautiously on the foundation of a supply business will make a sort of a one, that may develop by and by.

About the raciest article is a letter from W. F. Clarke, the key note of which may be taken from this sentence—

"I'd rather be a kitten and cry 'mew' than a dumb dog of an Editor, wearing a muzzle put on me by my subscribers." Page II.

Just imagine once what an article might be built up around that sentiment, and you have it.

Heddon appears on the subject of top bars, and runs a tilt against the idea that close lateral spacing at top prevents brace comb. He adduces one rather striking evidence. Slatted honey boards with wide spaces are but little obstructed with comb, but if narrowed down to queen excluding distance they will be half plugged up.

Doolittle gives a practical talk on getting ready for winter, and charges a large share of the disgrace of winter losses to the extractor, and the consequent condition of having nothing but late honey for winter on. Also a much longer wintering article of Doolittle's is copied from *Gleanings*.

The adviser for beginners is David Stewart of Tilbury; and he does a very good job.

Peter Bussey is going to tell them *next* time how to prevent swarming. May we all be there to hear. N. H. Smith pertinently notices that how to winter bees is practically about the same thing as how to make bee-keeping pay. No one proposes to suppress the latter subject as tiresome. The publisher, Friend Ouellette (our folks will doubtless pronounce him Owlet, when they should begin him with a W) he is lucky in being out of reach of Uncle Sam's baby-killers, for he spreads his own advertisements around at a great rate.

The special feature of the *Practical* seems to be translations from foreign bee journals. This is a corner in which there is plenty of room, and editor Leigh (if it is he) deserves credit for pouncing upon it

And we gently beg
All men who see
Say not Owlet and Leg
But Wellet and Lee,

The article from the French by the chemist Dr. Haenle on his dialysis method of detecting adulteration, and the one from the Italian of Dr. Metelli concerning the overstocking of locations, are worthy additions to our bee reading. Metelli also says elsewhere that the worst enemy of the hive is the man who wants to make the honey himself instead of letting the bees.

Pleasant to see that the *Practical* shows no look of trying to make the least matter cover the most space. On the whole the new child is not a five pound baby but a twelve pound one.

THE GENERAL ROUND UP

S. T. Pettit of Belmont, Canada, hived a lot of swarms, giving them a surplus of

drone comb at the outset, hoping thereby to get them to build unbroken worker sheets. Failure. Like trying to keep a tramp from drinking beer by giving him two or three glasses of beer in advance. *A. B. J.*, 627.

Simmins thinks bees swarm on account of the negligence of their keepers. No sir, the nearest to non-swarmer that there are are bees totally neglected. He would put in an empty frame in the center occasionally, taking out an outside comb of honey to make room. This is in line with the Conser idea, and may be good as far as it goes. Young queens is another of his items—also good as far as it goes. His grand gum-game is getting the colony to building in an added chamber *underneath*. Out of place, I think, to decide about this till we have reports of actual trial in this country. Mr. Alpaugh already reports that he has tried and don't like it. *A. B. J.*, 688-690.

Friend Muth, the honey dealer, feels a little sore to find that after all the protest some still *soak* honey barrels previous to filling them for shipment. Honey draws the moisture right out and leaking sets in.

"I have used the Heddon hive in large numbers for several years, and I have no hesitancy in saying that it is my choice." W. Z. Hutchinson, *A. B. J.*, 695.

Trego says heat queen cages in my lady's oven and wax 'em with wax. No, no, says Ernest, wax 'em with paraffine put on with a sash brush. *Gleanings*, 312.

In summer famine time Dr. Tinker raised a batch of queens by the process (or non-process) of removing the old queen and letting the bees do the rest. They could all go right through zinc anywhere, pretty strong proof of inferiority. He also finds that with too many young queens chambered off in one hive the bees will not feed them up to the point of taking a mating flight, and their lives are in vain. With queen zinc and drone zinc the Dr. thinks there is no longer any need of mating queens in confinement. *Gleanings*, 829, 830.

Friend Fradenburg wants to drown several bees in a small quantity of honey to test the actual flavor of formic acid, and guess better whether bees poke some into the honey with their tails, or otherwise. 'Ernid the flavor of some other ejecta might preponderate. Better pull sting and poison sac, and touch several poison drops to a big drop of honey. Even then I fear conclusions might be quite inconclusive. See *Gleanings*, 856.

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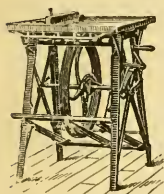
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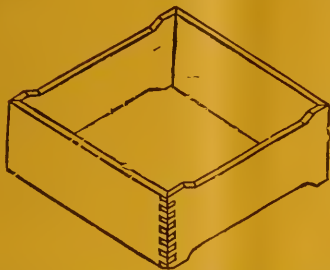
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The back volumes of the REVIEW are somewhat different from those of some journals; many of them are, to a large extent, little pamphlets devoted to the discussion of special topics. For this reason they will always be particularly valuable for reference. But how provoking it is when desiring to consult some back number, to find that that particular number is missing—has been lost or mislaid. To avoid such annoyance, some have fastened together the issues of each year by tacking them together with wire nails, or something of the sort. This is better than nothing, but there is a lack of flexibility, the book does not open out easily so that it can be read, there is no protection to the outside leaves, besides there is nothing handsome about such an arrangement.

There is a book binder here in Flint that does excellent work at a fair price. He will put the first five volumes of the REVIEW into one handsome volume with morocco back and corners, putting the title on the back in gilt letters, and giving the edges of the leaves a neat, reddish tinge—all for \$1.25.

Send me your back numbers, either by mail or express, and I will get the work done and return the book when bound, making no charge for my services, as the binder allows me a small commission, and should any of your back numbers or volumes be missing, I shall be glad to furnish them as long as the supply lasts, simply charging the regular price for them, which is as follows: Vols. I and II, five cents a copy; Vol. III, four cents a copy; Vols. IV and V, eight cents a copy.

The time will soon come when some of the back numbers will be difficult to obtain, and if you care for the REVIEW complete from the beginning, nicely bound, now is the time to attend to it. W. Z. HUTCHINSON, Flint, Mich.

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L. L. HEARN,

7-93-tf

Oakvale, W. Va.

THE editor of the REVIEW says that good advertising is half the battle. This is true if the advertising is lived up to. I do both. If you want good queens, early in the season, at a reasonable price, write to S. F. TREGO, Swedona, Ill., for particulars and prices.



1-94-9t

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A book telling how to manage them—10 cents in Stamps; or free to those sending names of five bee-keepers.

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J. FORNCROOK & CO.,

Jan. 1st, 1894.

Watertown, Wis.

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FEB., 1894.



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On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

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Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

CHICAGO III.—We are selling a little fancy comb honey, but the market is very quiet. We quote as follows: Fancy white, 15; No. 1 white, 14; fancy amber, 13; No. 1 amber, 13; No. 1 dark, 10; white extracted, 6; amber extracted, 5½ to 6; beeswax, 20 to 22.

Jan. 2. J. A. LAMON,
44 & 48 So. Water St., Chicago, Ill.

CHICAGO, Ill.—The Chicago market has plenty of honey, and it seems to be the outside price obtainable. Any thing that will not grade strictly No. 1 must be sold at 12 to 13. Large quantities have been sold, but the supply is at present in excess of the demand. Extracted finds ready sale at 6 to 6½ for Northern honey; Southern, in barrels, 5. Beeswax, 22 to 24.

Dec. 19. S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

CHICAGO, Ill.—The market is quiet, as it usually is at this time of the year. We quote as follows: Fancy white, 15; No. 1 white, 13 to 14; fancy dark, 10 to 12; beeswax, 20 to 22.

Jan. 2. R. A. BURNETT & CO.,
161 So. Water St., Chicago, Ill.

KANSAS CITY, Mo.—The demand for all kinds of honey is very light. We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 13 to 14; fancy dark, 10 to 12; No. 1 dark, 10; white extracted, 7 to 7½; amber extracted, 6; dark extracted, 5; beeswax, 20 to 22.

Jan. 2. CLEMONS-MASON CO.,
521 Walnut St. Kansas City Mo.

MINNEAPOLIS, Minn.—The market is very weak at present, but, evidently will be better later on. We quote as follows: Fancy white, 16 to 17; No. 1 white, 15; fancy amber, 13½ to 14; No. 1 amber, 12; fancy dark, 10; white extracted, 6½ to 7; amber extracted, 6; dark extracted, 5½.

Jan. 2. J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.

NEW YORK, N. Y.—The demand for comb honey has almost ceased, while the market is yet well stocked. In order to move round lots, the prices given must be "shaded." Extracted is in fair demand, but the supply is abundant. Bees wax meets with a ready sale at the prices given. We quote as follows: Fancy white, 12 to 13; No. 1 white, 11 to 12; fancy amber, 11; fancy dark, 10; white extracted, 6 to 6½; amber extracted, 5½; dark extracted, 5; beeswax, 26 to 27.

Jan. 2. HILDRETH BROS. & SEGELKEN,
28 & 30 West Broadway New York.

BUFFALO, N. Y.—The honey market is quiet, stock on hand is liberal and trade light, except on the second grade which is now moving off more readily on account of the lower price. There is also an excellent demand for buckwheat honey of which there is a light supply. A liberal supply could be handled here very satisfactorily. We quote as follows: Fancy white, 14 to 15; No. 1 white, 12 to 13; fancy dark, 10 to 11; No. 1 dark, 8 to 9; white extracted, 6 to 7; dark extracted, 6; beeswax, 25 to 30.

Jan. 2. BATTERSON & CO.,
167 & 169 Scott St., Buffalo, N. Y.

ALBINO Queens and Bees

Are the best of all. We can furnish the golden Italians or the Albinos, but experience tells us that the Albinos are the best, while our orders show 50 to 1 in their favor. Send for our reduced prices. We furnish bee-keepers' supplies generally. See our circular. S. VALENTINE,
2-94-3r Hagarstown, Md.

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AND
BROODERS
WRITE FOR CATALOGUE
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RANGLER & CHICAGO, U.S.A.

YOUR PROFITS

Next season will depend largely upon how your bees come through the winter. Many bee-keepers believe that after bees are put into winter quarters nothing more can be done for their welfare until spring has come. All who believe thus, and all who believe that care is needed, but are a little uncertain as to what that care should be, ought to buy the book "ADVANCED BEE CULTURE," and read the chapter entitled "Care of Bees in Winter." Remember, too, that the book contains 31 other chapters.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

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Best, select, tested,	3.00
Tested,	2.50
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-AND-
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E. KRETCHMER, Red Oak, Ia.

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T. G. Newman, 147 So. Western Ave., Chicago.

Doolittle's Queen-Rearing Free!

We have some of G. M. Doolittle's "Scientific Queen-Rearing book (170 pages) in paper covers, a copy of which we will mail FREE to the New Subscriber who sends us \$1.00 for the Weekly AMERICAN BEE JOURNAL for one year. This same book in cloth binding sells for \$1.00, but we give to a New Subscriber one of the paper bound edition for nothing. Order quick, if you want one. They will all soon be gone. A sample copy of the "Bee Journal" is sent free on application to the publishers.

GEO. W. YORK & CO., 56 Fifth Ave., Chicago, Ills.



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AT THE WORLD'S FAIR THE PORTER BEE ESCAPE received the ONLY AWARD (Medal and Diploma) given an escape. The most practical Bee-keepers everywhere use and recommend it as a great labor-saving implement and as the best. Circular and testimonials free.

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194-tf

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The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. VII. FLINT, MICHIGAN, FEB. 10, 1894. NO. 2.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

FOUL BROOD, ITS SYMPTOMS AND CURE.

"Diseases, desperate grown
By desperate appliance are reliev'd,
Or not at all."—SHAKS.



DURING the season I have given considerable attention to the disease known among bee-keepers as foul brood which from its insidious, highly contagious and deadly character is the one disease of the hive to be

greatly dreaded by the apiarist. It no doubt attacks and greatly curtails the life and usefulness of the mature bee but it is in the case of the bee in the larval state that its destructive effects are most evident. Like many of the diseases to which the human family is subject it is induced by bacteria to which in this particular case the same bacillus alvei is given, and such is its malignity that when once present, unless proper measures are taken to keep it in check in the course of three or four years whole colonies

are swept away. I am inclined to think that it is often present where not suspected and that often the destruction ascribed to the severity of the winter should be assigned to it.

How to detect the presence of the disease and how to effect its cure are the practical points to which my attention has been chiefly directed.

My experience with it is not confined to the past season but runs back over the past seven years during which I have cured more than one hundred cases largely during the first two years of the period, but I became so interested in the study of the disease and so certain that I could control it that I was not anxious to be entirely rid of it preferring rather at some risk to get as thorough and practical acquaintance as possible with its peculiarities and with the best methods of dealing with it.

It would be important to know if possible all the ways in which the disease is conveyed from one colony to another. Whether the bacteria may be carried in the air to a new hive or whether a bee from a diseased colony may carry them out on its feet or body and in gathering nectar deposit them on the flowers so that they may become by chance attached to another bee from a healthy colony in its visits to the same flowers and thus become the means of spreading the disease, or whether a bee from a diseased colony will convey the disease if on returning from the field with a load of nectar it enter a hive not its own I know not, but there are numerou

ways by which the disease may certainly be spread which should be familiar to every bee-keeper. They all depend upon the principle that the incorporation of the bacteria with the food to be given the larval bees will start the disease afresh.

Some of the more common ways in which this is done are the following:

1st. The "swarming out" of bees from a diseased hive and coalescing with a healthy colony.

2nd. The artificial uniting of a mass of bees from a diseased colony with a healthy colony.

3rd. The giving of a comb from a diseased colony or even a very small piece of such diseased comb to a healthy colony.

4th. The robbing of a diseased colony by bees from a healthy colony.

5th. The feeding of honey taken from diseased colonies to healthy bees.

When it is known that the disease is caused by bacteria it would be readily granted that it would be contracted from comb containing diseased larvæ, but it may be questioned, as it has been, whether it could be contracted from honey taken from the combs of a diseased colony; but when it is considered that the bees are continually traveling back and forth over open cells containing the putrid remains of the diseased larvæ to the open cells of the honey and that they endeavor to remove from the cells the glue like mass with their tongues and then insert their tongues into the cells of honey to obtain their food it must be admitted that it would be very strange if the honey were not thoroughly contaminated; and that it is so, and that the life of the germs is preserved in the honey, seems abundantly shown by an experiment I made with thirty colonies to which I fed honey not to exceed one per cent. of which was taken from diseased colonies. The result was that within two weeks twenty-nine of the thirty colonies were badly diseased.

Honey may be safely considered the great source of danger because under all possible circumstances it is greedily taken by the bees and conveyed to their hives and their own stores thereby contaminated. It is to the last degree important, therefore, that whenever the disease is known to exist, or its existence suspected, extreme care be taken that the bees have no opportunity to get a taste of contaminated or suspected honey.

Now as to the signs by which the presence of the disease may be certainly known.

So far as I have been able to discover there is one symptom and one only by which the average bee-keeper may determine without danger of error whether the disease is present, and that is found in the character of the remains of the larvæ before, in the course of time, they become dried up. Brood dies from several causes—perhaps from other diseases—but there is always a plain distinction to be observed between the appearance of the larvæ dead from foul brood and of that dead from other causes. The substance of the former (foul brood) is homogeneous throughout, that is, all parts of the mass in a given cell are of the same consistency, that of the latter generally varies in consistency one part being watery another more or less solid; the former is of a solid color, brownish like coffee prepared for drinking by the addition of milk, the latter is usually of different colors, often partly white and partly black but if in the grub stage it is nearly white; the former is without form like a drop of glue, or becomes so on being touched, the latter in all cases retains its shape with more or less persistency; and lastly the former is always viscid, the latter never. This characteristic alone, I believe, always furnishes a sure test. Take a sliver, match, or straw and inserting one end into the dead matter in a cell withdraw it, if the matter proves to be sticky orropy as shown by following out the straw in a string you have foul brood, otherwise not. So far as is now known if the above rules are carefully applied there never need be any doubt as to whether the disease exists or not.

However, unless one's attention is especially directed to the matter, one is not likely to discover the presence of the disease until it has practically destroyed the colony and perhaps also been conveyed to other colonies, hence it is important as an assistance in the discovery of the disease to bear in mind the following facts:

The life of the larva may be destroyed either before its cell is capped or after, and in the former case it is not capped at all.

As soon as the larva is dead, perhaps before, it loses its natural glistening pearly whiteness.

Theappings of cells containing the dead larvæ have an unnatural appearance,—they are generally more or less sunken sometime.

perforated and often darker in appearance than is natural.

By fall, if the colony is still strong, such cappings are all or nearly all removed.

After some time, at least by late fall, the dead larvæ becomes dried down to a thin dark brown scale attached to the lower side and extending almost to the entrance of the cell. They are then almost imperceptible except to the experienced eye when held in a favorable light.

When the disease has made considerable progress it is attended by an extremely unpleasant odor which may be perceived by holding the nose to the comb affected; sometimes it may be felt even when the cover is raised in opening the hive.

After the disease has obtained a firm foothold the strength of the colony gradually declines and a suspicious and increasing listlessness is shown in its efforts to collect pollen and nectar, until, at length, unless the apiarist interferes, it becomes the prey of robber bees and the disease is widely disseminated.

The time required for the destruction of a colony varies from one to three or more years owing to the amount of infection and to the virulence of the disease in the particular case.

The disease seems gradually to wear itself out, if I may use that expression. Seven years ago in some cases in three weeks from infection nearly one-half the brood was dead, during the past season in two colonies which each showed several cells in May, not a single cell could be found in September.

So far I have set forth the signs by which the disease is known almost in mere outline indeed, but sufficiently, I think, so that any intelligent person using care and attention cannot go astray; and now it remains only in the same brief way to explain the methods which have been discovered by which the disease may be banished from the apiary, but first let me warn every one except as an experiment, and at his own risk, not to place any reliance for a cure upon any of the drugs which have been recommended for the purpose. I have tried phenol or carbolic acid and salicylic acid in numerous cases, but in no single instance did it appear that even the first step was made toward effecting a cure.

There is a heroic method recommended by some and that is the destruction of hive, combs and bees by fire. I have never tried

it but no doubt it would be effectual so far as the individual hive is concerned, but whether it would be as to healthy neighboring hives would depend on whether it were properly done, and whether it were properly done or not would depend on whether any of the bees were allowed to escape—if they were the disease would probably be spread rather than circumscribed. The process is evidently one requiring extreme care and only to be recommended to one who is sure of his plans.

In the method which I recommend and which I have thoroughly tested in a hundred cases or more without a single failure so far as I know one must be prepared to disinfect the hive and all its belongings, except of course the bees, by a thorough boiling. My rule is to boil each part fifteen minutes. The combs are of course destroyed but the wax is saved.

Having provided as many hives as there are colonies to be operated on—the hives to be furnished with frames either filled with foundation or with starters of foundation—combs will not do at all—proceed as follows:

Select a time when some nectar is being gathered and an hour of the day when the bees are not flying, then move the first colony a little to one side and place the new hive, which should be like the old in outward appearance as nearly as possible, upon the spot where the other stood, then as rapidly as possible take the combs from the colony and shake or brush all the bees upon the ground in front of the new hive of which they will at once take possession and then remove the combs and hive to a place of safety to be disinfected, being careful not to break the comb so as to let any honey get upon the ground or elsewhere for other bees to gather up. In like manner treat the other colonies, but if any of the combs contain brood which it is desirable to save they may be given to one or more of the infected colonies which are then to be removed for treatment as soon as the brood is hatched. This course will insure a cure.

If the bees were given a hive containing comb they would be sure to carry the disease with them.

During the past season I treated two colonies as an experiment when there were no flowers from which to gather nectar and by carefully feeding them for two weeks just sufficient to keep them from starving, they

were afterwards found to be free from disease but this course requires great care or at least is not to be recommended without further experiment. In all cases it is desirable to place queen trap at the entrance of the new hive to prevent the bees absconding.

LAPPEER, Mich.

Jan. 23, 1894.



The Propagation and Dissemination of Foul Brood.

S. CORNELL.

"He could raise seruples dark and nice,
And after solve 'em in a trice."—BUTLER.



THE editor of the REVIEW says, in the January number, he does not understand why the germs would not find as favorable conditions for their propagation in healthy brood, as they do in dead brood. Well, the reason is every

healthy larva has, in its amoeboid cells, an army of germ killers, phagocytes, to protect it from the invading germs, while in dead brood, there being no protective cells, the disease germs grow and multiply without resistance. But conditions may exist under which foul brood germs may make a lodgment, and grow in living larvæ.

First. It has been demonstrated that a large number of germs may overcome the protective force, and cause disease in a healthy animal in which a smaller number would have been harmless. Therefore if a large number of germs floating in the air in the hive, and alighting in the milky fluid, are absorbed by the larvæ, they may be so numerous that the phagocytes cannot devour them, and the result is disease.

Secondly. It has been demonstrated that any condition which lowers the vitality of the animal renders it more susceptible to attack from disease germs. Cold has been proven to have this effect. Therefore, if larvæ are badly chilled, their vitality is so much reduced, that their phagocytes are unable to absorb and destroy the germs of

foul brood which may fall in the cells, and in this way the disease may be started. It has also been demonstrated that hunger, or lack of proper nourishment, has the effect of lowering the vitality, so that the organism becomes susceptible to the attack of disease germs, which it would have resisted if it had been properly nourished. To have bees in the best condition to ward off disease, they should, at all times, have plenty of food. It has repeatedly been observed that, during a bountiful and long continued honey flow, the disease disappeared of its own accord, the phagocytes having absorbed and devoured the disease germs, owing to the liberal supply of nourishment. Other cases are on record in which, during a honey flow, the disease almost disappeared, but afterwards returned with all its former virulence. I venture the opinion that, in such cases, even so simple a disinfectant as common salt in the food, might have been sufficient to so weaken the microbes that the balance would have been turned against them, they would have been overcome by the phagocytes, and the disease eradicated.

Replying to the editor's criticism as to the rationale of the cure under the McEvoy treatment, I would say that, even in the absence of disease, the nurse bees become too old to act as such at the rate of, say, from 1,000 to 2,000 per day, and by the time the first larva requires food the youngest nurse is then ten days old, the age at which, at least sometimes, they discontinue nursing.

[Some of the bees must act as nurses until bees hatch out, which will be at least twenty-five days from the time the bees were shaken off, there are no younger ones to take their places.—Ed.]

I have shown elsewhere that on account of disease they may give up nursing, and die much sooner. It is not contended that all the bees of a hive are diseased, and it is known that in some bees the disease seems to be localized, and becomes chronic, while in others the germs pervade the whole organism, causing early death. In the case of nurse bees, having germs in their chyle stomachs, but whose tissues have not been invaded, it is reasonable to suppose that during ten days active work in comb building the germs would probably pass into the lower bowel, and perhaps be ejected, leaving these nurses powerless to communicate the disease. If we were to ask Mr. McEvoy, or any of those who agree with him, how he

knows the honey carried from the diseased hive is all consumed in four days, the answer would be, he knows it is so, because the treatment based on this assumption cures. This reasoning has always seemed to me to be inconclusive. It precludes the possibility of there being any other way of accounting for the cure, and observed facts are against it. I recently met with an account of one of Mr. D. A. Jones' experiments in which he kept a cluster of bees without food for eighteen days, and, even at the end of this period, only a few bees were starved. It is a matter of indifference whether the honey carried from the diseased hive is used up in comb building in four days or not. In itself this honey is neither better nor worse than other honey, and what becomes of it is of no consequence; but the question of what becomes of the germs suspended in it is all-important. Mr. J. A. Green has suggested that they are digested with the honey, but this is disproved by the fact that the germs are found with their vitality unimpaired, after having passed through the digestive organs of the bee. It must be plain that the supposition that the disease is cured, because the infection from the diseased hive is all destroyed in four days, cannot be justified, and had better be abandoned once for all.

With regard to the point raised by Mr. Taylor, that if the infection of the brood results from the diseased condition of the nurses, all the brood would become diseased at once, whereas in the early stages only a few larvæ are affected, I would say that when using the term "diseased nurses," I had in mind nurses in whose chyle stomachs germs might be found, as well as those into whose tissues the microbes might have penetrated, although it is doubtful whether the former can be correctly said to be diseased. We have no evidence that the germs multiply in the chyle stomach. On account of the acidity of its contents they probably do not. This class of nurse bees, into whose tissues the germs have not penetrated, probably have no more germs to distribute, than were contained in the food they consumed. The milk of cows, suffering from tuberculosis, is said to contain the germs of the disease. In the case of nurse bees whose tissues contain microbes, the brood food secreted in the head glands very likely contains germs, though Cheshire says that on examination he did not find them. In a late article in the *A. B. J.* I advanced reasons for the belief

that such nurses either die early or soon discontinue nursing. In view of the foregoing the theory that the larvæ get the infection from the nurse bees does not appear to be at variance with the fact that in the early stages of the disease only a few larvæ are affected.

I have often thought about that "pole star" hive of Mr. Tyler's. The stock was not very badly diseased, or it would not have cast a swarm. Whether nurse bees, having germs in their tissues, would be more likely to stay at home at swarming time, than those free from them we have no means of knowing, but, assuming that some bees did carry germs with them, and that they were fed to the larvæ, the increase in the vitality of both bees and brood, resulting from abundant nourishment, and from the influence of the swarming impulse, would be favorable to the destruction of the germs by the phagocytes. These reasons for the disappearance of foul brood in the swarm are strengthened by the fact that attempts to cure the disease by shaking the bees from the diseased combs on frames filled with foundation, often fail.

LINDSAY, Ont.

Jan. 23, 1894.

[In order that this subject might be seen in as many lights as possible, I sent proof of the foregoing to Mr. R. L. Taylor, and asked him to express his views on the subject, which he has done as follows.—Ed.]

I do not find myself able to agree with Mr. Corneil in his conclusions that the germs of foul brood find more favorable conditions for their propagation in dead brood than in healthy brood. It seems to me that he overlooks the fact that absence of resistance—phagocytes—is not the only requirement in order to secure a favorable *nidus* for the germs of disease. Indeed that, it seems to me, is not the chief requirement, for as he justly intimates the disease may prevail notwithstanding resistance, for as he says large numbers of germs may overcome that, and a lack of vitality from any cause would make the conquest easier, but they cannot overcome the want of proper warmth and moisture nor a lack of a position within the tissues of the larva. Are they very likely to find such warmth and moisture on the outside of a dead larva? Or is there any likelihood that the germ will gain a position within the tissues of the dead larva by being

sucked in by it or by being fed to it by the nurse-bee? Besides, Mr. C.'s position seems a half way admission that foul brood has been contracted immediately from chilled brood which it appears to me that there is not sufficient evidence that such brood was ever the vehicle of foul brood even to arrest the attention.

Again, I am inclined to think that the powers of resistance of the larva do not cut much of a figure when foul brood is virulent, but that when the germ gets a position within the body of the larva the game is up; at least my experience has established me in the opinion which is quite the opposite to that which Mr. C. holds that an abundant honey flow does not weaken the grip of the disease but rather hastens its spread—the only exception being where the bees by filling their accustomed brood nest with honey crowd themselves to use other comb for brood. In my experience the most rapid cases of the disease were those contracted when I was feeding the colonies in question all the honey they would take and next to these in rapidity were those where there was plenty of room for brood rearing during the heaviest honey flow I ever knew. I think the abundant warmth, moisture and the large spread of brood accounted for it.

As to the "rationale of the cure" I must say that so far as I am concerned it is shrouded in mystery. I consider McEvoy's plan of putting the bees to preliminary comb building entirely useless. I have found (see my article in this number of the REVIEW) that either a natural or shaken swarm put at once upon foundation is always cured *if left to itself*—feeding would be likely to cause the disease to be retained—but if the bees were confined a week till apparently ready to starve and then put upon comb the disease in its active stages would be retained in almost every instance. This I have demonstrated in many cases.

The reasons which Mr. C. advances for the disappearance of foul brood in my "pole star" swarm do not hold because as I have already intimated if the bees, including all nurse bees, of a foul broody colony having no desire to swarm are simply put on foundation and left to themselves they are, with me, found to produce brood invariably free from disease.

R. L. TAYLOR.

LAPER, Mich.

Jan. 30, 1894.

When Sealed Covers are Not Objectionable.

"RAMBLER."



ONE of the wintering problems that seems to still agitate our Eastern brethren is the question of sealed covers, or no covers. The preponderance of testimony so far seems to be against sealed covers.

It was my fortune to own bees in a cold portion of New York and after many years of wintering in the cellar, out doors packed in chaff, and various other absorbents, and always with absorbents over the bees, I finally came down to wintering successfully in the cellar and with sealed covers, and should I return to any portion of the frigid belt of our country I should certainly again try sealed covers.

The way I should do it is this: I should take any ordinary cellar that is considered passably dry, say where combs will mould but very little, use a shallow hive, either a one or two-story Heddon, or a Longstroth, putting a three inch rim under the hive between the brood chamber and the bottom board, with ventilating apertures either at the sides or ends, and allow the bees to seal the cover tight. There must be no rags of any kind over the frames, nothing but just the board cover.

Now see that the temperature of the cellar does not go much below 45° and I would guarantee the bees to go through the winter with but slight loss.

The great trouble where there have been failures in wintering with sealed covers is that the outside temperature has not been looked after close enough. The bees, through respiration, draw air into the hive, and it passes upward and strikes against the sealed cover; if the upper side of said cover is exposed to the cold air, the respired air from the bees striking against the cold under side of the cover condenses and forms moisture, and that is wherein all the trouble lies. If the outside temperature is such, either in a cellar or packed in chaff, that the cover is kept at about the temperature that the bees maintain then the respired air will strike

against the cover and not condense. Condensation will take place down near the corners of the hive where the warm air strikes the incoming cold air, but with plenty of ventilation all around the rim there will be no condensation in the hive and the bees will come through as bright as a new silver dollar: and even quite moist air going into the hives will have no deleterious effect. Under the above conditions I will stand up to be counted in favor of sealed covers.



Where Honey Comes From.

[An address delivered by R. McKnight, at the late meeting of Ontario Bee-Keepers.]

MR. PRESIDENT, LADIES AND GENTLEMEN:—I may say it is rather a trying ordeal for a man to face an audience and attempt to interest or instruct it in these days when "the school master is abroad" in such numbers. A few days before I left home I received a card from the secretary, saying I had been selected to say something by way of filling up the programme on one of the evenings during the session of this Association. The circumstances were such that I had no time or opportunity to make preparation to do so, or even to think of or fix upon a topic. On mentioning my dilemma to our president, Mr. Gemmell, to-day, he generously came to my rescue and suggested "Honey" as a good subject to treat on such an occasion. I am very grateful to him for thus furnishing me with a "text." It is a very common place one to treat before an audience of bee-keepers—an audience composed of the brains and matured experience of the class to which they belong in this Province. Still, the topic has something in it we don't all understand, and by way of demonstrating this, I ask Mr. Blank, down there in the audience, "What is honey?" Mr. Blank pauses a while and replies, "Why, honey is honey,—everybody knows what honey is." "Your answer to the question is a very unsatisfactory one, sir; I will furnish you with a better definition, but one you may not find in the dictionaries, it is one, however, that suits me well enough. Honey is a translucent saccharine syrup that all children and most grown-up people are fond of." Now, Mr. Blank, No. 2, "Where do we get honey?" Your answer is, "We get it in bee hives."

"And how came it in the bee hives?" "The bees collected and stored it there." "Good; and where did the bees get it?" "In the flowers, of course." "Aye, and where did the flowers get it?" Now you hesitate; that is evidently a "poser." Well, it is the consideration of the last question I propose discussing for a few minutes this evening. I set out with the assertion that the atmosphere is the source whence our honey is derived and I say further, that the substance of every green thing on the earth's surface—from the tiny plant to the monarch of the forest is *mainly* derived from the same element. Science has clearly demonstrated this fact. It is a fact that is easily demonstrated too. Fell a tree and burn it up, the ashes that remain represent just what of its substance comes from the soil, the rest is driven off and mingled with the air. It is another instance of "dust to dust" and the balance to the source from whence it came. To understand how honey, and plants and trees from which it is collected, have their origin in the atmosphere, we must know something of the composition of the atmosphere, and the nature of plant life. Here let me say that one of the advantages of bee-keeping is, that the prosecution of it leads intelligent, observant people into channels of thought they would not otherwise enter upon. To understand it fully, the domain of science must be pretty well cultivated. Hence the bee-keeper of an enquiring mind finds in it ample scope for the exercise of his talents, and usually becomes an enthusiast in the business. The constituents of the atmosphere, in the main, are no longer a secret. Every school boy knows that they consist, in the main, of oxygen and nitrogen, but there are other elements as well, one of which is carbonic acid. This is the source from whence we derive our honey. It is the source, too, that nourishes and builds up the plants and trees that secrete honey. The proportion of carbonic acid in the atmosphere is comparatively small, being only about four-tenths of one per cent. of its volume. Yet this fraction is quite enough to supply the wants of the vegetable world. It has been estimated that there are twenty-eight tons of carbon in the atmosphere that overhangs each acre on the earth's surface. As less than a third of the earth's surface is covered by vegetation, and as the atmosphere is ever in motion from place to place, and as the loss of

carbonic acid through its appropriation by living plants is ever being given back to it through the decomposition of vegetable matter, there is and will continue to be in the atmosphere, ample of carbon to supply the ever recurring wants of the vegetable kingdom. Hence we may look forward to an annual honey crop while the vegetable kingdom remains as now constituted; not always uniform, however.

It remains for me now to outline how living plants elaborate honey from the carbon of the atmosphere. We can only understand this by knowing something of structural and physical botany. We will select a tree for our purpose, because it appeals more forcibly to our senses than a tiny plant. What then is a tree? I answer it is at once a living and a dead thing. Every particle of matured wood in its trunk and branches is dead matter. It is death preserved from decay by its environments. It has in it no power to aid in the further nourishment or development of the tree. The leaves, the bark (especially the inner bark) and the sapwood alone are alive, and in these the work of nourishment and development are carried on. It is in the leaves especially, that the elaboration of suitable food for the plant or tree is carried on. We ought therefore to know something of the structure of a leaf in order to understand our subject: but time forbids a close investigation of it: suffice it to say that its pores and cells are what we are more particularly concerned with—the cells especially—because it is in the cells honey is elaborated. The epidermis or outer skin of a leaf is closely studded with pores, these pores range in number from 800 to 170,000 to the square inch of surface, and it is through these pores the carbon of the atmosphere is absorbed and received into the cells, where it is worked into honey. Cells also abound in the inner bark of branch and stem, they are especially active in the interposed *Cambium-layer* lying between the newest strata of wood and bark. These are annually renewed, and maintain a living communication between the rootlets on the one hand and the foliage on the other. These cells—wherever found—contain protoplasm, which has definite relations with neighboring cells, and with the outlying carbon of the atmosphere. Protoplasm is the active, working, living matter of the plant or tree. When the carbonic acid of the atmosphere is received into the protoplasmic cells of the

leaves of plants and trees it undergoes three changes before it is fitted for cell building. It is first converted into starch—the basis of honey—then into sugar, or honey if you like, afterwards into cellulose, which is fully elaborated plant food. Every green plant contains starch, therefore every living plant has in it the basis of honey. Who then will dogmatically assert what are and what are not honey producing plants? But this is not german to my topic. I have said when the carbon of the atmosphere is absorbed by the living plant it is first transformed into starch through the agency of protoplasm and leaf green and then into sugar. We stop at this stage of the elaboration of plant food because it is then, and then only, we get our honey, and we get it in greater or less quantities in proportion to the reserved store of starch. If plants had no power to store up more starch than is necessary for their immediate wants, we would have no abnormal honey flows. But they have the power to store up more of this article than they can work into tissue, and do so occasionally. It is under these circumstances we get the big honey crops, if we have the working force to collect it. The excess of food over the requirements of the plant is, while in the sugar stage, determined by the flower, or oozes through the pores of the leaf, flowing over its surface. The former is called nectar and the latter honey-dew. They are substantially one and the same thing—the main difference existing in the fact that that in the flower absorbs a portion of its essential oil which gives to the nectar its aroma, hence the expert can readily tell the class of flowers from which honey has been collected. Honey-dew is destitute of this aroma, but is just as healthful and nutritious as that collected from the flowers. Perhaps some of you will be ready to hold up your hands in holy horror at the promulgation of this theory, and be ready to declare me as great a heretic as those who are by some believed to be who gave to the world the pollen theory, the trowel-sting theory and the sugar-honey theory. I am content to be so considered if you can disprove the statement. Understand me, by honey-dew I do not mean the vile stuff, vulgarly denominated “bug-juice.” That is a different thing. When honey-dew is present it is frequently devoured in large quantities by the little insect you are all familiar with. The little “beastie” is a glutton of the worst kind and

devours a great deal more than it can assimilate. The excess is voided in the form of excreta. This is "bug-juice" pure and simple, and not honey-dew. We are often deprived of a good crop by the presence of these creatures, and the fact that their voidings co-mingle with what would otherwise be a pure, healthy article of food.

I thank you, ladies and gentlemen, for the attentive hearing you have accorded me while giving expression to the few crude remarks I have been able to offer in the short time allotted me. Before taking my seat I desire to thank Mr. Pringle, because it is to him indirectly I am indebted for what I know of the subject. It came about in this way: A few years ago when he was president of this Association, he asked me to prepare a paper to be read at our then coming meeting on the "Honey producing plants of Ontario." In acceding to his request, I was led to look into a branch of natural science, from the study of which I have since derived much enjoyment.



A Brief Summary of the Ontario Bee-Keepers' Convention.

ALLEN PRINGLE.

"Hand

Grasps hand, eye lights eye in good friendship,
And great hearts expand,
And grow one in the sense of this world's life."

ROBERT BROWNING.

THE annual meeting of the Ontario Bee-Keepers' Association was held at Lindsay, Ont., on 9th, 10th and 11th of Jan. This was a most successful and profitable convention running through eight long sessions. The attendance was good throughout, and the discussions animated and instructive if not always quite parliamentary. The evening sessions were popular in character, being varied by music, singing and extempore addresses. Mr. R. McKnight's address the first evening on "Honey," being able, entertaining and instructive and was well received. Mr. S. Corneil, of Lindsay, the efficient Secretary of the Association, had made the arrangements for the convention and had done everything to make it pleasant and successful. At the first session an expert lady stenographer was engaged to report the entire proceedings of the convention, including, of course, the discussions following the various papers read, and the "Question Box" discussions. This is a

new departure by our Association, the wisdom of which is apparent. In the summary reports of convention discussions usually published, much valuable matter is oftentimes lost. When a *verbatim* is taken all is preserved—even that, it is true, which ought not to be preserved—but to secure a survival only of the "fittest" the stenographer's type-written report is to be gone over by a committee named for the purpose and the superfluites, excrescences, ebullitions, and "you're another"—if there are any such—carefully excised from the official report. I mention these things as hints to other Associations. The time was, not many years ago, when it was not a little difficult to get the members generally in convention assembled to engage in the various discussions. They were "backward in coming forward," but now they are forward and hardly ever backward, and the reporter has no lack of material—ripe or raw as the case may be. The annual report of the O. B. K. A. is official, being printed and published by the Ontario government which makes a yearly grant of \$500.00 to the Association, duly incorporated according to law. I do not know how it is with the State Associations over there, but it seems to me, if I may be allowed a suggestion, that they would do well to proceed on similar lines, and thereby secure "fruits from their respective States, as one precedent for which Ontario could be referred to. You know legislatures, like lawyers, always want precedents; and the precedents strengthen them in their efforts to cover new ground. When we were seeking legislation on the foul brood pest almost the first question was "have you any precedents?"

The following papers were read and discussed: "President's Address: "Extracted Honey," by R. H. Smith; "How to Make Bee-Keeping Profitable," by B. F. Holtermann; "Apiculture at the World's Fair," by Allen Pringle; "Management of Out-Apiaries and Shipping Bees by Rail in Summer," by C. W. Post. The editor of the REVIEW was expected to be present and read a paper on "Being Stung," and the convention regretted to hear that owing to sickness in his family he was unable to attend.

The following officers were elected for the current year: President, A. Picket, Nassagaweya; Vice President, R. F. Holtermann, of Brantford; Secretary, S. Corneil, Lindsay; Treasurer, Martin Emigh, Holbrook; Foul Brood Inspector, Wm. McEvoy, Wood-

burn; Sub. Inspector, F. A. Gemmill, Stratford; Auditors, J. Alpaugh, St. Thomas, and S. T. Pettit, Belmont.

DIRECTORS.

- District No. 1.—W. J. Brown, Chard.
 “ “ 2.—J. K. Darling, Almonte.
 “ “ 3.—M. B. Holmes, Athens.
 “ “ 4.—Allen Pringle, Selby.
 “ “ 5.—S. Corneil, Lindsay.
 “ “ 6.—Wm. Couse, Streetsville.
 “ “ 7.—D. Chalmers, Poole.
 “ “ 8.—F. A. Rose, Balmoral.
 “ “ 9.—J. B. Hall, Woodstock.
 “ “ 10.—R. McKnight, Owen Sound.
 “ “ 11.—John Myers, Stratford.
 “ “ 12.—E. O. Jones, Kertch.
 “ “ 13.—R. H. Smith, Bracebridge.

Stratford was selected as the next place of meeting.

SELBY, Ont.

Jan. 25, 1894.



The Essential Qualities of Foundation and How to Secure Them.

OLIVER FOSTER.

EVERY bee-keeper who uses foundation, (and what bee-keeper does not), has a pecuniary interest in the question, “which make is the best?”

Every manufacturer of foundation wishes also to know what is the secret of merit and demerit.

Mr. Taylor's experiments at the Michigan station seems to indicate that foundation made upon the Given press has some points of advantage, as compared with that from roller mills.

While we are not yet warranted in deciding this question, it is well to fully discuss it now before the time when farther experiments can be conducted.

When Mr. Given invented and introduced his machine in 1878 and '79, his object seems to have been, not to produce a foundation that the bees would more readily accept, nor that they would more perfectly work out into completed comb. The important advantage he claimed for his machine was that a sheet of wax could be pressed into foundation and fastened into a wired frame at one operation, the wires being more perfectly imbedded than by any other process. This machine consisted of a pair of plates or dies the exact size of the sheet of wax to be pressed into foundation. These were hinged together at one side like the leaves of a

double slate. The inner surface of each leaf was of copper plated embossed type metal, backed with, or mounted upon wood.

To fill a wired frame with foundation, the frame was placed over the face of one leaf of the die, a sheet of wax fitted into the frame over the wires, and the other leaf closed down into the upper side of the frame, and in order to make the required impression, the dies inclosing the frame and wax sheet, were shoved into an iron press and subjected to a tremendous pressure.

To make foundation for sections, a thinner sheet of wax is used and the wired frame omitted.

If I am correct, Mr. Given's first dies were made to form the side walls of the cells high and narrow like those made on roller mills. But it was found impossible to make the septum as thin, and at the same time force the displaced wax into side walls as narrow and as high by means of the plates, as could be done with the rolls.

In case of the rollers, the surplus wax that is forced from the bottom of the cell, flows out from between *inclining* surfaces, whereas with the dies, these surfaces are always parallel to each other, approaching each other in this position, requiring a heavier, direct pressure.

With the latter also, the only place for the surplus wax is in the side wall cavities; hence it is important that these be commodious. Any unevenness in the thickness of the sheet of wax, must appear in the side walls of the foundation, if the bottoms of the cells are made uniformly thin. But in case of the rollers, this superfluous wax simply flows forward, causing the sheet to stretch.

To impress a whole sheet of wax at one stroke, and effect as near an approach to natural comb as was possible with rollers, would require a pressure too great to be practicable.

Even if such a deep impression could be made, the removal of the sheet would be next to impossible, since the whole surface of the foundation must be released from the die simultaneously. It was this evident necessity that was mother to the invention of the thick, shallow side walls, and which led Mr. Given to adopt this form of cell. About this time some one presented a theory that seems still to pass as sound doctrine; it was that by pressure wax was made harder, and less easily manipulated by the bees, and that the wax in the heavy side walls of the

Given foundation has not been subjected to this hardening process. While I am not prepared to prove that the theory is false, I wish to suggest it as a question for scientific investigation at our experimental station, and will give some reasons for doubting its correctness.

About the time this theory was advanced, the writer invented and introduced a very cheap foundation machine, intended for those who wished to make their own foundation. It consisted of a pair of plaster of Paris dies hinged together like those of the Given machine, only these were not used in a press. The melted wax was dropped evenly upon the upper horizontal surface of one leaf of the die or mold, while the other leaf was quickly clapped down, sending the surplus melted wax out from between them with a "squirt" into the water tank which enclosed the molds. The sheet of foundation thus formed at one operation was soon cool enough to remove upon opening the mold.

This machine was heralded with enthusiasm by many prominent bee men who believed in the theory regarding the qualities of foundation made without hard pressure.

Supported largely by this theory, the plaster mold enjoyed a degree of popularity for several years while it was offered for sale.

It's life was short, but active, and more or less useful. Most of my customers were satisfied with it and its work. It was the inventor's own loss of faith in their merits that induced him to withdraw all advertisements and let the mold give place to the improved roller mills which were then offered at greatly reduced prices, which would make a more perfect impression and which were far more durable than the molds.

After using two of these machines for several years, Bro. Doolittle gave an unsolicited but glowing testimonial for them in one of the journals which sent me a shower of letters and orders, but this was after I began to "let the old cat die." Why did I let it die? Because the molds were not sufficiently durable in the hands of the average operator to make their use profitable, unless there were special advantages in their favor: because in spite of the soft wax theory, there appeared more or less of the "fish bone" in the comb made on the foundation, owing partly to the fact that the septum could not be made uniformly as thin as with other machines.

Molded foundation proved to be much more brittle and liable to crack and crumble when handled in cool weather, than that from the roller press under the same conditions.

This in itself is not a serious objection to the molding process, but it may throw some light on the theory that pressed wax is harder than unpressed. If at a low temperature the pressed or *wrought* wax is more pliable than the unpressed, or that molded in the liquid state, may we not suppose that it is more plastic at a comb building temperature? The conclusion of the matter to which I feel inclined is that if there is any advantage in extra thick side walls for section foundation, it is because with them we are able to combine the advantages of the thinnest possible septum with the necessary strength in the sheet of foundation, rather than because the wax is softer in such side walls.

Whatever the best form of cell may be, it can be formed between rollers better than between die plates.

It has been claimed that foundation with round cells is stronger than that of equal weight with hexagonal cells; in other words that for the greatest strength for the material used, the side walls of the cells should not be of uniform thickness throughout, but should be much thicker where they unite with each other, and very thin midway between these points. This seems contrary to the principle that "nothing is stronger than its weakest point."

Aside from the item of strength, and we must depend chiefly upon the network of side walls for this, when we have determined just how wide and how high we may make these ribs of wax and yet depend upon the bee to always utilize all of the material, the perfect side wall will be of these dimensions at every point, which will result in a perfectly hexagonal cell, with corners clean cut.

The construction of the bee's mandibles is such that she can grasp a heavy side wall between them, reaching to the bottom on either side, but according to my observation she cannot always be depended upon to utilize all of this material in lengthening out the cells, especially that portion in the corners of the cells when the deposits there is heavier in proportion than elsewhere as in case of round-cell foundation.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, FEB. 10, 1894.

"ACCIDENTS will happen," and a small one happened when this month's REVIEW was being printed. One of the "guides" against which the paper is placed when fed to the press became loose and dropped down on the "form." The result is shown in the blurred appearance of some of the words in first column of page 33.

SWEET CLOVER is praised by Mr. H. R. Boardman in *Gleanings*, both for honey and for hay—yes, and for pasture. It is only occasionally, however, that such wholesale praise is met. This plant seems to be all right when once it gets a start in waste places, but as a *cultivated* crop the successes have been very few indeed, so few that I don't remember to have seen one mentioned before in years—don't know as I ever did.

A WATER BOTTLE in a queen cage containing a queen that is to be sent a long distance in hot weather is recommended by W. A. Pryal in the *American Bee Journal*. Commenting on this, the editor of *Gleanings* says that after the introduction of Good candy they dropped the water bottle principally because it was not always possible to adjust the small piece of candle wicking in the cork of the bottle in such a way that it would not feed the water too fast, thus wetting the candy too much and soon exhausting itself. Years ago, when I was using a water bottle in queen cages, I stopped the mouth of the bottle with a cork made of a piece of *sponge*. If the sponge is of the *right size* it does not slip out, neither does the water run out nor evaporate too rapidly, yet it is furnished to the bees at all times on the moist sponge in the best possible manner. This plan was a success in every sense of the word.

FOUL BROOD is receiving considerable discussion just at present; in fact, this issue of the REVIEW might also be called a "foul brood" number. Perhaps too much space is being used in discussing some of the finer points. They are very interesting from a scientific point of view, but the practical bread and butter bee-keeper does not really stand in much need of them. The symptoms have been given so clearly and repeatedly that it seems that no one need be deceived—that nothing more in the way of descriptions of the malady is needed. The ways that are at all likely to spread the disease have been told and re-told. Cautions to be observed are not unknown for the lack of telling. And, best of all, the only method of cure is so simple that no elaborate treatise is needed to make it understood. What more is needed?

HOW TO MAKE THE BEST FOUNDATION.

The experiments at the Michigan Experimental apiary have brought this topic upmost. Why do we use foundation, what are its most desirable characteristics, and how may they be obtained, are questions that must interest all bee-keepers. One of the reasons for using foundation is to secure straight, perfect, all-worker combs, but I am inclined to think that the principal object in its use is to furnish the bees an opportunity of rapidly making storage room for their surplus in abundant honey flows. That foundation that is the most readily accepted by the bees, and the quickest made into comb, yet containing the least unavailable amount of wax, would seem to be the most desirable. This last point is one that deserves careful consideration. A very light foundation might contain no unavailable wax, yet if it contained more wax in the right place it might be much more valuable because it would the sooner be made into comb. It is for this reason that Mr. Heddon, Mr. Oatman, and some others have urged the use of heavy Given foundation in sections, asserting that it was the sooner made into comb because of the greater amount of wax in its side walls, yet the thinness of the base of the cells was such that no thicker "fish bone" resulted from its use.

The character of the wax and the treatment that it receives in being made into

foundation are also important points, especially in making foundation for use in the sections. In Mr. Taylor's recent experiments the thickness of the septa in different foundations was very clearly brought out, but the hardness or toughness of the "fish bone" was not noted. Perhaps this is a difficult point to experiment upon. Mr. Doolittle, several years ago, made some experiments, something similar to those performed by Mr. Taylor, in which he tested the hardness or toughness, or both, of the septa by thrusting wire through the finished sections and noting the resistance by means of scales. This is something in the line of what I have in mind. It is well-known that, in a certain sense, comb is not wax. That is, comb contains something more than wax, besides it is of a peculiar, light, flaky, brittle, granular character which is greatly lost upon being melted into wax. It is then more solid, hard and tough. Mr. Bingham has given the best illustration that I ever saw. He says "butter is butter, but melted butter is grease." So comb is comb, but melted comb is wax. But there is a difference in wax, whether this sometimes comes from its treatment I cannot say positively, but I think it does in some instances. I know that some foundation is quite tough and leathery, so that it can be handled in ordinary summer weather, yes, even in the fall and spring, with no danger of its breaking. Other foundation requires some care even in hot weather to avoid damage by breaking. Of course, this toughness is a great convenience in handling and shipping, but the question arises, is it a desirable quality in foundation that is to be used in the production of comb honey? I think not. I think the brittle foundation would result in honey with a less preceptible "fish bone." Oliver Foster calls attention to this point in his excellent article in this issue, but I fear that he confounds hardness with brittleness. The terms are not synonymous by any means; neither are the properties that they represent always found in company. For instance, wrought iron is quite hard, yet it is far from being brittle, while a pine stick is so soft that it may be indented by the thumb nail, but may be easily snapped asunder. The most brittle foundation may be the *softest*. A peeled banana is so soft that my baby can easily mash it with her soft fingers, yet a very slight bend will break it. It will be seen that because an

object is brittle is no sign that it is hard. The molded foundation, or the Given foundation, may be the most brittle and at the same time the softest and easiest molded; which I suspect is the fact.

If I remember aright, Mr. M. H. Hunt once told me something about some kind of a treatment through which he put the sheeted wax which toughened it—made it the opposite of brittle, so that it could be bent in quite cool weather without breaking it. I think it was done with water and that he called it "tempering" the wax. Now whether this process hardened the wax as well as toughened it I do not know. It may have softened it for aught I know.

Possibly, pressure hardens wax, and it is because no pressure is exerted upon the side walls in the Given foundation that they are softer and more easily worked by the bees. In the roller mills having deep interstices between the cell-dies I do not understand why or how the side walls receive pressure, but perhaps they do.

Once before in the REVIEW there has been a special discussion in regard to the use of foundation, but no attention was paid to the different ways of treating the wax nor of the methods of manufacture. I think now is a very proper time to discuss methods of clarifying and preparing wax for being made into foundation, and the methods of manufacture, having in view the points that I have brought up. I should be glad to hear from every manufacturer of foundation, also from every one who has used different kinds of foundation, and the next issue of the REVIEW shall be an old fashioned "special topic" number, devoted to a discussion of "How to make the best foundation." When you write, please also make suggestions as to how future experiments upon this subject shall be conducted at the Experimental Apiary.

EXTRACTED.

How Much Centers in the Queen.

In one of the early issues of the REVIEW the question of "Queens and their influence upon success in bee culture," was discussed. In that discussion I took the ground that too much stress is laid upon the importance of having the right kind of queens. I argued

that "the queen is simply the vehicle of transmission from one generation to another, and it is the *qualities* to be transmitted, rather than the *vehicle* of transmission, that should receive our attention." I also asserted that prolific queens, those of unusually great laying powers, are of no more value, except to the man using a large brood nest, and that it would be better for him if he would reduce his brood nest to the capacity of the average queen. As nearly all of my correspondents opposed me at that time, perhaps I may be pardoned for now quoting something in my defense. It is from the pen of Mr. B. Taylor and published in the *American Bee Journal*. After describing the advantages of his new house apiary, and mentioning the wonderful yield of comb honey secured from one colony, he says:—

"Doolittle said long ago that 800 inches of comb space gave room enough for any queen, and my experience confirms his judgment. The colonies with two sections gave no larger swarms than those with one. I do not recommend small hives to those that give but little attention to their bees, but for the scientific apiarist, to get the *most white comb honey*, they are indispensable.

I must say something more about the colony that produced the 250 pounds of honey. There has been a great deal said in the bee papers about the importance of always removing inferior queens, and filling their places with good ones. My experience had led me to suspect that the bees could attend to this about as well as us big, smart fellows. However, I last fall resolved to give this fine point more attention in the future, so I went to such hives as my judgment had determined had poor queens, and wrote on them plainly—"Poor queen. Re-queen this," intending to attend to it in the spring. I placed the colonies on the summer stands in the house, and upon examining them I found the one that afterward made the big yield was marked for re-queening, and this was the reason the hive was not given an extra section. It increased the task of finding and *destroying* the bad queen, but other work pressed, and the job was neglected. If I had got my intentions carried out, I should have *killed* one of the best queens that it was ever my fortune to possess, as she kept the hive boiling over with bees during the entire season."

I know of some successful bee-keepers who allow no old queens in their yard, and if large brood nests are used I must admit that I think such a course advisable, while others equally successful allow the bees to do their own superseding.

There is one other point brought to my mind by the reading of Mr. Taylor's article, and that is, does the same colony give the best yield every year? Some of you may re-

member that there were some quotations from a German bee journal given last year in the REVIEW, showing the conditions under which bees store the most honey, and the question is, are not those conditions of more importance than even the *qualities* that the queen may transmit? What part does the queen play in bringing about those conditions? If a young queen keeps her combs supplied with eggs, and a bountiful surplus is the result, and then poor crops are harvested by her colony when she is older, then we get an argument on the *other* side, but it seems that Mr. Taylor's colony did better the next year *after* the queen was condemned. I am a little curious to know why he condemned her.

I suspect that one cause of his success in this instance was the complete filling of the brood nest with brood.

Bee-Escapes, How to Put Them On, and How They Save Labor and Prevent Robbing.

"'Tis pleasant * * * to see the stir of the great babel, and not feel the crowd."—COWPER

It is yet a little early in the season here at the North to begin talking about bee escapes, but it will not be so *very* long before they will be in use in the South or in California. I had a card to-day from C. W. Dayton of California, and he said that the bees were beginning to work quite briskly on the willow and eucalyptus. By the way, the article that I am now writing this introductory for, is from the pen of this same Dayton, and the editor of *Gleanings*, from which paper it is taken, says it is one of the best reports they have received showing the value of bee escapes. Of course, it must appear in the REVIEW, and if it is given now it will not crowd out something else later in the season. Mr. Dayton says:—

"In my work I have been testing escapes more and less, sometimes to the number of thirty or forty; and to say they are advantageous always would not be my belief, yet I think them a decidedly useful implement. It is not the trouble of putting them on that is an objection, nor taking them off: in fact, if we work as fast as we can, the *time* amounts to nearly nothing. Sixty to one hundred per hour could be put on by a little practice. They can be put on at any time, but probably the best time is in the evening, and wheel the upper stories into the extracting-room the next morning, utilizing the cool of the evening and morning when it is pleasant and invigorating to work—while

Mr. France is riding to and from the apiary—too late and too early to brush bees from combs. The only fault I could ever find with gardening was that the mornings and evenings were too short.

It is impossible to go to the apiary, put on the escapes, and extract the honey on the same day, because the bees will not be out until in the afternoon. Our present forms of escapes (I use the Porter) do not seem to work fast enough, but we may never get any that will do better than the present forms.

To put the escape-board under, the upper story does not need to be lifted off. Simply pry up the rear end of it about six inches with the left hand. A chisel may be necessary to start it. As soon as it starts, begin to blow in, across the brood-frames, smoke from the smoker held in the right hand, on the right side of the hive as you stand in the rear. Sharp blasts in the narrow crevice will pass clear across. Do not look to see if the bees run; if you have smoked bees a thousand times or more you may know that every bee will get out of the way as soon as possible. When the edge of the hive is up six inches, put your left knee against the edge, to hold it there while the hand goes over to catch the front hand-hole, and raise that end of the story about a foot, and swing it around to the left, using the knee for a pivot. By this time the right hand has set the smoker down and brought the escape-board up, and laid it on top of the brood-chamber. Escape-boards are light. One hand can handle them by the rim and lay one down carefully to avoid killing bees. Then both hands are free to ease the upper story down onto it. This is only the fraction of a minute, but it takes as large a fraction to get to the next hive, and another to straighten the back after the bending position. Rheumatics straighten up very slowly sometimes. No pans of water are needed, nor honey-daubed brushes to stick to every bee they strike—no handkerchiefs to arrest the drops of perspiration that chase each other off the end of the nose into the hives, nor aching fingers from grasping slippery projecting arms while plying the brush.

Brushing bees hurriedly from the combs, with old Sol looking straight down at you in the confined air of a veil, is like feeding a thrashing-machine or firing an engine. The feeder steps out from his machine, the fireman from his cab, and apiarists seek the shade of a tree or building while they mop away the sweat and secure a free breath of cool air.

The principal fault I have found in escapes is, where only one upper story is used, it keeps all the bees from work about six hours while they are getting through the escape, or else we need a six-hour supply of empty combs and stories to begin work with; but where two extracting-stories are used, one could always be left on. I used two stories, but expect, another season, to use three.

Brace-combs may trouble where narrower frame material than 1-1-16 is used in either top or bottom bars. Still again, there is about one colony in twenty that persists in their construction, and needs a change of queens.

When our harvest ended last June I did not think there would be any honey in the fall, and I left on about 75 upper stories full of capped sage honey, there not being a pound of winter stores in the lower hives. However, they gathered enough from tarweed and other bitter flowers to about fill the lower combs. The escapes are put on in the afternoon, and the upper stories taken into the tent the next morning, and extracted during the day. The empty combs are returned to the hives the following evening, to be cleaned during the night; and now after five days there is only occasionally a stray robber smelling around. This could not be done without escapes, and I am so well pleased with the plan that I shall try to leave half the crop (if we have any—prospects look poor now) on another season, and extract it after the hot weather is over, and there are no ants to bother.

The honey is thick enough to be eaten with a fork, without any trouble, but the extractor must be turned like a thrashing-machine cylinder, which is easily done by putting a small cog-wheel on the crank end of the crank-shaft of a two-frame Novice machine. Then another larger cog-wheel, to which the crank is attached, is arranged on the side of the can just below the smaller wheel. It takes a little more turning, but the work is as easy as in hot weather.

C. W. DAYTON.

PASADENA, Cal., Dec. 15, 1893.

Is *Bacillus Alvei* the Germ of Foul Brood?

"Who shall decide when doctors disagree,
And soundest caustics doubt, like you and me."
POPE.

There is much discussion these days upon the subject of foul brood, and through much of it runs the assumption that *bacillus alvei* is the cause of the disease. Mr. Frank Cheshire found this bacillus in the bodies of bees in colonies where there was foul brood, also in the queen and her ovaries. This being true, it has always been a wonder to me how a colony could be freed from the disease simply by removing the combs and giving the bees a new hive. Mr. J. A. Green, in the *American Bee Journal*, raises the question as to whether *bacillus alvei* is really the cause of foul brood, and his views are certainly worthy of consideration. He says:—

"I believe that Mr. Corneil has misquoted me on page 760 of the *Bee Journal* for December, 1893, and he is certainly in error in saying that I have 'repeatedly' made such a statement. However, I will not stop now to look the matter up, but will define my position anew.

I do not believe, as one might infer from the quotation attributed to me, that bacteria are always the result, and never the cause, of disease. At the only time I remember making any such statement, I expressly

stated that I was not attacking the germ theory of disease. It is too firmly established to be affected by argument. In the main, I believe in it thoroughly. I also believe, and in this belief I am only the follower of at least a 'respectable minority,' that the fact that bacilli are to be found in diseased tissue is not in itself a proof that that particular form of bacillus is the cause of the diseased condition.

It also seems to be a fact that very careful experiments have sometimes failed for a time to show the distinction between cause and effect. For instance, a newspaper item recently stated that late investigations had decided that the 'comma bacillus'—the discovery of which caused such a sensation in the scientific world—was not the cause of cholera, but merely a companion of the disease, the real cause of which must be looked for further. I did not pursue the subject further, so I cannot say how much of the truth there may be in the report, but it serves to illustrate my position, that it is very easily possible for the bacteriologist to jump at conclusions, and hastily decide that the microbe so plainly in evidence in the matter under investigation and in his subsequent cultures, is the very one for which he is looking, the cause of the diseased condition, when perhaps some other microbe, more minute or elusive, is the real cause.

I have never questioned Mr. Cheshire's discovery of *bacillus alvei*. He may appear to have succeeded perfectly in its isolation and culture. What I claim is, that there is room for a reasonable doubt that this bacillus is the cause of foul brood. I base this doubt upon the well proven fact that those who have attempted its cure along the lines laid down by the bacteriologists, have met with almost uniform failure while those who have discarded their teachings, and followed methods which presuppose another cause for the disease, have met with as uniform success. It appears to be simply a case where the facts do not fit the theory. It is said that a French theorist, upon being told that the facts did not agree with his theory, replied, 'Zen so much ze worse for ze facts.' I regret to say that some of the writers on this subject seem to have considerable of the same spirit.

It is my opinion that the real cause of foul brood is yet to be discovered. In saying this, I will readily admit that I have not myself made microscopical investigation of the disease, and that my training in bacteriology has been somewhat limited. There are few, though, that have had a larger practical experience with foul brood than I. All that experience has gone to show that Cheshire's conclusions are incorrect, and that the methods of cure advised by him, as well as all similar methods, are inefficient, unsatisfactory, and unreliable.

The disease is generally, if not invariably, transmitted by means which the theorists have considered unlikely to transmit it, while those things they have pronounced most likely to transmit it have utterly failed to do so. Mr. Corneil has spent much argument in the attempt to make bee-keepers believe

that wax made from foul-broody combs was dangerous, as liable to transmit the infection. Granting his premises to be well-founded, his conclusions, according to bacteriologists, are quite correct. As a matter of fact, though, I have made many hundreds of such combs into foundation, the use of which did not cause the disease in a single instance. No evidence has ever been brought forward to show that any of the thousands of pounds of such wax used for this purpose has ever caused foul brood.

It may be that the cause of foul brood is a bacillus yet undiscovered, or it may prove that *bacillus alvei* is really the cause, and that its investigators have simply been mistaken in regard to its manifestations, and the best manner of dealing with it. In either case, I see no reason to doubt that the disease may have its origin in decaying brood, whether killed by chilling, starving, drowning or suffocation.

Do not understand me as saying that I believe in the spontaneous generation of life of any kind. The experiments of Tyndall settled this question conclusively in the negative. But before he could make these experiments conclusive, he had to go to the pure air of the upper Alps, away from the contaminated and germ-laden air of the lower earth. These, and other experiments, have proven that living germs innumerable float in the atmosphere, undeveloped until they fall upon a substance favorable to their growth. Some of these germs are exceedingly common, while others are extremely rare. There might be hundreds of square miles, for instance, in which none of the germs of foul brood could be found. In such places no case of dead brood could ever develop into foul brood. In other places, the air might be full of its germs, and every case of putrefying brood, occurring under the proper conditions of heat, moisture, etc., furnishing a favorable soil for its growth, might become a starting-point of infection. However this may be, I doubt very much that the disease is ever communicated to healthy colonies except through the medium of infected honey."

A Condensed View of Current Bee Writings.

E. E. HASTY.

SEE that an editorial note in the *American Bee-Keeper* with the signature of "C." thinks out loud that *Gleanings* is give too much space in these papers. Perhaps I should watch out a little more to see that I don't neglect the juniors. But I'll say this much "to wunst;" nothing like an equal division of space among the journals can be tolerated. Readers want the most important new thoughts, without regard to where they come from. I suspect, moreover,

that if I were fairly tried by a jury of my peers I would be found guilty—not of the crime charged, but of the opposite one—passing over things in *Gleanings* and *A. B. J.* that would have been promptly noticed had they come up in the younger journals. Men are mostly alike in certain things, one of which is that when a fellow has a bran new thought, which he thinks will set all the fraternity a-talking, he will not send it to what he considers a minor journal. So the complaint really lies not against me but against the timbers of the universe.

But friend C's complaint is a marvel of incorrect statement. He chalks me up with a regular habit of spending six columns reviewing *Gleanings*. Any one who will take the pains to glance at recent Views can see that in December a little less than one column was devoted to *Gleanings*. Same in November. And in October there was but a little more than one column. And if I can put two whole numbers of *Gleanings* into one column, so that my readers have no need to take *Gleanings*, I must be the most wonderful writer in the whole world. Say, W. Z., hadn't you better be advancing the pay a little? to fifty dollars a page, or some such little matter?

NEBRASKA BEE-KEEPER.

To this paper I am doubtless owing an apology of some sort. Till recently I do not remember as I ever saw a copy—knew there was such a journal, but possessed the idea somehow that it was in the last stages of dying off, when silence is the best thing all around. Well, it don't appear to be dying off at present, and has just entered its fifth year. Your pardon, four-year-old *N. B. K.*! Still I won't make my apology very abject; 'cause if you had been crying very bitterly about my omission you might have sent a sample copy. The paper seems quite largely editorial—and L. D. Stilson appears to be the man. His advice is, sell half your honey at a good price, and give the rest away, rather than sell the whole at half rates. (Page 139.) And he is the apostle of "keeping everlastingly at it" even if half the bee magnates do ignore him. Questions are issued in one number and answered in the next. Why the queens of a pure Italian apiary so often mismate is an important question recently up. And the faults? Well, I'll just let them go through my fingers this time. And here are some of the valuable sentences,

the first being in reply to the question just alluded to.

"In June '92 I was surprised to find a hundred drones at every hive in the yard. Many of the hives I positively know were free from drones only that morning, which had been pleasant; but about noon a heavy south wind suddenly came up, and soon this swarm of drones came from the same direction, black as jet, and the nearest apiary of black bees in range of the wind is over four miles away." Page 2.

"We claim that bees cannot be successfully wintered in a moist or damp atmosphere." Page 4.

"Isn't it better to have good plans and have them sometimes miscarry, than to have no plans and always in a muddle?"

According to Nebraska lore a "kat" is nearly as good as a "cat," if it represents a good mouser.

Nebraska bees prepared for Christmas by cleaning house, just as ours further east did.

And here is S. T. Crandall's report of one colony—50 lbs sections, 300 lbs extracted, and 6 new colonies made by division. All sold at an actual total of \$52.50. Publishing this sort of thing used to be condemned as wicked; but sinners have been so scarce lately that we can actually afford 'em a free ad.

THE GENERAL ROUND UP.

Rambler in *Gleanings*, page 14, gives voice to one of the most solemn thoughts the fraternity can encounter. Is there no other practical way to beat off glucose, and cultivate the public taste for honey than to offer genuine extracted at two cents? Have we many localities that can do that? Who of us can sell 10 tons of honey for \$460, buy the supplies with part of it, and accept what is left for wages? Hist! Are there wild boars in the woods? or is it the brethren in the back counties snapping their teeth?

"If you like sweet apples you will like sweet apple honey better;" (from the bruised fruit.) Mrs. Hallenbeck in *Am. Bee Journal*.

The bee-keeper who wants to know how to put in his time in the winter should read W. Z. Hutchinson's 3½ page article on the subject in the *Progressive*—not even skipping the following—

"Of course, not very large wages can be made at it, but cutting stove wood is something that can be worked to advantage in the winter." (Page 13.)

Shoo! Does stove-wood have to be cut by somebody before it can be burned? Like as not, like as not, a bee-keeper might do "that are" with pleasure and profit.

Doolittle fights for his "contented hum" like one of the heroes defending ancient Troy. Like Hector in the gate he stood after

nightfall in the door of his bee cellar (all open 60 hours, and no foul air possible) and he caught the murmur of the wind in the trees outside with one ear, and the murmur of health in his bees with the other ear, and the two sounds were sweetly alike. Guess we shall have to yield him the point that bees are not *always* silent when wintering well. See December *Canadian*, page 133.

It would be quite interesting if Alley would just out with it and tell how he accomplishes what he promises below—but then, trade secrets—yes, yes!

"If others wish to do so (keep two queens together) we can ship them queens with the point of the sting taken off." *Apl.*, 1893, page 181.

Alley also thinks that the prevention of swarming should be given a rest, and that we investigate this question instead: How to bring a colony up to the swarming point. See *Apl.*, 10.

The following from the *Canadian's* beginners' department rather reminds me of the awfully fussy and too-too directions of certain amateurs:

"To have a smoker standing in the yard for hours blowing its fumes about the apiary is not in accordance with good management." Page 108, Dec.

Of course a smoker *might* be left so as to annoy one colony needlessly with continued draft of smoke; but bees are not quite babies, to be watched over with nurse-maid vigilance. Put the smoker right where the boy's mother put the rod—behind the motto—inscription, I Need Thee Every Hour.

"Last winter I tried the plan of putting in occasional fires. Bees out doors have occasional warm days, and why should'nt it be the same way in the cellar? But it didn't seem to work in practice as well as in theory." C. C. Miller in *Canadian*, page 111, Dec.

Ah, yes! Here we have it. Those grave and sapient Germans can get into a mess by over positiveness just like we'uns. Hear friend Reepen in the German department of *A. B. J.* (XXXII., 717.)

"Has the bee to die after stinging? Yes, always!"

But then we Yankees have respectable evidence that the bee does *not* always die after stinging.

Jennie Atchley finds that in fall transferring (perfectly feasible in her sub-tropical location) it is best to cage the queens a spell, lest brood rearing be started too freely. *A. B. J.*, XXXII., 718.

Jennie is quite an earnest opposer of McEvoy's foul brood heresies, and on the next page to the above she gets in the following knock down.

"Do you suppose that this United States had no dead brood up to the time foul brood was brought to this country?"

A sample hive which she bought as a model brought foul brood with it, and developed a bad case when a swarm was hived in it. Men of Israel, help! This is the man that teacheth all men everywhere to be ruinously careless about infected hives!

"In this warm climate we find that the moths are twice as bad, it seems, as they were in north Texas. We now put out a tub of soap suds in the apiary, and burn a lantern all night right over the tub" *A. B. J.*, XXXII., 719.

"Exceedingly yellow drones generally indicate Cyprian blood." Emerson T. Abbott in *A. B. J.*, 721.

"The poorest food gathered by bees is the juice of fruits, then the honey dew. Both are bad food for winter." Charles Dadant, *A. B. J.*, 722.

But Pierce found that mixing one-tenth of cider in honey seemed to do little or no harm.

The same writer notes that cold in the latter part of winter works much more injury than during the early weeks of winter.

Perhaps the following, also from Pierce, is worth meditating on a little:

"A normal colony of bees hived in a large box or gum, and allowed to keep all honey gathered, say to the amount of 60 or 80 pounds, will live and keep healthy, no matter how severe or how prolonged the winter may be."

Query 901 in *A. B. J.* shows nicely how a method once popular goes into almost entire disuse. It refers to the plan of spreading the combs for winter to let larger masses of bees between. The respondents are against the practice by a vote of 18 to 3.

In these days when so many bee-keepers seem to think it nice to make up mouths at their first love, it is refreshing to hear what Doolittle says on the subject. If it is true that "all men love a lover" I think that it is the forever and ever sort of lover that will be awarded the café.

"While else has seemed like work to me, yet every moment spent in the bee yard is always play; and after 24 years of this kind of play, I must say that to me the bee business is still the most fascinating of anything in life" *A. B. J.*, XXXII., 784.

Mrs. Atchley reminds us (*A. B. J.*, 813) that perforated zinc is one of the best remedies for robbing. Might know how it is yourself. When there is prospect of a fight in front a fellow don't relish crawling, with a squeeze and a grin, through a small hole immediately antecedent.

"I never yet have had a colony consume a large amount of stores during the winter, unless it was injured to a greater or less extent as to its usefulness, if it lived through to see the next honey harvest at all." Doolittle, *A. B. J.*, 17.

How the boys do get together, banditti like, and subject one idol after another to a storm of unexpected clubs! Of late it is the bee escape that is catching it. One senator after another speaks out to our surprise and tells how little he cares for it.

"I doubt the economy of painting; for wouldn't the amount of painting needed in 25 years cost more than a new hive body? But I suppose I made a mistake in not having the covers painted." C. C. Miller in *Gleanings*, XXI, 883.

How's this for Australian report?

"One apiary of 17 colonies produced 7,000 pounds of honey, and increased to 90. *Gleanings*, XXI., 885.

A California friend, E. H. Schaeffle, contrives to turn the sun's rays on both top and bottom of the solar extractor, and so dispenses with the dangerous lamp for caking the wax solid. I incline to think this an important invention—possibly needing some additional licking into shape. See *Gleanings*, 920.

Powdered sulphur well sprinkled over bees and combs cures bee-paralysis when salt fails. So says Joseph Monnier. *Gleanings*, XXI., 942.

Friend Corneil, playing at several queens in a hive, lost every queen from about 20 nuclei; and then was so boyish that he wouldn't play any more. *Gleanings*, XXI., 931.

"I see the report that mountain honey is richer than valley honey. My appetite seems to indicate the reverse, for the higher in the mountains I find it the more I can eat, to the extent of nearly making a meal of it." C. W. Dayton in *Gleanings*, XXI., 930.

Tut, tut! Richness and fulsome-ness are not the same thing. I'm going to hang on to the notion that way up honey is the *best*.

And here is a nearly conclusive decision of a quite important question.

"After a careful watch for over a score of years I have failed to find a single bee having any honey in its honey-sac while at work gathering pollen from corn tassels." Doolittle in *Gleanings*, XXI., 916.

And on page 922, *Gleanings* XXI., the ever fascinating, and ever unsettled question comes up again—inheritance of qualities by

food, or magnetism, or contact, or something or other besides parentage. Well, discoveries are for those who are not satisfied with what they already know.

In last *Gleanings* (page 44) we have a subject opened in such a way, as seems to assure us that a new era, long halting and recalcitrant, will get here by and by. It's all about what the good bees *actually do* in fertilizing flowers.—Find the truth first, and proclaim it afterward. Our preaching on this text heretofore has worn such high heels, and given itself so much of the air of the bantam rooster, that sensible outsiders could hardly help being suspicious that we were merely talking in our own interest of things we knew very little about. And our general history has not been such as to greatly encourage impartial investigators—except such as are usually willing to play short stop to dead goslings and stale turnips from all directions. Yes, let the matter so well opened go on. Let those who have, or think they have, evidence that fertilization takes place nearly as well without bees as with, bring it right forward; and let no one call names. Then let bee folks make more experiments. Prof. Cook's are good as far as they go; but we want more. Especially we want some flowers covered with gauze and *bees admitted too*, that we may know just how much the deadening of the air counts for. Between the *Rural New Yorker* and Ernest and Dr. Miller they have done us a good turn. In the end thereof we may not know so much as we do now, but *some* of what we know will be so.

And Mr. Doolittle's answer to the beginner who wanted to be told just how he could know how his bees in cellar were wintering well, (*Gleanings*, 20.) I do not feel like condensing that. I'll just request our editor that we may have the whole of it either in this or a forthcoming number.

RICHARDS, Lucas Co., Ohio, Jan, 29, '94.

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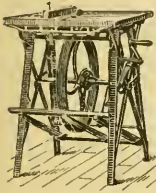
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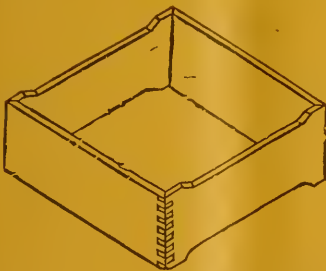
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FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

CHICAGO, Ill.—The Chicago market has plenty of honey, and 14c seems to be the outside price obtainable. Any thing that will not grade strictly No. 1 must be sold at 12 to 13. Large quantities have been sold, but the supply is at present in excess of the demand. Extracted finds ready sale at 6 to 6½ for Northern honey; Southern, in barrels, 5. Beeswax, 22 to 24.

Dec. 19. S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

CHICAGO, Ill.—Comb honey is selling in small lots, when choice, at 14 to 15 cts; off grades are hard to dispose of. Extracted is of slow sale at 5 and 6 cts. Beeswax is in good demand at 25 cts for pure goods.

R. A. BURNETT & CO.,
Mar. 7. 161 So. Water St., Chicago, Ill.

BUFFALO, N. Y.—There is a liberal stock of honey on hand and trade is dull, but we expect to clean out all this month and next. We quote as follows: Fancy white, 13 to 14; No. 1 white, 11 to 12; fancy dark, 8 to 9; No. 1 dark, 7 to 7½; white extracted, 6; dark, 5; beeswax, 25 to 30.

BATTERSON & CO.,
Mar. 7. 167 & 169 Scott St., Buffalo, N. Y.

KANSAS CITY, Mo.—The demand for all kinds of honey is very light. We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 13 to 14; fancy dark, 10 to 12; No. 1 dark, 10; white extracted, 7 to 7½; amber extracted, 6; dark extracted, 5; beeswax, 20 to 22.

CLEMONS-MASON CO.,
Mar. 7. 521 Walnut St. Kansas City Mo.

MINNEAPOLIS, Minn.—The market is very weak at present, but, evidently will be better later on. We quote as follows: Fancy white, 16 to 17; No. 1 white, 15; fancy amber, 13½ to 14; No. 1 amber, 12; fancy dark, 10; white extracted, 6½ to 7; amber extracted, 6; dark extracted, 5½.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Jan. 2.

CHICAGO Ill.—The honey market is very dull at last month's quotations; but we have moved considerable stock at 13 cts and believe that 13 to 14 will rule for the balance of the season. There is plenty of inquiry for beeswax with none to offer. We quote as follows: Fancy white, 13 to 14; No. 1 white, 13; fancy amber, 12; white extracted, 5 to 6; beeswax, 25.

J. A. LAMON,
Mar. 7. 44 & 48 So. Water St., Chicago, Ill.

NEW YORK, N. Y.—The demand for comb honey has almost ceased, while the market is yet well stocked. In order to move round lots, the prices given must be "shaded." Extracted is in fair demand, but the supply is abundant. Beeswax meets with a ready sale at the prices given. We quote as follows: Fancy white, 11 to 12; No. 1 white, 10 to 11; fancy amber, 11; fancy dark, 9; white extracted, 5½ to 6; amber extracted, 5½; dark extracted, 5; beeswax, 27 to 28.

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Mar. 9. 28 & 30 West Broadway New York.

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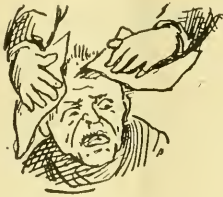
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W. Z. HUTCHINSON, Editor & Prop.

VOL. VII. FLINT, MICHIGAN, MAR. 10, 1894. NO. 3.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

SMOKERS; BEE ESCAPES; BRACE AND BURR
COMBS; CLEANSING WAX WITH ACIDS.

Sometimes this poser meets the tester.
When both are best which is "bester?"



SMOKERS for use in apiaries to aid in the control of the bees are rightly considered a prime necessity. They are made in great variety by a number of manufacturers. Several tests have been made by

different persons of the comparative powers of the "blasts" of some of the larger ones, but it occurred to me that perhaps that point is not the most important one to be considered for the reason that for all practical purposes the blast of any of the well known smokers is strong enough,—in fact the use of a very strong blast is very seldom desirable. I think the points that should have precedence in determining the value of a smoker are: the degree of freedom from

choking up, and durability and convenience in using, and these points can best be decided by practical use in the apiary. To compare in this way the two smokers that have perhaps the highest repute of any, viz., the Crane and the Bingham, I procured one of each of the largest size and put them to use in the apiary during the entire busy season.

So far as difficulty with soot was concerned neither one seemed to have any decided advantage—either being entirely satisfactory when proper fuel is used. The fuel should be wood absolutely dry and but little decayed; if fuel containing much dampness is used soot will collect sufficiently to cause some annoyance.

As to durability one season is not sufficient to enable one to form a judgment. Barring accidents, the leather used in making the bellows is in an otherwise first-class smoker the first part to fail, so that in such case the one in which the best leather is used would generally prove to be the most durable. In the two smokers in question the leather used appears so far to be equally good.

In point of convenience my assistant decided that the Bingham had a decided advantage and in my judgement his decision was right. The wire handle for opening the fire box in the Bingham was found more effectual in securing the hand from burning in the operation of refilling, for the cap of the Crane, though lined with asbestos, would often become much too hot to be grasped by the hand with impunity; but more impor-

tant than this we considered the difference in the weight of the two smokers. From the use of asbestos in the Crane smoker and the consequent doubling of the metal it is made much the heavier, which made it a burden where much use was to be made of it, and caused the Bingham in such cases to receive the preference. Where one has the management of but few colonies a smoker of one of the smaller sizes answers every requirement.

For the purpose of experiment I procured and put to extensive use in clearing supers of bees, a dozen bee escapes, a part of which were those known as the Porter and the rest the Hastings. There is no question that they are of great utility for the purpose intended at any time when the bees are not busy gathering honey from the fields. As a rule, about twenty-four hours were required to substantially clear the supers of bees, and then there were generally a few bees left in them, but not so many as to be a serious objection. They were not used until the honey season had about closed and it is very likely that had they been employed during the time of active work in the fields their function would have been much more rapidly performed. Though no very great difference appeared, yet of the two the Porter seemed to operate the more satisfactorily. It appears that the perforated plates have the effect of making the bees contented where they are, rather than hastening their departure from the super. Great caution should be exercised by the novice in adjusting the escape in seeing that the super is bee proof, otherwise he may discover later that he has instituted a disagreeable case of robbing.

For several years past there has been much discussion of the question of the prevention of brace and burr combs and for the purpose of such prevention frames with heavy top bars have found much favor. During the past season, being possessed of fifteen or more colonies upon such frames, I had a favorable opportunity for judging of their effectiveness. The top bars of the frames I used are 1 1-16 in. wide and 1 1-16 in. deep. I spaced them about $\frac{1}{4}$ in. apart so that they were about 1 5-16 in. from center to center. The results were very satisfactory, and, unless seasons of more abundant honey flow produce different results, leave nothing to be desired. There was scarcely a sign of a burr comb except where a frame was improperly spaced.

Having seen the use of sulphuric acid recommended for the cleansing of wax I procured some in order to test its efficacy. To do so I brought the wax to a hard boil then dipped it into a wooden vessel and added about a table spoonful of the acid to twelve pounds of wax. The wax which before was very dark was astonishingly improved in appearance. However, the process is one not to be recommended unless in extreme cases. The bringing of the wax itself to the required temperature demands extreme care to avoid danger and the acid is a poison which must be handled with the greatest caution; and more than all this the wax is, undoubtedly, as Dadant points out, injured for the use of the manufacture of foundation and the price would be consequently lessened rather than increased if it is to be used for making foundation. It seems wiser therefore to render wax in the ordinary way and to make use of the acid process when the wax is very dark and is to be used for some other definite purpose than that of making foundation.

LAPERE, Mich.

Feb. 24, 1894.



Why Given Foundation is Softer Than that of Other Makes.

JOHN MYERS.

O beauty, skin deep, we love you a heap!
And when shall we learn to be wiser?
The good and the wise, you seem to their eyes
Like an eagle of gold to a miser.



FRIEND Hutchin-
son:—I was very much pleased to see R. L. Taylor's experiments with the different makes of foundation, as published in the REVIEW for December. The conclusions he arrived at are similar to those that have been forced upon me

during the last few years while experimenting with the two kinds of foundation, namely, the Given and that made on rolls.

Although I did not have the facilities for testing the thickness of the comb, as did friend Taylor, yet, while watching the bees drawing foundation, both in sections and in frames in the body of the hive, I have always

noticed that they would draw out the Given much sooner than they would the rolled, and that after it had been drawn out the Given seemed to be much thinner than the other; also, at different times, I have taken two sections of comb honey, one made from Given and one from rolled foundation, and placed them on the tea table and told my family to test it and let me know if there was any difference in the amount of wax contained in their mouth after eating the honey, they not knowing which was Given or which was not; and, invariably, they have given preference to that made from Given foundation. The only reason I can give for the bees making thinner comb from the Given is the same as I think has been given before, that is, that the wax in both base and side walls of the Given is much softer, therefore being more pliable than that made by rolls.

I think it is Dr. Miller asks the question, or at least tries to explain the reason that the wax in the Given is the softest, and then goes on to tell how the melted wax is thrown into press, etc., and then you, Mr. Editor, undertake to correct the Dr. by telling him it is not made in that way. Now while the Dr. is wrong he is also *partly* right. We do not throw the melted wax on the dies, to be sure, but after it is sheeted, and before it gets cold, the sheets are put in the dies and pressed: and pressing it in the warm state leaves the wax much softer than it does to let the wax get cooled before pressing.

Some one might ask why not run the sheets through the rolls while in this warm state. It can hardly be done, it sticks to the rolls so. Those who are accustomed to making foundation on rolls know that the wax works much better when it has been dipped some time and allowed to anneal, as some call it.

Now while I think the above has something to do with the consistency of the wax in the two kinds of foundation, I also think there are other things that help to make this difference. The rolls squeeze the wax much harder than it is possible to do with the press. For instance, take a piece of woolen cloth and soak it in water then put it in the die book and put on all the pressure the press will stand, and when the cloth is taken out it will be quite wet, soak the cloth again and run it through the rolls at the same pressure as we would use for ordinary brood foundation and the cloth will come through quite dry, showing that the pressure of the rolls is much greater than that of the press.

I think Dr. Miller is wrong in stating that Given foundation cannot be made of even thickness; if the sheets are dipped right there is nothing in the pressing of them to make it uneven. But I do agree with him when he says he doubts if as nice looking foundation can ever come from a Given press as from a mill. I think this is where the Given has lost ground and nearly gone into obscurity. The bee-keepers of America, like all other people, seem to have a great eye for the beautiful, hence the demand for golden Italian queens, polished sections, etc., and while I am one of the greatest advocates of Given foundation I must admit that in regard to looks it cannot be compared to that made on rolls; the greater pressure of the rolls makes a clearer base and puts a much finer looking polish on the wax, thus making it much nicer looking.

There is also some weight in what friend Heddon says with regard to great advertising facilities being able to introduce and sell an inferior article. I am not sure, but I think it was yourself, or Ernest Root, that stated that you thought the reason that Given foundation was not kept for sale by dealers now was because it was much slower making Given than rolled. I don't agree with you. Having made thousands of pounds of both kinds, I am free to say I can make a great many more pounds on the press than I can on the rolls in the same amount of time. One of my men and I have tried a number of times to see which was the most speedy way of making foundation. He would work on the rolls and I on the press for several hours and I would make a considerably larger amount than he; then he would take the press and I the mill and we would work several hours thus and at the end of the time he would have quite a number of pounds more than I had. So that I am pretty sure that this is not one of the hindrances to its being kept for sale.

There is one other thing which I think is against the sale of Given foundation, that is, there is no lubricant will make it come off the dies as easily as strong lye. I think it was James Heddon that first gave this to the public. Starch, soap, or any other of the lubricants usually used on rolls seem to be of very little use on the dies. Well, when lye is used, as it becomes dry, it precipitates leaving a white powder on the foundation; the more lye used the more powder will be left on the wax. While this does no harm either

to the foundation or the bees, yet it does not look nice, and, as I said before, the looks has more to do with the selling of it than any one thing. In conclusion I must say, that although the demand for Given foundation is not nearly so great, either in Canada or the United States, as it was a few years ago, I use no other and shall continue to use only that kind, except for experiment, until I am satisfied that there is a better kind.

STRATFORD, Ont.

Feb. 9, 1864.



How to Make Good Wax.—The Characteristics of Good Foundation.

C. A. HATCH.

"How skillfully she builds her cell,
How neat she spreads her wax!"
For us to do our part as well
Requires some knocks and knacks.

THE wax is the most important thing in foundation making. If the wax is poor, no matter how well the foundation is made the result is sure to be unsatisfactory when submitted to the bees. Poor wax may be pure wax or it may be what was once good wax but has been spoiled by handling. Wax that is the least bit scorched is unfit for foundation; bees do not like it and it cannot be used except at a loss. Wax made entirely from cappings does not make the best foundation—it is too hard and brittle. And here let me say, Mr. Editor, that I have never found any wax that was brittle but it was also hard.

Color has but little to do with foundation being good or bad. Of course, if one is making foundation to sell it must not be off color, any more than butter for general market; must be off color, a certain color is demanded by the trade and it is the duty of the manufacturer to comply with the demand or he soon loses his trade. Some of the best foundation I ever had, however, was of dark gray wax which no customer would look at.

The hard ness and toughness of the wax is all important; color amounts to nothing only to please customers. Wax from old combs is always better than that from new combs. Who can tell why? Age makes wax hard, yet old combs always give wax of good color and both soft and tough. Who knows but the pollen always present in old combs gives it this desirable character? Or is it the

saliva of the bees used in the repeated polishing of the cells that effects the change?

Wax rendered at as low a temperature as possible and allowed to remain melted only long enough to get separated from the refuse, is better than that rendered at a high temperature at a long time. Therefore, in rendering wax it should be done as quickly as possible.

The kind of water used in rendering wax is of importance. Hard water or water containing iron in solution are both objectionable, especially the latter. I nearly ruined some wax I was helping a friend prepare for the Columbian fair by putting into it some water highly impregnated with iron. This water was so strong in iron that bright tin put into it soon turned color. Wax in all its processes should not come in contact with either iron or tin vessels, copper only seems to be proof against the acid contained in it.

Wax being the natural product of the bee why should it not be as uniform as the fat product of cattle (tallow)? We know that wax is far from being uniform in any one thing. But are we sure that it is not the result of the pollen in the combs or some other outside cause rather than the variation of the original wax scales?

I have had some wax too soft to make thin foundation at all, and other lots so hard that it was almost worthless. What caused it? Can change of food effect so great a change in the fatty product?

You spoke in your editorial of natural comb being more brittle than drawn foundation, can not this be simply a mechanical difference? Ice is frozen water, so is snow; if you take a small magnifying glass and look at natural comb and drawn foundation you will find about the same difference there is between snow and ice, the natural comb representing the snow and the drawn the ice. This may be accounted for in part by the fact that natural comb is made up of minute scales not always perfectly joined while the foundation is one homogeneous mass, more solid and therefore tougher.

[Your explanation is as I understand the matter, and in addition, there is a residue of something when comb is melted into wax.—ED.]

The best foundation I ever used was made on plaster casts, but I have my doubts about it being enough better to pay for the extra cost of making. So let us go slow on this tendency to accept only pressed foundation,

even if it is better, is it enough better to pay for the extra work of making?

I think the shape of the cell has something to do in the matter. A cell with the bottom perfectly shaped and the side walls simply a round rim of wax is my ideal. The Dunham comes the nearest to this.

[How about the Given—this is its description to a dot.—ED.]

But let us consider how bees draw out foundation. The first thing done is to thin the base of the cell to their ideas of proper thickness, which seems to be so thin that the outlines of a bee may be seen through it. How is this done? By cutting away the wax and allowing the chips to drop to the bottom of the hive, and I think it is done on both sides simultaneously but of this matter it is hard to know, for a bee will work for perhaps a minute on one side, and then run away; whether she goes to the opposite side to work it is hard to tell. These chips of wax which are cut off are not necessarily wasted, for a bee finding one of them on the bottom board seems as much pleased as a boy would be if he found a nice mellow apple, and she seems to be in a hurry to put it to use by adding it to the comb commenced, doing it in the same way as a wax scale is added.

After the bottom of a cell is thinned to suit these cunning architects they commence on the side walls and by biting and pulling seem to pull out the extra wax into sides of the cells. But whether drawing out foundation or building natural comb there is always a thick broad rim at the top of the cell, be it only just started or nearly finished. Why is it? What is that broad rim for?

[I suppose it is to give strength to the walls.—ED.]

I suspect if honey were coming in very rapidly, and comb room needed right away, much of this thinning and drawing out would be changed into simply putting on wax scales and making comb as soon as possible. But of this I am not sure.

I have proved by experience that the thinnest foundation does not leave the least "fish bone" in the honey. Foundation made of wax that is reasonably soft and that will cut about 100 full sheets for pound sections to the pound is about right.

Now, Mr. Editor, I have given you my experience for twelve years in making foundation and wax, and working with bees but find

there are so many things I do not know that I am almost ashamed to send it in, however, there may be something worth printing.

ITHACA, Wis.

Feb. 17, 1894.



Wax Manipulation and Foundation Making.

—The Effect of Using Heavy Foundation in Sections.

M. H. HUNT.

BEESWAX comes to the manufacturer of comb foundation in various shapes and colors and conditions as to cleanliness. The first operation is sorting it for the different grades; the lightest colored being used for the finer grades. All has to be refined; the cleanest cakes always containing some foreign matter. This operation helps to even up the wax in color, which adds much to the appearance of the foundation.

To refine it we put it into a wooden tank with water, and melt it by steam, and when all is melted, it is covered very closely, and allowed to settle. Just before it is too cool to dip, it is carefully taken out, down to the sediment. The wax left with the refuse is scraped and put in the next lot for refining. If the tank is properly arranged, the wax will stay in the liquid form ten to fourteen hours, which is sufficient time for all impurities to find their way to the bottom.

The next operation is the remelting in a large double copper tank; the steam heating the water surrounding it is what melts the wax. A faucet lets it run into the dripping tank, also surrounded by water, and kept at the right temperature by steam. The faucet in the copper tank is eight inches from the bottom, so that if any sediment should remain, it has a chance to settle. An exceedingly fine screen is placed over the hole leading to the faucet in the copper tank, so that nothing but the pure wax can find its way into the dipping tank. Great care has to be exercised to keep all the hard substances out of the wax when sheeting, as a little nail or anything of like nature, would spoil the rolls.

Then comes the dipping, and taking all in connection with it, it is the most difficult and important manipulation in making good comb foundation. If the wax is too hot or too cold, the sheets are spoiled, and if the temperature is right, and the sheets are not

then managed as they should be, there will be trouble in the rolling. Right here is where the greatest number of failures occur, and until the manufacturer understands what the sheets require he cannot expect to overcome the difficulty. When you break open a cake of wax, you will usually find the center of it has a mealy appearance, and is very easy to crumble: that is, it is brittle like the banana spoken of by the editor in his leader. This crumbling, brittle tendency, brought about by the conditions of cooling, is what has to be avoided in making your sheets; to do this is what I term tempering the wax. This tempering of the wax, has no effect on it, so far as making it either hard or soft, for the sheets will be hard or soft according to the condition of the wax in the first place. When the sheets are ready for the rolls, they are put in a shallow vat of water, attached to the rolling table. The water has a thermometer in it, so as to help the operators keep it at the right temperature, a very necessary precaution.

Passing the sheets through the rolls, is a simple process, still it requires some experience to do it and keep the rolls so adjusted as to do the best work.

When making foundation by either rolling or pressing, the sheets should be kept as warm as is possible to work them, so that the wax will find its way into the side walls, or be crowded back, as with the rolls, with less pressure. Mills making the bottom of the cells most natural, find the least resistance, as the points of the rolls enter the wax first and gradually crowd it back, while the flat bottom mills present the whole surface to the wax, and need more pressure to accomplish the same result.

Rolling or pressing the wax makes it more firm by better uniting the little grains, and perhaps it is well that it does, if it did not we might not be able to use foundation twelve or thirteen feet to the pound, in full sheets in the sections, it would not be strong enough to hold the weight of the bees, when warm enough to be worked by them.

The so-called fish bone, under certain conditions, will always be found in comb honey if foundation with heavy side walls is used. The only way to avoid it, to a certainty, is by using foundation so thin that no extra wax is there to leave, and this is the kind of foundation I recommend. The wax we give them and the kind they use to build on with are of a different nature. If wax is left in

the side walls, and they use it even to the best advantage, it will not be so tender and crisp as that they produce themselves, and will help to make the honey so produced, tougher, and leave in the mouth, after the honey is dissolved, a large amount of wax. The wax of their own production, or rather the comb, does not stick together in the mouth, but is mixed more with the honey and swallowed without noticing it so much.

BELL BRANCH, Mich.

Feb. 25, 1894.



Why Rollers are Preferable to the Press for Making Foundation.

O. P. DADANT.

FRIEND HUTCHINSON:—In reply to your request to give our opinion upon the best foundation, we must say that we agree in substance with Oliver Foster.

At the time when the Given press was put before the public, we enquired into its merits, with the intention of procuring one. At different dates we asked Mr. Given for samples of the work of his machines, but in every instance the work produced was so irregular that we concluded it was best to leave it alone. And yet the bee-keepers were not wanting who praised his machine above all others. But what is the result? Were it not for the experiment of R. L. Taylor the Given press would be left in the dark. Is that experiment conclusive? I think not, for if it is evident that an amateur may be able to make very good foundation on the Given press, it is none the less evident from the experience of the past fifteen years that the Given press is not practical, in the hands of the average bee-keeper. Nor is it at all proven to me that even the amateur can make, with the greatest care, as good an *average* on the press as on the rolls.

We Americans were not alone in trying the press. It was on a press that the first European foundation was made. Mehring, the original inventor, used a press. But in Europe, as in America, the press has given way to the mill, for with the latter all perfections can be laminated out and it is therefore more regularly satisfactory. As to the greater or less hardness of the wax in the different cases, I would not give a straw for the difference. It is all wax and there is much more to consider in the melting and

re-melting than in the pressure put upon it.

Although this may be a diversion from the main subject, allow me to put in a plea against the cleaning of wax with acids. If anything will "make grease out of but er" as relating to wax, the using of sulphuric acid will be the worst factor. Root saw us using it for our worst residues and from that recommended it for all purposes in rendering wax. It is emphatically a mistake. There is no need of this, for just as good wax may be rendered without its use and sulphuric acid removes all good flavor and all essential oils, rendering wax more brittle, tougher (?) and less acceptable to the bees.

In conclusion, I will say: 'Just' as soon as your inventors give us a machine that will make foundation more *regularly* satisfactory than the mills, we will agree to give you foundation made on that machine, but in view of the fact that for the past ten or twelve years a good article of rolled foundation has given entire satisfaction both to honey grower and consumer, while the press was set aside, we shall await further and *more extensive* experiment before changing our mind on the subject.

HAMILTON, Ill.

Feb. 17, 1894.



Some Facts Regarding Flat Bottom Foundation.

JUSTUS VAN DEUSEN.

FRIEND HUTCHINSON:—In December REVIEW, page 354, you can't see why the Given press is not used for surplus foundation. You might ask P. H. Elwood. He has a Given press but uses the flat bottom foundation for surplus and says it is all right. If I were to guess I would as soon think of clothing this generation with the product of the old spinning wheel and hand loom as to use the press for surplus foundation for the bee-keepers of the world. We commenced making foundation late in the season of 1879. Our first season was largely experimental. In 1880, one of our first orders was for three tons from a prominent maker of foundation and editor of a bee journal, he furnishing the wax. Since then our orders have often run up to six or seven hundred pounds a day and have been promptly filled. Time was when the canal boat and stage coach, making three to eight miles an hour, satisfied the traveling public.

They now want forty to sixty or even a hundred miles an hour. There is the same difference in speed between the press and rolls. To be sure and have surplus comb honey free from fish bone, use no surplus foundation heavier than twelve square feet to the pound. When nectar comes in slow, bees may thin foundation in a measure, but with a flush of honey they are very apt to extend the cells without thinning the foundation. The only safety is in using foundation twelve square feet to the pound if you would be free from the objectionable heavy centre which leads to the impression that comb honey is adulterated. The use of foundation seven to ten square feet to the pound for surplus honey, has injured the reputation of comb honey about as much as the use of glucose has injured the reputation of extracted honey. As a matter of economy *seven pounds* of foundation, twelve square feet to the pound, will fill as many sections as *ten pounds* of foundation seven to ten feet to the pound, both being fifty cents a pound, a saving of one dollar and fifty cents is made on every ten pounds of foundation used. The flat bottom foundation from its *thin, clean, uniform* make, has given more general satisfaction in use than any other foundation. The shape of the cell wall from the flat bottom machine is decidedly superior to the cell wall from any other machine, and whether honey comes in fast or slow the center is not objectionable to the general consumer. Foundation made from the same sheeting will be just as hard made by the press as by rolls. Shheeting from our domestic yellow wax will be a little softer than if made from a light selected southern wax. The consumer prefers the latter color and we have paid from one to three cents a pound extra for such selection. As bright, practical men have failed to supply the market with surplus foundation from the Given press, it might be well to get friend Hasty at it (January number, page 21)—to enable him to judge where the bee comes in. The measurements referred to start with natural comb, which is not a foundation. Then come three samples from the Given press, which are not to be had in the market. Then comes the flat bottom foundation which stands A No. 1 of the available foundations on order. Am very glad to have friend Taylor test the different makes of foundation, both for the surplus and brood; but would like to have him get the flat bottom foundation from us

as he got the other samples direct from the makers. The sample of flat foundation tested, if made by us, was not less than a year old and may have been much older, exposed to the air and dust of the office or work shop. I don't wish to forestall opinion on our patent wired foundation for brood frames, but will assure you that it is *self sustaining* and cannot have a cell stretched in making or in use, as tested up to seventeen inches square for extracting. All other foundation for brood made with rolls is liable to be stretched both in making and in use to such an extent as to unfit it for worker brood and when put on wired frames does not remedy the defect.

SPROUT BROOK, N. Y. Jan. 29, 1894.



High Side Walls Can be Made on a Press
But it May Not be Advisable.—One Reason
Why Given Foundation Went
Out of the Market

E. T. FLANAGAN.

EDITOR REVIEW, Dear Sir, In reading friend Foster's article in the February REVIEW, I found several errors to which I wish to call attention. He certainly never made foundation on the Given press or he would not have said that "To impress a whole sheet of wax at one stroke, and effect as near an approach to natural comb as was possible with rollers, would require a pressure too great to be practicable." The highest side walls I ever saw on foundation were made on a die that was manufactured under my special instructions, and for the very purpose of having higher side walls than could be made on any roller machine. This die I used for years: unfortunately it was stolen from me a few years ago, a loss I have not yet been able to repair, as I do not know now where any Given dies are made.

And when he says it is "impossible to make the septum as thin, and at the same time force the displaced wax into the side walls, as narrow, and as high, by means of plates, as can be done with rollers," I know he is again in error, for I owned one of the very first and one of the very last presses made by Mr. Given and his successor. To show I am not alone in what I have stated (and I can bring scores of others to corrobor-

ate the foregoing) and in proof of what I here state; I will say that I bought and used one of friend Foster's moulds for making foundation, and that I disposed of it to Mr. Wm. Little, of Marissa, Ill. As the moulds broke, or wore out, he, from time to time, procured me sheets of Given foundation to make new moulds from; this he did for years. I can vouch for Mr. Little as being a well posted, first-class apiarist, a close observer and a conservative, careful, reliable man. Hear what he says:

"MARISSA, Ill., Feb. 19, 1894.

E. T. FLANAGAN, ESQR., Belleville, Ill.:

DEAR FRIEND:—Yours of 13th inst., at hand. You are right in regard to my purchase from you of a Foster foundation mould 10 years ago, which I am still using, and upon the good points of which I could write a book. I have tried sheets of foundation made on the various machines and have been using the Given foundation in making my plaster of Paris moulds for the very reason that I found it having the *highest* walls of all the various kinds of foundation. The last mould that I made I have used three seasons, making many thousands of sheets with it and still the mould is in good order and I will use it next year. I have also experimented with the Given foundation and other makes in the hives when conditions were favorable and uniform, and I have found invariably that the bees would work out the Given foundation first. I consider it the best foundation made as far as my experience goes. WM. LITTLE."

Another error, in my opinion, is that the Given press and dies was invented to wire frames of foundation. This may have been *one* of the objects in view, but from the tenor of the correspondence held with Mr. Given when bringing out his invention, this was not the primary point.

And when he says "the whole surface of the sheet of wax must be released from the die simultaneously," it is proof positive to me that he knows but little of the Given press or how to work it and if in error on several important points: why not in all?

[I presume that Mr. Foster was speaking in a *comparative* way, meaning that a *much larger* surface must be released at once on the press than with the roller process. I do not think that he really meant that the *whole surface* must be released simultaneously.—ED.]

I have used in the sections starters of Given foundation as thick as what is termed "medium brood" foundation, side by side with extra thin foundation made on the roller machines, and could see no difference whatever in the finished product, no "fish

bone" in either. If more wax is desirable in foundation designed for use in the sections, the Given has decided advantages over that made on the roller machines, as it is certain the side walls are softer and contain more wax, with an exceedingly thin septum; and dies can be made with high side walls as is desired; but is it an advantage? I am in doubt. Why? The foundation will certainly weigh more to the square foot and will not go so far, thus making it more expensive. This is a decided objection, as in my experience the average bee-keeper wants his foundation as thin as possible so as to reduce its cost, as, of course, the thinner it is the more sections a pound will fill. The "fish bone" with him counting for little or nothing.

One of the greatest advantages of the Given press is the ease and facility with which foundation can be made. It requires but ordinary common sense and a little experience, to make a fair article, as, once the wax is sheeted, a boy can press it.

This same facility, strange as it may seem, was one of the reasons why Given foundation was forced out of the market. How so? Every one that had a press made foundation, and as few had the facilities or took the trouble, to clarify the wax, a large amount was made of dark, dirty, impure wax, and such foundation could not for a moment compete with that made by large concerns from purified wax; and, having no market for the dirty stuff, the manufacture ceased; and the manufacture of foundation to-day is in the hands of the comparatively few, who, knowing how, and having the facilities, took the pains to make an attractive article. And this is as it should be, for any one with less than one hundred colonies should not bother with making his own foundation. Beyond that number, a Given press and dies are a safe, profitable investment.

Wax that has been adulterated, or that has been boiled too long, or that has been burnt, or scorched in rendering it from the combs, is unfit for making foundation. So, too, in my judgment, is that which has been rendered or clarified with muriatic acid. It certainly hardens the wax. There is no great secret in clarifying even the darkest wax. It only requires that the melted wax be kept in liquid form at a low temperature as long as possible, before hardening. If any dark matter remains, re-melt and proceed as before, as often as required.

BELLEVEILLE, Ills.

Feb. 20, 1894.

Those "Apiary Reports."—Why the Given Press Makes Softer Foundation than that Made on Rolls.

DR. A. B. MASON.



I HAVE been very interested in Hon. R. L. Taylor's experiments at the Michigan experimental apiary, but in none more so than in those relating to foundation, and I'm glad that we can get these reports of his experiments

soon after they are made, and without having to wait for them to be made to the State and then get them when about a year old, less or more, and if he can get anything out of *you* for them I'm glad of it; he gets paid for his extra work and we bee-keepers get the benefit of it. If some of the bee journals don't think you and Bro. Taylor are doing just the right thing they seem to be perfectly willing to receive "stolen good" * and not pay a cent for it, and I hope we shall be permitted to know right along just what Bro. Taylor is doing, and not be obliged to wait for the results till the State publishes them.

I was not at all surprised at the result as shown by Mr. Taylor submitting different makes of foundation to juries composed of bees. They hadn't read the papers, so went to work without having their judgments warped all out of shape by what they had heard.

I have used a Given press about 12 years, having made nearly all my own foundation, and many times more for my neighbors, and all who used it were well pleased with it. I have used foundation that was made on different mills, but prefer that made on the Given press to any of the other makes I've used. I prefer it because the bees seemed to work on it more readily and rapidly than on that made on mills. I say *seemed*, because I never conducted any experiments to test the matter of which was really the most profitable to use.

I have read with much interest your leader on "how to make the best foundation," also Mr. Oliver Foster's article on "the

* Don't put an s on the end of "good" for I mean "stolen good" and not GOODS.

essential qualities of foundation, and how to secure them." Your statement "that foundation that is the most readily accepted by the bees, and the quickest made into comb, yet containing the least unavailible amount of wax, would seem to be the most desirable," states the matter very concisely. Mr. Taylor's experiments are of value in several ways, one of which will doubtless be to induce the makers of foundation to pay more attention to the points in the making of foundation that will make it conform to the three requisites in your statement above quoted.

It is evident to any one who has manufactured foundation on the Given press, and also on roller mills, that it requires more care in dipping, or sheeting the wax for the press than it does for the mills; that is, if the best is to be done on the press that the press will do, but I think it is possible to so make the rollers, and dip or sheet the wax that is to be made into foundation on them, as to produce the same results as or may be produced on the press.

You say "in the roller mills having deep interstices between the cell-dies I do not understand why or how the side walls receive pressure, but perhaps they do." In making foundation on rollers the sheet of foundation is made longer than the wax sheet just in proportion as the wax sheet is thicker than is required to fill the space in the rollers in which the septum and side walls are made. If the rollers were so made that there was a surplus of room for wax in the interstices between the cell walls, and the wax sheets were made of such thickness that the septum would be of the right thickness and the surplus go in the side walls and still not fill the interstices, would not the sheet of foundation be of the same length and width as was the wax sheet, and would not the side walls be in the same condition as those made on the press? Is not the pressure which is made by the rollers on the side walls produced in part by the pressure that comes from the "squeezing" of the wax sheet that makes the sheet of foundation longer than the wax sheet, and the thicker the wax sheet the greater the pressure on the side walls, if the septum in each instance is of the same thickness?

In making foundation on the press the wax sheets must be so made that there will be no more wax than is needed to make the septum and side walls. Should there be more

it will result in either thicker septum or harder side walls. Perhaps it is possible that the septum made on the press is as hard as is that made on the rollers, but it is differently made, so that with the same degree of hardness the septum made on the rollers might be more brittle than that made on the press.

I am not sure that pressure hardens wax, but I have always believed that it did, and have always thought that the reason the bees seemed to work on Given foundation more readily and draw it out more rapidly than that made on the rolls was because it was softer, and that it was softer because made with less pressure. And I believe that foundation can be made on the press that will approach as near to natural comb as that made on rolls, and be done with no greater pressure, but the wax sheet must be of the right thickness; and with the wax sheet of the proper thickness there need be no surplus or unavailible wax, but it requires more care in making the wax sheets.

I have just been testing some samples of foundation, some of which were made on my Given press and some on a roller mill, and I find that that made on the press seems to be less tough than that made on mills. The pressure produced by the rolls may have so condensed the wax tissue, so to speak, that it may have room to stretch out more without breaking than will the Given foundation where the wax tissue has not been so pressed together, and so readily comes apart.

AUBURNDALE, Ohio.

Feb. 23, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

TERMS: — \$1.00 a year in advance. Two copies \$1.90; three for \$2.70; five for \$4.00; ten or more, 70 cents each. If it is desired to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing, otherwise it will be continued.

FLINT, MICHIGAN, MAR. 10, 1894.

MAJORITIES are not always right.

—●—
 REST satisfied with doing well and let others talk as they will.

—●—
 ONE good way to get along with some folks in this world is not to know they are in it.

IF in an argument you talk louder than your opponent, it means that he has the best of it.

HAVE you reached that stage where you can believe that those who differ from you are honest in their belief?

THE BEE-KEEPERS' UNION re-elected all of its old officers. This means that T. G. Newman is Manager and R. L. Taylor President.

H. P. LANGDON is mourning the loss of his dear wife; his greatest comforter being a little two-months-old girl.

EDITORIALLY, I will say nothing this month about foundation as there are several articles yet on hand, and after this issue is read there may be others who will wish to write on the subject.

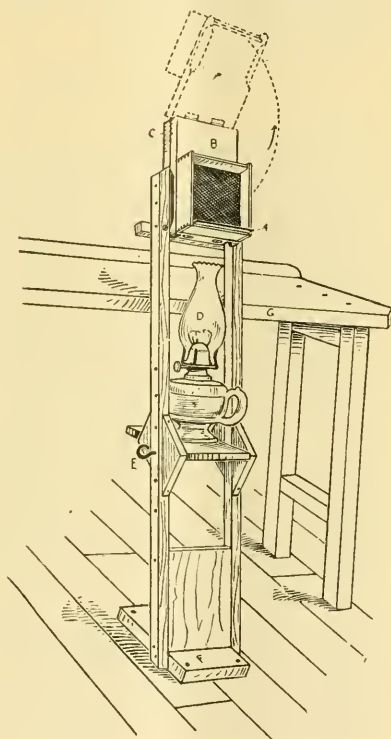
PULVERIZED SUGAR for making candy for use in queen cages ought to be selected with care, so says the *Progressive*. One kind is mixed with starch or flour and is not suitable. It will become very hard. The other grade is pure sugar. It may have some lumps in it but the greater part of it will remain fine.

MR. W. J. ELLISON, the well known queen breeder of Catchall, S. C., has passed beyond this vale of tears. He had suffered a long time from throat and lung troubles, I believe, and on the 9th of February he passed peacefully away. He leaves a widow and four children, all boys, to mourn his loss. My business relations with the deceased were extensive, long continued and very pleasant, and I feel as though I had lost an old friend.

GLEANINGS has been having a most thorough discussion of the necessity for bees in the fertilization of blossoms. While they may not always be a necessity it is very evident that their presence greatly increases the yield in many instances. All of the papers have been gathered together and published in pamphlet form which can be furnished at a very low price. They are intended for distribution where there is "friction" between fruit and bee men.

THE WOODCOCK FOUNDATION FASTENER.

Mr. Marcus Woodcock of this place has invented a new foundation fastener. It works upon the hot-iron-melted-wax-plan, its distinctive feature being that the section is left in an upright position, or rather the foundation is supported while the section is being turned into an upright position. The accompanying cut makes a description al-



WOODCOCK FOUNDATION FASTENER.

most unnecessary. The machine is fastened to the floor, the upper part being placed against a table. A metal plate is attached to a cross-piece, the plate being heated by a lamp placed upon an adjustable shelf. The part of the machine bearing the block over which the section is slipped is hinged at the top, and as soon as the sheet of foundation is dropped upon the hot plate that projects through the section just above the top bar, this hinged part is swung outwardly and upwardly. As the section is swung out the heated plate is withdrawn allowing the melted edge of the foundation to drop down upon the center of the top bar. As the foun-

dation is supported while the section is turning this summer sault, it never lops over and breaks out as is sometimes the case with other fasteners in which there is no support for the foundation while the section is being brought to an upright position.

Mr. R. L. Taylor has used the machine to put foundation in about 2,000 sections and he pronounces it a "Double Daisy." He says it does the work easily and perfectly and with comfort to the operator.

Price of the machine, \$1.00.

PROTECTION FOR BEES IN SPRING.

Most of my readers know that I favor taking the bees from the cellar quite early, certainly as soon as the last of this month in

shingles. First there is a frame or ring made from cheap lumber sawed up to the right lengths and then split up into pieces two inches wide. These frames are about four inches larger each way than the outside of a hive. To the inside of a ring or frame are nailed the shingles in an upright position, the frame coming about the middle of the lengthwise way of the shingles. A few of the shingles at one end are cut three or four inches short, their lower ends resting upon a "bridge" placed upon that part of the bottom board that projects in front of the hive. When this rim of shingles is placed over or around a hive there is a space of nearly two inches between it and the hive. This space is filled with planer shavings.



THE "REVIEW" APIARY IN THE SPRING.

ordinary seasons, and then protecting them for nearly two months. The advantages have been given several times in the REVIEW, hence I will not use space in their repetition, but instead I will describe a method of packing that I adopted last spring with pleasure and profit.

One objection to spring packing is that of the cost of the boxes or something to hold the packing material in position. Those that I used a year ago are certainly not open to that objection. They are made of culled

The hive is now all protected except the top, and that is really the most important point. To protect this I first removed the cover and spread over the top a piece of oil cloth. I then put on a super filled with planer shavings, the shavings being kept in place by a sheet of heavy paper tacked to its lower side. In some instances I tacked a honey board to the bottom of the super, laid a piece of "REVIEW" paper on top of the honey board, and then put the shavings on top of that, and this arrangement worked

all right, the bees not gnawing the paper to amount to anything, but when I set a super right down on the frames with no honey board between, and no oil cloth, the bees cut great holes in the stoutest kind of manilla paper in three days time, and let the shavings all down amongst them. I had a regular circus getting off those supers, and how I should have laughed at any other man who would have cut up such a caper. Over the super is placed the hive cover with a stone on top to keep the wind from blowing off the cover.

To keep the rain out of the packing, and the wind from blowing it away, narrow shin-

a more perfect protection over the top of the hive than can be secured by the other arrangement which is ample for spring.

I also present another view of the same portion of the yard taken later in the season, showing some of the hives with supers tiered up and shade boards in place. The hive in the fore ground with the cover tipped back and some smokers sitting inside it, is a chaff hive that some good friend sent me years ago, and I now use it as a little house for keeping my smokers, smoker-fuel, matches, and spring bottom oil can filled with kerosene oil. Don't keep these things in buildings; it is too dangerous.



THE "REVIEW" APIARY IN SUMMER.

gles were placed in a slightly slanting position against the sides of the super, their lower edges resting on the tops of the shingles to which they were tacked with wire nails.

I give an illustration showing a part of my apiary after some of the hives had been unpacked the latter part of May. It will be noticed that one hive in the fore ground is a trifle higher than the others and has a different roof. I had this arranged in this manner to show how I would use these shingle packing boxes were I to pack the bees out of doors in the fall and leave them on their summer stands all winter. Two of the boxes are telescoped together nearly half way and a shade board is used for a roof. This allows

EXTRACTED.

Do Bees Add Any Wax in Drawing Out Foundation?

In this special number devoted to foundation is a proper place to quote the following from *Gleanings* for February 1st. It is written by Mr. M. W. Shepard, of Rochester, Ohio. He says:—

"The article in the December 15th issue of *Gleanings*, from R. L. Taylor, leads us to ask whether bees ever thin the septum of comb foundation at all; if so, under what conditions? Do they ever pull the side walls of

the foundation to make cells? If so, under what conditions? We hear much about the different grades of foundation, such as light brood, heavy brood, etc. Now, is it any difference to the bees which they have? If so, what is it?

We have had a little experience in the matter, and it does not coincide with the generally accepted theories. Has any one ever weighed a sheet of foundation before giving it to the bees, and then after it had been drawn out into a perfect comb? We venture the assertion that, nine times out of ten, it will be found that the bees have furnished every particle of wax to make the cells of the comb, regardless of the amount of wax in the foundation. Sometimes bees make the base of natural comb much heavier than much of the artificial foundation. Why is it, if not because of an overabundance of wax secreted?

During the past season we found swarms of bees whose abdomens were literally covered with wax scales. Now, when put on full sheets of foundation what did they do with that wax—throw it away, or use it to build cells on top of the foundation? We don't believe it was thrown away by the bees; in fact, we can prove it was not.

We have often heard how much it cost to let the bees build their own comb. With due respect for experimentalists, we ask how you know that, under normal conditions, wax is not a spontaneous production, and costs the bees nothing to produce? It seems that an all-wise Providence would make no blunder in the matter."

The editorial reply in *Gleanings* reads as follows,—

"[Years ago, as some of our older readers will remember, we weighed pieces of surplus foundation before and after it was drawn out by the bees. We can not just now place our fingers on the page and volume where these experiments are recorded: but if memory serves us correctly, the scales showed that the drawn out comb weighed but a small trifle more than the foundation from which it was originally drawn, proving, in this case, that very little wax was added to the foundation. Combs two-thirds drawn out weighed just as much as the foundation. Other experiments showed that bees put more extra wax on sometimes than others. Particularly was this true when we used bleached foundation, as was done years ago. This is easily explained on the ground that, the bleached wax was much harder than the yellow, and the bees rather than draw it out, added to it. With ordinary soft yellow wax, such as now sold, the results were as we first stated.

These experiments can be easily repeated. Weigh a strip of foundation before putting it into the section; weigh it after it has been drawn out into comb. Likewise weigh a sheet of brood foundation before and after it has been drawn out. In fact, we wish many of our readers would try this experiment, and report. Different localities, and the character of the honey flow, whether light or heavy, will have an important bearing on the question."]

A Condensed View of Current Bee Writings.

E. E. HASTY.

FEARFULLY dull all the journals have been this long time. Cause, La-grippe. Not that the aforesaid tyrant has got hold of all the writers and made them write dullness, but that he has had hold of me until I could see nothing but dullness. Say! I've got an idea. Bee fever has been supposed to be an incurable disease that must be allowed to run its course. Mistake; just vaccinate the patient with la-grippe and it will cure him I'll warrant.

And now while I'm nicely spiteful and cross I'm going to throw mud and adjectives and things at comrade Reepen who runs the German department of *A. B. J.* See page 205. He villainously said that Doolittle published guess work about the larval food of bees and queens. Guess work is it, me bye? An how much bether than guess work, sure, is yer own scientific nonsense in thim figgers about fat and sugar and albumen? Arrah! let's be sensible now for a minute.

There are many kinds of sugars, and these figures do not specify which and how much of each, in queen food and drone food respectively. There are several kinds of fats, and the same remark applies to them. There are various sorts of albuminous matters also, I believe. Two different foods are imaginable, each with 40 per cent. of albuminous matter and 15 of fats and 20 of sugars, which shall nevertheless be very different in quality and characteristics. Those crude analysis percentages, if we swallow them whole, and trust to them only, seem to teach that the larval foods of queen, drone and worker are pretty much the same thing—and that is presumably a falsehood. Better kick the science overboard, and trust only to taste, smell, sight, and observed effects, than to go it blind on a rudimentary analysis, and scout everything else as guess work. We want to know *what it is* in the larval queen food that makes the little larva take on such a totally different development from what it would take if fed on larval worker food. Honestly now, friend Reepen, do these moderately varying percentages offer a clear solution of that mystery? Is it not more probable that some sly ingredient, present in very small percentage, and not yet caught by the analyst, is the real transformer? Let us

take Von Planta's analysis with thankfulness and respect—take it as *one of the things* which we need to know. But we shall be very great fools if we take it as a *finalty*, beyond which no one must inquire, and which must be allowed to brush off the track all work not done with lenses or chemical re-agents. Perhaps I had better paddle back far enough to admit that Von Planta's analysis does seem to decide one matter of importance, namely, that royal jelly is not *identical* with the first food given to the worker larvæ. This is counter to a very general impression among wise heads. The difference is mainly in the fatty ingredients, in which the royal jelly exceeds the worker food by more than one-half. And that the Aladdin-like transformer we are in search of may be a fatty acid, is among the imaginable things.

THE APICULTURIST.

The *Apiculturist* is especially interesting of late on account of its attempt to evolve a new sort of journal and editing—a style in which the editor is always “at bat”—not indeed furnishing all the matter, but using the matter other than his own rather as a set of texts to preach from. Early volumes of *Gleanings* made a success of the everlasting foot-note, but Alley is varying the proceedings by putting the notes into still more prominence and abolishing the articles, as it were. Of late his turn of thought is to pour considerable contempt upon nearly all the current topics of apiculture, as worn out and exhausted—crying very loudly for something different, but not indicating very clearly where it is going to come from. When we are out on the lake canoeing we don't want to sink the old canoe till we have the new one ready to step into. And if that bomb which he calls for is actually to be dropped into camp we all want to remove our own little traps and personalities first.

On the question of the silence or low murmur of bees in the winter cellar Mr. Alley is a murmurer. See page 7.

Perhaps the most important thing in recent pages is the account of the origin of the golden Carniolans. It rather puts matters before us in such a way that each man can form for himself his own opinion whether they are strictly Carniolans or a cross between Carniolan and Italian. Presumably most brethren will take the former ground who accept Mr. Alley's dictum as given before—

“Half a mile is sufficient to isolate two races of bees in order to maintain pure fertilization. That is our claim” Page 5.

“There was but one colony of Italian bees where drones were allowed to fly, and they a mile and a half away.” Page 6.

Now I presume that most of the fraternity will agree that queens do not usually mate with a drone that *lodged the previous night* as far away as a mile and a half; yet for all that some of us are pretty stubbed in the belief that nothing less than twenty miles is secure distance, unless a body of water or an utterly barren desert intervenes to prevent the daily visiting and roving of drones from hive to hive. That raising a multitude of drones of one strain, and trying to repress another strain, seems to result in a mating of queens just the opposite of that desired, I can testify from experience. Yet opinion is opinion; and we must let our brother have his opinion—and here it is—

“We do stoutly deny that there is any mixture of Italian blood in our golden Carniolan bees, except what came direct from Carniola.”

The fact that there were 3,000 Carniolan drones in the yard, and no Italians to his *knowledge*; and the further fact that *every queen fertilized in the yard* varied from the original type and showed some yellow in the worker progeny, convinced Mr. Alley that the putting on of golden stripes was a natural development, and not the effect of crossing. But probably some of the brethren will take the liberty to think that the matter in evidence is not convincing—except to convince one of the opposite belief.

THE GENERAL ROUND UP

That molded foundation should crumble when cold much more than rolled foundation is just what we ought to expect. Wax cools in rudimentary crystals, and rolling spreads them out into plates—precisely the same thing which takes place when iron is put through the rolling mill. But as bees evidently object to having their wax a-la-sheet-iron we must keep our foundation out of the frost, or some way. See Oliver Foster, *Review*, 43.

High scientific authority has tried to suggest a doubt whether foul brood is ever communicated by honey. Against this skepticism practical men have all along stood firm as a wall. Yet experimenter Taylor does well to give us such knock-down evidence as he does in *Review*, 34. One per cent. of contaminated honey in their feed caused the disease to break out in 29 colonies out of 30.

See also *A. B. J.*, 77, where Dr. Howard, of Fort Worth, Texas, clinches the matter by finding with his microscope live bacilli in foul broody honey, and proceeding to raise colonies of bacilli from them.

Also the facts concerning the cure of foul brood given by friend Taylor on page 38 seem to be remarkable, and quite important in their character; and every one so unfortunate as to have that sort of medical practice on hand ought to remember them—unless perchance some one can improve the alleged facts. Put bees in an uninfected hive, on good foundation (only that and nothing more) and *let them alone*, and they will come out right every time. But if you feed them and fuss with them they will usually have to have a new set of frames and foundation, the first showing more or less diseased cells. How important little things are when a body has a big and difficult contract on hand.

C. B. Replogle, on page 9 of *Gleanings*, gives us a case where a queen lived six years lacking about a month. I knew in my bones that Virgil's seven years for a queen's life would get support sooner or later. Fertilization late in the fall, and no eggs laid till next spring, is claimed as the cause of this extra longevity. The claim is not devoid of plausibility, and is important if true.

I was much interested in the article on apiculture in Chili (*Gleanings*, page 15.) All pure Italians, because only such were carried there, and no bee-moths or foul brood. These advantages together with a California-like honey flow, ought to make the Chilean bee man happy.

On page 16 of *Gleanings* we have from the German valuable precise observations of the flights of queens. American recorded observations seem to be strangely scarce and desultory. The gist of this series of observations is that queens usually fly many times (one of these ten times) with seldom success till the third trip or later. Time of absence ranged from 10 to 35 minutes. One queen flew when 22 days old, and one at two days old. Fertilization on two different trips is claimed for one of them. Different sets of observations are likely to vary widely in some of these items I take it—especially in response to the relative abundance and virile condition of drones.

And the Smith named Jake contributes the fact that although nice honey by frost is cracked

It will stand all the zeros you please intact, if through summer it's up in the garret packed. (Kur-ract.)

The *Canadian* on page 147 gives a new way of disinfecting hives. Brush the interior with kerosene and *burn it over*. This method may prove quite valuable in those cases where boiling is not available. Evidently careless hands could bungie it, and cause a new colony to be infected. The idea is credited to M. M. Baldrige.

In convention assembled the Canadians note that if drone comb is put above an excluder the bees will hold it empty for brood. But this can be cured by allowing a reasonable amount of drone comb below. And dark store comb they say darkens the honey somewhat—in fact any one can see that it darkens clear water. *Canadian*, page 153.

In the following friend Holterman bears on heavy; but I guess it's all right, and no more than is deserved.

"To talk about ripening honey after taking it from the hive is unpractical, visionary; and to take honey unripe, and advocate such a practice, only leads to having it placed upon the market unripe and stopping its consumption." *Canadian*, 154.

"Never kick a hive of bees when you are down; wait until you are up and can run away." The Stinger, *A. B. J.*, 57.

J. H. Andre, of Lockwood, N. Y., (*A. B. J.*, 59) got a bee out of his ear by turning the smoker on full blast. Good general.

Jennie Atchley replies to those individuals who never saw a queen that was worth anything after a trip through the mails, that one of her very best came by mail from Italy, and served three years thereafter. *A. B. J.*, 44.

And here's a new departure in wintering. Two Iowa folks, Mr. Merritt and Frank Coverdale, report five colonies between them nicely wintered screened in up stairs near hot stove pipes. Let's try 'em in the oven. *A. B. J.*, 89.

"Last year perfectly preserved honey from the fifteenth century was found in the buried cellar of a city hall in Dresden." *A. B. J.*, 81.

Pretty good proof that honey can be kept; but still only a few of us will put down our unsold crop for the folks of the twenty-third century.

"The best wintered lot of bees in these parts was in 43 hives, each of which had an inch auger hole in the end, half way between the entrance and the upper edge." Cornell in *A. B. J.*, 150.

This was a way of fixing things largely in vogue years ago, but is on the decline of late apparently. But perhaps the bees have suffered for lack of these same holes notwithstanding. Most of us never "catch on"

that the so-called fly-hole is really a wintering device—to let moisture out that would otherwise condense inside.

The cold weather found Mrs. Atchley's new Eden, and went for her with ice an inch thick—and pinched the tropical trees thereabout. And thus we sometimes “change the skies over us, but not the spirit (of shiver-de-freeze) which is within us.” *A. B. J.* 174.

“Get the best.” It seems that the best medium to carry “pizen” to the gentle skunk is not a hen's egg but a hunk of drone brood. He cannot resist its self-evident toothsome-ness, but “tumbles” to it at once. Credited to Dr. Gallup.

It seems the simple alcohol test for glucose miscarried because we'ven didn't know what to expect. The alcohol and honey do not stay mixed. And (quite important) the alcohol may get a little milky when the honey is perfectly pure. It's the honey at the bottom that's to be looked at. If that is clear all right, if milky there is glucose in it. Why didn't you tell a body before? We chaps were like Absalom's guests: “We went in our simplicity, we knew not anything.” *Gleanings*, 63.

The attempt to prove that there is no such thing as poisonous honey is going to fail. Very greatly exaggerated no doubt such reports usually are, but they are not a mere figment of the brain. J. P. H. Brown, who is excellent authority, and right on the ground testifies in *Gleanings*, page 84, to the poisonous qualities of jasmine honey. It is very deadly to newly emerged bees, killing piles of them; and people sometimes come near losing their lives by eating it. Old bees do not die of it; and black bees mostly know too much to gather it.

“I could never make a success of having comb built in upper stories.”

So says Doolittle in *Gleanings*, 96. The sentence rather surprised me—and yet, come to think of it, I don't know as I have had much success at it either. My up stairs built combs mostly get cut up into squares to be eaten or sold as comb honey, instead of being extracted and the comb used for next time. But I am willing to have lots of drone comb in the supers; and if half of my extra combs were drone size I should hardly call it failure.

There, now, I've gone and used my space all up, and that big talk about the bees-fertilizing-fruit discussion will have to lie over.

RICHARDS, Lucas Co., Ohio, Feb. 23, '94.



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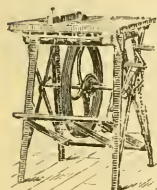
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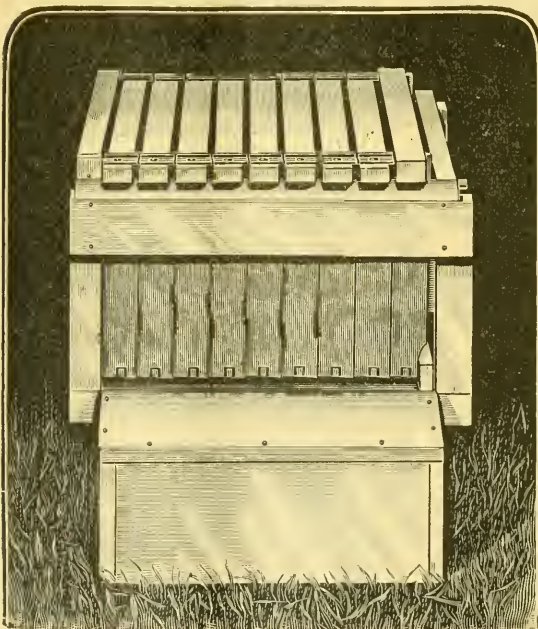
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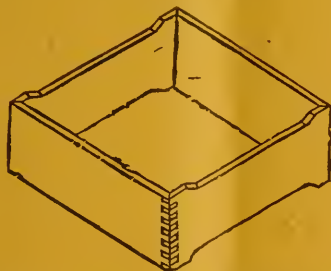
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The following rules for grading honey were adopted by the North American Bee - Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

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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.

CHICAGO, Ill.—The Chicago market has plenty of honey, and 14c seems to be the outside price obtainable. Any thing that will not grade strictly No. 1 must be sold at 12 to 13. Large quantities have been sold, but the supply is at present in excess of the demand. Extracted finds ready sale at 6 to 6½ for Northern honey; Southern, in barrels, 5. Beeswax, 22 to 24.

Dec. 19. S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

CHICAGO, Ill.—Comb honey is selling in small lots, when choice, at 14 to 15 cts; off grades are hard to dispose of. Extracted is of slow sale at 5 and 6 cts. Beeswax is in good demand at 25 cts for pure goods.

R. A. BURNETT & CO.,
Mar. 7. 161 So. Water St., Chicago, Ill.

BUFFALO, N. Y.—There is a liberal stock of honey on hand and trade is dull, but we expect to clean out all this month and next. We quote as follows: Fancy white, 13 to 14; No. 1 white, 11 to 12; fancy dark, 8 to 9; No. 1 dark, 7 to 7½; white extracted, 6; dark, 5; beeswax, 25 to 30.

BATTFERSON & CO.,
Mar. 7. 167 & 169 Scott St., Buffalo, N. Y.

KANSAS CITY, Mo.—The demand for all kinds of honey is very light. We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 13 to 14; fancy dark, 10 to 12; No. 1 dark, 10; white extracted, 7 to 7½; amber extracted, 6; dark extracted, 5; beeswax, 20 to 22.

CLEMONS-MASON CO.,
Mar. 7. 521 Walnut St. Kansas City Mo.

MINNEAPOLIS, Minn.—The market is very weak at present, but, evidently will be better later on. We quote as follows: Fancy white, 16 to 17; No. 1 white, 15; fancy amber, 13½ to 14; No. 1 amber, 12; fancy dark, 10; white extracted, 6½ to 7; amber extracted, 6; dark extracted, 5½.

J. A. SHEA & CO.,
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Jan. 2.

CHICAGO Ill.—The honey market is very dull at last month's quotations; but we have moved considerable stock at 13 cts and believe that 13 to 14 will rule for the balance of the season. There is plenty of inquiry for beeswax with none to offer. We quote as follows: Fancy white, 13 to 14; No. 1 white, 13; fancy amber, 12; white extracted, 5 to 6; beeswax, 25.

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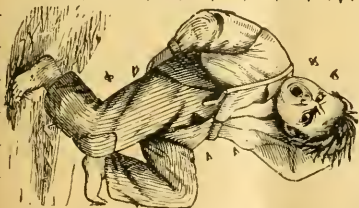
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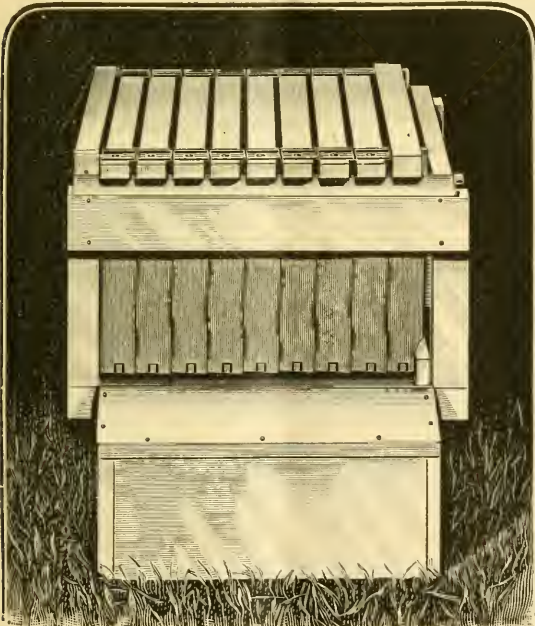
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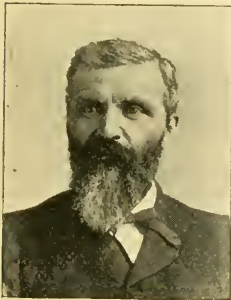
VOL. VII. FLINT, MICHIGAN, APRIL 10, 1894. NO. 4.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

OUTLINE OF WORK FOR THE COMING YEAR.

"Perhaps he hath great projects in his mind,
Or revels in the joys of calculation."—BYRON.



SINCE it has been definitely settled that the apicultural work in connection with the Michigan Experiment Station is to be continued for another year, it will be profitable to begin the consideration of plans

to be used in conducting the work. So far as the work already completed is concerned an effort has been made to secure its more general publication by the early issue of a bulletin which it is expected will be ready for distribution by the time this meets the eye of the reader, and it can be obtained by simply asking for it upon a postal card directed to the Secretary of the State Board of Agriculture, Agricultural College, Michigan.

There are some items of uncompleted work relating principally to the wintering problem which will appear as soon as the re-

sults can be definitely known. Owing to a long continued illness during late fall and the beginning of winter they are neither so extended nor so important as I had intended, but there will be an earnest effort to make effectual preparation for useful experiments in this line next winter.

I have been making use of a hygrometer to determine the degree of moisture in my cellar and its readings have been so much of a conundrum that I have sometimes been in doubt as to whether I have as yet succeeded in securing its perfect operation, but I hope by further study to make it worthy of confidence.

What shall the work be for the coming season? I shall here give something of an outline of what I propose, which is, of course, subject to change by authority of the State Board of Agriculture, by the advice of the Committee of the State Bee-Keepers' Association, or on account of reasons that may come to light through communications from those interested in discovering improved methods in apiculture or otherwise.

The first thing contemplated in order of time is an experiment to test the advantage of spring packing. As soon as the bees are out of the cellar and have quieted down so that their strength and condition can be intelligently estimated, two sets of colonies will be selected with all possible care so that when all points as to their condition are considered it cannot be safely said that one set is better than the other, then both sets are to be treated alike except that one is to be

thoroughly packed and to remain so until settled summer weather, and the other left without any protection but the single-wall hive. If there prove to be marked advantages in packing it will be shown, at the time when the packing is removed, by the greater strength of the colonies both in bees and brood: but the crucial test will be in the cash value of the increase and surplus of all of which an accurate account is to be kept.

Then the matter of feeding during the spring for the purpose of stimulating the production of brood is one upon which there is not a full agreement on the part of the most experienced bee-keepers, and is of sufficient importance to call for as thorough a test as it is possible to make. To do this the same care is to be taken in the selection of two sets of colonies as in the preceding matter, and, as in that, a careful record of all the results will furnish a criterion that will perhaps enable us to say whether such feeding has any decided advantage.

In connection with these two proposed experiments, if the season is such as to cause considerable swarming, an effort will be made to obtain some light upon the mooted question of the advantage or disadvantage of swarming, *i. e.*, whether a colony which casts a swarm will produce results of greater or less value than it would have done had it passed the season without contracting the swarming fever. I say in connection with the other experiments, because thus the labor of selecting colonies of equal strength can be made to serve both purposes.

Dr. Miller writes me suggesting that I make an experiment to test the comparative advantage of ten frame hives and eight frame hives. Would a two story Heddon hive take the place of a ten frame hive satisfactorily? They are of the same capacity. Such an experiment seems to me a most thankless task for if there is anything I *know* about the production of comb honey, it is that an eight frame hive *in this latitude* is better for that purpose than a ten frame hive, for, as a rule, in the former there will be produced as much, or a little more, profitable brood, less unprofitable brood and eight or ten pounds more section honey, which, in the latter, would go into the brood chamber, while twenty-five per cent. more bees will lounge or labor in the brood chamber of the latter instead of attending to the more profitable business in the supers. This

is not all, but it seems to me to be enough. To me, the results of an experiment conducted on any plan which has yet suggested itself to me would be less satisfactory than is what I already know by direct action of my senses. However, if the Doctor can suggest some feasible plan for making an experiment at not too great expense, the results of which, if rightly conducted, he will guarantee to produce in his mind a settled conviction to which he agrees always to cling, I would gladly agree to make it.

Another point which I think deserves attention is the question so often discussed as to whether a made swarm does as effective work as a natural one. With proper care this is a matter of which I think a very satisfactory solution may be obtained. The made swarms should be taken from colonies which have not contracted the swarming fever and which have queens equal in qualities, as near as may be, with those which the natural swarms possess. A careful record should be kept of the weight of such swarm of either kind as well as of the time of living and they should be put into hives alike in all material respects at the same time or if not all at the same time at least in pairs, one of each sort so that the aggregate time of honey gathering of each set shall be just equal. The results should then be taken as a pretty accurate indication of the advantage or disadvantage of either course.

Of course, all the experiments of last season should be repeated with such changes of method as experience may intimate will be of advantage.

The non-swarming attachment with any additional improvements can be tested from the very beginning of the honey season before the inception of any desire to swarm.

The hiver also should be given the fullest chance possible consistent with fairness to redeem itself, but in the case of each of these devices the best effort possible should be made to compare the actual value of results with that of the results of the same number of other colonies of equal strength.

In the case of the comparison of the value of starters, foundation and comb in the brood chamber, the same general course should be followed as last year, but more should be made of the results in the brood chamber in the matter of brood and comb building. Perhaps also something more satisfactory may be obtained by a course some-

thing like this: Take three swarms and put them together in a large basket caging the queens, and place the basket in a darkened cellar, then after the swarms have become thoroughly united divide them again into three equal parts, giving each a queen, and hive each one in one of a set of the three differently prepared hives. Though the three swarms before being united may have been of different values as workers the thorough amalgamation and the equal division would presumably make them of just the same value.

The subject of foul brood will continue to receive such attention as circumstances will permit. An experiment which I had expected to make last year, but failed to carry out from the circumstances of the season, will be attempted during the coming summer. I refer to the testing of wax from foul broody combs as to its ability to convey the disease to a colony hived upon foundation made from it, without its ever having been brought to a boiling temperature. The wax was rendered in a solar extractor at a temperature never exceeding 180° F., and it will be sheeted and made into foundation without permitting its temperature at any time to go above that point. This foundation will then be used in frames and swarms hived upon it and results carefully noted.

The testing of different sorts of section foundation will again be made a prominent feature of the work this year and on a more extended scale. While in some parts of the work no important change of method is necessary, in others an entire change must be made. For instance, in testing foundations for the purpose of determining what sort the bees prefer as shown by their drawing it out quicker and farther, only two kinds, I think, should be used together alternately instead of a large number as last year. Then the sections used for this purpose should be much narrower so that the bees will not be tempted to leave one sample on account of the unusual depth which its cells have reached to bring up another having shallow cells. Comparisons also will be attempted of foundations made from the same lot of sheeted wax but upon different machines as well as of different weights of the same make.

These are the chief features proposed for the summer's work so far as my plans are yet matured and my hope is that this state-

ment of my plans may lead bee-keepers to make suggestions that will enable me to further improve and extend my operations.

LAPEER, Mich.

March 20, 1894.



Suggestions for Foundation Experiments.— Advantages of Single-tier Wide Frames.

E. A. DAGGITT.



THE topic for discussion in the March issue of the REVIEW is an important one, but I fear it will be a difficult matter to settle to the satisfaction of all, owing to certain difficulties in the way of a definite solution

of the question, still I believe much good will result from a thorough discussion and investigation of the subject.

Before reading the excellent article on this subject by Mr. Oliver Foster in the February number of the REVIEW—(an article that deserves to be carefully read and studied by every bee-keeper)—I was going to ask if foundation could be made on the Given press with other than broad side walls, and if so, if it could be made on the same machine with a very thin and broad septum and narrow side walls; but Mr. Foster's article makes it unnecessary for me to do so.

It occurs to me that round dies would make just as good foundation as flat ones, provided the projections and depressions on them were just the same as on flat ones except the form it is necessary to give them to adapt them to circular surfaces. Indeed, I should think that if one had the advantage of the other, it would be the round ones, both in producing softer walls and thinner septum.

The results of the experiments at the Michigan Experimental Station on the use of foundation in sections were important and I hope these experiments will be continued and will lead to important results, if not to a solution of the problem.

I wish the foundations used had all been made of the same wax. This I think is very important and I hope the matter will not be

overlooked when other experiments are made. I would suggest that experiments be made in manipulating the wax before it is made into foundation. Every one who has made grafting wax is aware how much better it becomes by manipulating it as soon as it gets cool enough to handle ; and the more it is worked the lighter in color and better it seems to become. The difference between comb and melted wax is, I presume, in the mechanical arrangement of the molecules, and it may be that this difference is largely due to the manipulating of the wax scales by the bees. It may be possible to make considerable improvement in foundation by this means, and to very closely imitate natural comb.

I am interested to know what the results of such an experiment as this would be : Suppose four sets of sections are taken, the first set to be filled with natural comb with the cell walls removed or nearly so, leaving the septum or back of the combs. The second set to be filled with foundation having the thinnest and hardest possible septum with only incipient side walls. The third set to be filled with Given foundation, and the fourth with plain sheets of wax of about the same weight per foot as the Given foundation, enough sections to be used to fill a super and no two of a kind to be put together. They to be put on a hive containing a strong colony of bees in normal condition. As bees do not like any foreign substance in their hives, my opinion is that they will attack the plain sheets of wax first, and commence to remove them. Owing to the Given foundation being more *unnatural* than that in the second set of sections, I believe the bees will attack this next. Finding in it the imprint of cells (its only redeeming feature) they will make it into comb, instead of treating it as they did the wax sheets. I think they will next attack the other foundation, and, last of all, the natural comb. This experiment may at first appear of a trivial nature, but a little thought will make it appear otherwise. It may show us that bees work one kind of foundation before another chiefly because of its more unnatural character—an attempt to remedy the greater evil first. The softness of the foundation may have something to do too with their preference ; but probably not as much as we think, for any foundation must be very soft and plastic in a strong colony of bees during the honey season.

It seems to me that experiments in the use of foundation in sections should be carried on during a series of years, for what may take place in one season may not in another owing to different conditions being present.

Because bees prefer one kind of foundation to another, is not of itself conclusive proof that the kind preferred is the best to use, for it is possible that they may produce just as much honey with the other kind. There must be something more than a mere preference by the bees to commend it. Neither is the fact that thinner septa were made from the heavier Given foundation than from the lighter grade, as shown by the experiments at the Michigan Experimental Station, conclusive proof that the former is preferable to the latter, for it would give more melted wax to the comb, which is undesirable. Now, if I were compelled to eat melted butter mixed with that in its natural state, I should insist on having as little as possible of the former mixed with it. When I eat comb honey, I want as little melted wax in the comb as possible. I am of the decided opinion that we should have our comb honey as natural as possible in both honey and comb. If we try to chew empty comb made from foundation, we shall find that it becomes a tough mass, and is not easily broken into pieces. If we treat natural comb in the same way we will find it of a more brittle nature. For this reason I think the less wax there is in foundation for sections, other things being equal, the better. Unless one has a fancy trade, small starters answer sufficiently well for all practical purposes.

In the treatment of this topic, we must bear in mind that bees will sometimes build comb on foundation and alter the foundation but little if at all. A neighbor found this to be the case when examining a brood comb built, he thinks, on medium brood foundation and which was made on a roller machine. He says that by pressing against the sides of the cells they would separate in a mass from the foundation leaving it about the same as when put into the frame. It is possible that some of the trouble from "fish bone" in comb honey comes from this source.

I have never had a complaint from any customer, about "fish bone" in my comb honey, but one season one asked me why the honey I had sold her contained so much wax. I could give no reason for it, unless the bees sometimes used too much wax in

building the comb, for the foundation used in the sections was either thin or extra thin, and I am almost sure that only small starters were used.

Before closing, I wish to say something about putting sections on the hives—a matter closely related to the foundation question. I much prefer single depth wide frames for the purpose, to any other arrangement. The combs in them are built out quite evenly from end to end, and from the center of the super outward, leaving the fewest unfinished sections. The sections are kept cleaner, and separators can be used in them to better advantage than in any other arrangement. They possess another important advantage that I have never seen noted, and which will appear further on.

If a swarm of bees is given single depth closed end frames filled with foundation, and without a bee space above the frames, the combs will be broadly built to the top bars except at their ends. At the ends of the frames, passage ways will be left here and there through the combs, and there is almost sure to be one of these at each upper corner. These bee passages are a necessity under the circumstances. But if a bee space is left over the frames the bee passages will be more limited in extent, and the upper corners of the frames are apt to be filled with comb, for the necessity for passage ways at these places no longer exist. If hanging frames with bee spaces over, as well as under, and at the ends of the frames, had been given the swarm, the frames would have been filled with comb except at their bottom, and then the bees would try to fill up the bee space above the frames with comb and would in time build brace combs in the bee spaces at the ends of the frames at their upper parts. I have found that bees bring their combs well down to the bottom bars, except towards the entrance, if there is a bee space of not less than $\frac{3}{4}$ of an inch under them.

Now, as each section is really a closed end frame, and as such frames are not as well filled with comb as hanging frames are, it seems to me that we should, as much as possible, apply the principles of the latter to our surplus arrangements for securing comb honey.

To do this, wide frames are a necessity. By means of their top and bottom bars, we get deeper comb ranges; and this in connection with a bee space above and below the frames will give about all the advantages

of deep bee spaces in encouraging the bees to thoroughly build their combs to the top and bottom bars of the sections. By having a bee space at each end of the uprights of the wide frames, and a continuous passage way on each side of the separators, and through the uprights, and into the bee space at each end of the frames: the bees will be encouraged to build their combs out evenly from end to end of the frames, and to properly build them to the uprights of the sections. If these passage ways were as deep as the sections it would be difficult to crate the sections when filled with comb, and support the separators. Insets in the sections and the bars of the frames would probably answer the purpose. I am confident that we may yet be able to get as well filled sections by using only starters, as we now do with full sheets of foundation. I have noticed that bees finish up sections more evenly from end to end of wide frames when there is a bee space between the ends of the frames and the super case, than when there is not. Who knows what improvements may be made in the direction of better comb honey supers?

WHITE HOUSE STATION, N. J., Mar. 7, '94.



The Same Colony is Not "Best" Every Year;
Grading Honey Objectionable; Clarifying
Wax; Dipping Boards; Adulteration.

B. TAYLOR.

NOR man nor bee is worth a moment's viewing
Except they each CONTINUE in well doing.



EDITOR REVIEW,
In commenting on an extract from my article in *Gleanings* regarding the policy of replacing queens that the apiarist considers inferior, you express a desire to know upon what grounds I condemned the queen in question. I

condemned her because the colony failed to do average work during the season. The colony containing the queen marked for execution made little or no surplus and did not swarm. It never seemed to have a large

quantity of brood but was heavy with winter stores in the fall and I held the queen responsible for the failure; and, as the ignorant generally do in treating questions they fail to understand, I decided upon extreme measures.

I have oftentimes noticed that colonies that did extra good work failed to come to time next season. Several years ago a certain colony in my yard made 265 pounds of comb honey. It was in two sections of the small hive, had a one-year-old queen, and was just boiling over with bees during the entire season, yet did not swarm, its entire energy being employed in storing surplus honey.

If I could have had the advantage I now have of sections of finished combs for storing surplus, I could have easily secured 500 pounds from that colony. In the fall I wrote upon the hive in big plain letters: "The best colony I ever owned; 265 pounds of honey. Breed from his."

After removing all the surplus, the colony was light in stores but I supplied them and awaited the coming season, when this colony proved to be one of the *poorest* in the yard, and I did not get my extra strain of non-swarming honey gatherers, although I heard of such through the advertisements of queen breeders.

I have for many years bred my queens from the colonies that built up and swarmed early, regardless of race or color. This is nature's law of selection, "the survival of the fittest." It is to the horse that *gets there* that the turfman looks for material to *breed* from.

I shall stop trying to improve on nature's law, and try to find what the command really is and then obey without question.

I am beginning to be suspicious that swarms that have to be fed and doctored in the fall are not as safe stock for good work the next year as those swarms that are heavy in stores and strong in bees without tinkering.

My general plan in the past was to get one natural swarm from each colony, as near the opening of the white clover as possible, (*too* early swarms are no good) and work the new swarm for all the surplus I could get without regard to their future value for wintering; the old colony being requeened and built up strong and heavy for next year's stock, and this kind of colonies never disappointed me. Is there a better way all things considered?

At this writing, March 2nd, the bees in the house apiary are having a splendid, joyful

flight, being the second since cold weather set in. But best of all, these bees will be ensconced in their warm beds of sawdust during all the changeable weather of spring, and will have extra opportunity to build up strong in time for the white honey harvest. The house apiary has at last come to stay.

In trying to discuss the foundation question I confess I scarcely know what to say. I feel a little as I did when the question of grading honey was up. You will remember, Mr. Editor, that at the National Convention at Chicago, in 1890, I opposed having any official standard for comb honey, and that I continued my opposition in the discussions that followed in the bee journals, believing that the cause of improved comb honey would be better advanced by *liberty of free and unrestrained competition* than by any authoritative rules. I wish every person to be free to win the benefit that his superior talent and industry might give. The beauty of true religion is the high ideals it offers blind but unfolding humanity to strive for, and I can think of no way of raising the highest ideals of perfection in producing honey or any other manufactured article than that of allowing every competitor in the race the chance to win the highest distinction of *merit*, and then giving each contestant the reward that naturally belongs to such worthy effort; and in the end all will be benefitted, as the coarse and slothful producer will be compelled, in the struggle for existence, to improve his methods and move toward the higher perfection. Well, after all the laborious fussing of several National conventions, all can now see that the grading question is not settled for any practical purpose, and that, as friend Muth has well said, "it will never be of the least value in business transactions."

As to the best foundation or the way to make it, I can give but little light. In practice I have, for years, been a free unstinted user of it. I have used all the famous makes, including Van Dusen's flat-bottom, and I have used much of the celebrated B. Taylor make, of many grades of fineness, and have sold much comb honey made from all these many different makes and different weights of foundation, and now for the result.

I was always strictly careful in raising and crating this honey to do every thing with scrupulous care, and I have for twenty years, and still have, a grade of comb honey that

stands No. 1 where ever offered for sale, and I have never heard one word of complaint about the kind of foundation used, nor did I myself ever detect any difference that would justify a preference for any particular brand, except, I believe, that the B. Taylor brand has this advantage, it is made by needy labor on rainy days from twenty cent wax into fifty cent foundation. See?

No, friend H., you will easily see that, as I have never been harmed by any of the grades of foundation which I have used, I cannot realize the importance of the great amount of attention this question has received. A burnt child dreads the fire, but as I have never had my fingers scorched by any grade or make of foundation you will excuse me for my indifference.

Several years ago when I first began to make foundation I imagined that every foundation maker refined the wax extremely fine, so I prepared to do likewise. Several tall, slim, tin cans, with slightly sloping sides, were made and filled with melted wax and set near the warm stove so it would cool slowly and allow the impurities to settle. That was the way the "bosses" in the books told me to do it. Well, it did settle, but not clear enough so that I could see my face reflected in a cake of the wax, and I feared it would not do, and I began to look about for improvement. I made a tight box five or six feet long, two feet wide, and a little deeper than my cans, with a tight lid to cover all. Then in the center of one side, at the bottom, a square hole was cut, twelve inches in size, and a tight door hinged in the place. Several of the tall cans were then filled with hot wax, and set in the box near the ends so as to leave a vacant place in the middle of the box near the door. In this space a single-burner, hand, oil stove was set and lighted, and it made heat enough to keep the wax liquid any length of time. The wick was turned up just enough to make the proper heat, and the lamp refilled when empty, and the thing kept brooding for several days. Have I said I could see my face reflected in this wax when cold? No, but I *do* say that the wax was very soft and clear. These tall cakes of wax were cut in two in the middle, the top used for surplus and the bottom for brood foundation. And right here I may say that nearly every thing I learned by visiting a celebrated foundation manufactory several years ago, was that the wax that I was using for brood foundation was as good

as the average used there for surplus. Now I am not condemning said manufacturers, for perhaps my wax was better than necessary. However, I never noticed any bad results from it and it looked nice.

Hereafter I shall have my sections for white comb honey filled with drawn combs, as I can double my white honey crop thereby. I did so last year, and I can get the testimony of an old dealer that it was the finest honey he ever saw. But I will use just as much foundation as before, as I want full sheets to have my surplus combs built upon.

[Tell us how you get the foundation drawn out before the harvest?—Ed.]

When I first began foundation making I used Bro. Root's outfit in which the long dipping board was lowered into a deep narrow can of wax. The board was handled from one end only, but I was never pleased with this way of dipping a long board into hot wax. The first end of the board has to be a much longer time in the wax than that part at the top, the result is that it is hard to get even sheets. I now dip the boards in sidewise from both sides in a shallow trough of wax kept at the right temperature by an oil stove in nearly the same way as I purify the wax. In this way the wax need not be quite so hot, and the sheets are even, soft and nice.

I see by *Gleanings* of February 15th, that foundation makers are charged with adulterating with paraffine. Truly this adulterating business is getting to be a big elephant. Just when we thought we had the honey adulterators by the horns, the Bee-Keepers' Union seems likely to have to interfere to save innocent men from persecution under the laws we have had enacted to punish evil doers. Well, while the big "Boss Tweeds" who are attending to Uncle Sam's business at Washington are engaged in perpetrating the greatest frauds ever recorded in history, by running the nation further into debt in this time of profound peace, for the purpose of compelling our patriotic but easily gulled people to pay more usury to the money kings, it does seem like "straining at gnats and swallowing camels" to fine or imprison a poor devil because some one "*having authority*" has decided that he has mixed a little cane sugar with honey and then sold it to old and young children to give them a foretaste of future bliss by eating it on warm flapjacks. I oftentimes wonder if our boasted

civilization is not a great sham; honest, industrious citizens starving in the midst of wasting abundance; adulteration and fraud in nearly every thing we buy or use; and the statutes running over with laws forbidding all these things. Well, I guess that when adulteration gets so common and so dangerous that we dare buy nothing in the markets to eat, for fear of being poisoned to death at once, that we will be compelled to turn a new leaf and construct a "new heaven" and a new earth (the co-operative commonwealth) wherein *merit and well-doing* will be the only recognized road to distinction and success.

FORESTVILLE, MICH. March 2, 1894.



Needed Improvements in Bee-Escapes— Can they be Secured?

R. C. AIKIN.



NO doubt many are watching for a report from me as to escapes. The Porters sent me escapes having two exits, and one with a dozen or more. I at once pronounced these no improvement over their regular form. I also received from Mr. Stead, of Canada, a sample of his new escape. The Stead escape is formed of a number of little gates hinged above, and so arranged as to be placed in the edge of the escape board, thus allowing the bees to pass to the outside of the hive and down the front to the entrance. Of course it can be made of as much capacity as desired by putting in more gates. The directions are to put it on with the gates fastened so the bees cannot get out till they are very anxious, then let them out. The gates swing outward, so they cannot return.

The season and circumstances have been such that I could not make any very extensive experiments, nor anything decisive.

When I wrote upon the subject of escapes some months ago (see April last No. of the REVIEW, page 92) it seems that the Porters and others gathered the idea that I thought

larger outlets was all that was needed. I did say that the Porter could not do the work fast enough, and say so yet. I also tried to make it plain that something else other than enlarged outlets was needed to make a successful escape.

I have removed thousands of supers placing them on end on the ground, leaning them against the hive, placing them on the hive top or in stacks in the open air while the bees left them. When so treated the bees usually leave them in from a half hour to an hour and a half of time. This of course can only be done when robbers do not bother, or when not too cool. If the bees will leave when so treated, cannot an escape be devised that will work equally rapid? That some one might develop the necessary apparatus was why I wrote my former articles on the subject.

All observing apiarists know that when a bee wants to get out of a super, *she wants to get out*, and will go out in a hurry; but if she cannot get out then her hurry gets over with.

Now if the Stead escape be well constructed, I think it will do the work fairly well at times. However it will not work well in cool weather where the Porter would work. The Stead cuts the communication between the super bees and those in the hive, while the Porter does not. Just how they communicate I do not know; but I think the complete separation is one of the points that *must not* be over looked in the successful escape.

The Porter I think is the best all things considered: but will not work fast enough because it is a *physical impossibility*. Yet if we enlarge the outlet we make communication more direct, and so they feel at home and do not try to get out till they would naturally want to fly or go to the brood nest.

I have watched bees passing out through a small exit, well-mell, and find that less than 100 pass per minute. My observation leads me to believe that when bees know the road, and follow each other through in single file, and at a natural pace, they will not exceed 25 per minute. That means 1,500 per hour, thus requiring about three hours to pass a pound of bees at a fairly regular and intelligent movement.

In putting comb honey supers on escapes, an intelligent use of the smoker will leave but few bees in the super to start with; but a full depth extracting super is not so. The

extracting super is just the one we want emptied quickest, but is the hardest one to free. Think of it. A two story hive containing six or seven pounds of bees, and probably three pounds of them in the extracting chamber to pass through the escape. At the rate of 25 per minute it will take nine hours to get them out, allowing 4,500 to the pound. Thus the Porter or any escape having to pass them out single file, must necessarily be a long or short time in proportion as there are more or less bees to pass.

In making these statements I do not forget that other conditions influence the bees in going out, such as the weather, the honey flow, the age of the bees and time of day. I think the majority of the bees, young and old, will want to fly once during the day—old bees to the field and the young to play; so most escapes will do the work in 24 hours.

I would like to ask R. L. Taylor, B. Taylor, G. M. Doolittle, E. R. Root and W. Z. Hutchinson to experiment as to how many bees will pass through an exit requiring them to go single file, in a given time; doing so as soon as the weather will permit, and report the results to me or in the REVIEW. This is not to discredit the Porter or any other escape, but to suggest improvements. I would also suggest that they use the Porter escape in the test, arranging details to suit their own convenience.

LOVELAND, Col.

Jan. 20, 1894.



Molded Foundation.—Advantages of Carbolized Cloths and Bee Escapes.

W. WOODLEY.

NOTICE IN REVIEW for February, that Mr. O. Foster's article on foundation gives Mr. Given's method of making foundation on the Given press; as the method differs somewhat from the manner Messrs. Abbotts of Southall, England, made some foundation with the plaster casts, early in the eighties, at a London bee and honey show, perhaps it will be acceptable to your readers if I give the *modus operandi*.

The wax was melted in a tank within another tank containing water to prevent burning the wax, the tank containing the wax was deep enough and contained enough

wax in which to dip the plaster casts. Those casts were made in a stout wood frame (and wood-back I believe) with hinges that allowed the two casts to close together like a book. The operator had a tank of clear cold water and a table. The machine was dipped into the water then out of the water and into the melted wax and the two sides of the machine brought up together tight by the aid of a handle on each part of the machine, then out of the hot wax and the whole plunged into the cold water. The book (machine) was opened and the sheet of foundation taken off the casts, the sheet trimmed to size, and the shreds, also the thin film of wax that easily left the outsides of the machine when taken from the wax tank and plunged into the cold water tank, were returned to the melting tank. This foundation received *no pressure* after the wax was cold, was of uniform thickness and good quality, but I do not think any one uses the plaster cast machines *now*, though at the Royal Show at Chester, last June, a machine of similar construction, but all metal, was exhibited and tried on the show ground, but the conditions of trial were against the machine and it was not voted a great success; but the Abbott machine of ten or twelve years ago was successful in an eminent degree in making stock foundation, but bee-keepers in England had not at that time "caught on" in using full sheets of foundation for section honey, hence I cannot say if the foundation as made in the plaster cast machine was worked up well by the bees.

Bee escapes (we say "super clearers,") are made the same size as our supering crates which are fairly uniform in size throughout England and take twenty-one sections with dividers. My method of putting them on differs somewhat from Mr. Dayton's, and I consider my way superior to his from several points of view. 1st, I kill no bees; 2nd, have both hands at liberty; 3rd, it is a quicker way; 4th, have no robber bees around; 5th, don't disturb the colony; 6th, no smoke drives the bees to the sections which may possibly get badly perforated. How do I do it? Why, sir, thusly: I take one yard of calico, tear it into two equal parts, dip these two pieces of calico into a dish containing diluted carbohc acid, say one ounce of Calvert's No. 5 carbohc acid to which add a little glycerine, stir together, then mix with a pint or more of water. This mixture can be kept in a bottle ready for use.

Squeeze or wring the cloths as dry as possible, then take off the cover of the hive, place the clearer or escape board fitted with a "Porter escape" on the cover of the hive, lift the crate of sections off the hive and allow one of the cloths to drop gently in its place over the top of frames and the super is placed on the clearer before a bee has escaped. The other cloth comes handy when taking two crates from one hive, or in putting an extra crate on under the clearer. The bees pass into the hive in a few hours, or by the morning. At my out-apiary I put them on in the evening and remove the honey in the morning ready to be put into the trap to take home. I consider the super clearer one of the most useful appliances that has been added to the bee-keepers' outfit for many years. I well remember the old way of removing sections, brushing and shaking or blowing the bees off or out or through the pop holes at the corners of the sections, now the bees clear out themselves while other work can be attended to. Once it was a general disturbance, now it is done quietly; then the stings were many, now they are a rarity; then one's eyes were oft-times full of or smarting with smoke, now by the use of the cloths (carbolized) there is no danger of stained sections, or robber bees following around ready to pounce in as soon as the quilt is removed from the top of the section crate, making the bees of the hive vicious and spiteful; then it meant a general upset to the hives from which the honey was removed and a great loss of time to the bees, now, with plenty of supering crates on hand, the honey can be removed and the bees continue right along with their work without a break, thus increasing the out-put.

Yet another point in favor of the super clearer, *i. e.*, when the bees have built brace combs between the bottoms of sections and tops of frames, the bees, as they pass from the sections to the escape, will sip up the bleeding honey and carry it down into the next super, or into the brood combs as the case may be, and when the super is removed there is only a little dry wax to remove.

A closing word for the carbolized cloths: when taking the clearers off, the bees are instantly driven down out of the way as soon as the cloth falls on the top of the super or frames, on removing the clearer, and the quilts can be replaced expeditiously without killing a bee.

NEWBURY, England.

March 10, '94.

Judging the Future From the Past.—Given Foundation.

"RAMBLER."

Please the children's and their mamma's eyes; No man liveth to himself, or dies.



THE Dec. number of the REVIEW was very much delayed and did not arrive till well along into January. It struck me that I would like to have something to

say in answer to that question of yours, "How to make the REVIEW a better paper."

It is a very easy thing to take up the REVIEW or any other paper at the end of the year and take a retrospective view of it and observe the many points of improvement. If there is improvement the points are so plain that they indicate the line of improvement for the future. Half-tone illustrations have been creeping into the REVIEW, and an assurance that they are to be continued is an evidence of striking improvement that is sure to be popular.

The picture conveys to the gaze a meaning that cannot be gained from the printed page. Then the picture livens up the journal much as pictures on the wall make the home more pleasant and interesting.

We sort of dream over valuable facts sometimes that are not illustrated, but throw in now and then an illustration and the fact is fastened in the mind.

This is certainly an age of pictures and there is no use for any one to deny the value of good illustrations, and judging from Bro. Heddon's remark on page 9, the REVIEW to accord with his view would be as bare of adornment as a thorn bush in mid-winter; just think how forbidding that would be.

The question in relation to the special topic plan, is a little more obscure, but again taking a retrospective view we find that the REVIEW has not of late held so close to the special topic feature, and it is pronounced a better paper than ever. It is very evident that a class journal, with a large circulation, can stick closer to its text than such a journal with a small circulation, and the question comes in here, shall we make

the journal for the one bee man of the family or shall we throw in something that will make it interesting to the whole family? It seems to me that there is a little rock of danger ahead of the class journal with a limited circulation, both editor and reader are likely to get into the habit of posing as, "We 400." I hope, however, that such a condition of things will never encrust the bright REVIEW.

Another point in the REVIEW is the almost entire absence of lady writers. In looking over the index for the past year, we find just one article and that by Mrs. Atchley. It is very easy to divine the cause. The rear guard, Hasty, is such an inveterate old bach, and makes such onslaughts upon kitchen utensils, calling mops "dagons," etc., that the sight of him is equivalent to "No woman need apply." I admire Mrs. Atchley's courage, and wishing always to see fair play, hope in the future to see the name of more ladies in the REVIEW.

There is another point, don't praise the camera too much, but let it speak for itself. It seems to be the fashion for great newspapers to keep their editors in the background, but our bee journals have become the mediums whereby to become famous, and when we recently opened the first number of a new bee paper and found the editorial face beaming on ours from two half tones, we mentally remarked, "great I and little U." Don't believe it is necessary to have so much editor.

I am pleased to see the revival of the Given press idea. I used the press for several years in my eastern home, and had good success with it in making brood foundation. In making foundation for sections I found that my press would not give a uniform thickness to the septum. I patiently tried to remedy the fault by laying in pieces of paper back of the dies, but faults still existed. The only press I ever saw do good work was owned by Mr. Holmes, of Shoreham, Vermont. Mr. H. is a fine mechanic and he worked at his press until he could make foundation of a very uniform thickness and I am not sure but he uses it to this day. I think if the press is manufactured at the home of the honey bee the close mechanics in that establishment will give us a machine that will prove a success.

Foundation can be made quite rapidly upon a press, and I am not sure but the mechanical movement to secure the pressure

might be improved so that the work can be done more rapidly. It is no surprise to me to learn that the pressed foundation shows up best under experiment, and is ahead of the roller-made and even better than the much lauded flat-bottom foundation.

BLOOMINGTON, Calif.

Jan. 31, 1894.

[Apropos the foregoing I might say that the gist of the suggestions regarding the management of the REVIEW is that it be kept closely in bounds as a bee journal. The introduction of illustrations is regarded with favor, but there are hints that they be confined to apicultural subjects. The references to the editor and his hobbies outside of strict apicultural work will be enjoyed if they are brief and timely, but there is a very decided feeling against the REVIEW wandering too far into by-paths. There is an intimation that bee journals are taken for the information that may be gained in regard to apiculture, and the closer they are devoted to that industry, the greater will be the satisfaction. Instead of adding departments devoted to other pursuits, make the *bee-keeping* matter so interesting that it will be read by the whole family. For instance, I send the REVIEW to my father, and I have been told that the whole family reads Hasty's writings, although only one member is especially interested in bees. Another instance: When Mr. Terry wrote a book on potato culture I looked it over, and then became so interested that I read it and then read it aloud to my wife, and neither of us are potato growers or expect to be. Let us carry some sort of enthusiasm into the work, let us "git up and git," and there is no danger that our journals will be dropped even if side issues are not added.—ED.]



Disinfecting Foul - Broody Hives by Burning Kerosene Oil.

[Hasty referred to this plan in his "Comments" and that led Mr. M. M. Baldrige to write him a letter. Hasty thought it too good to keep, so he sent it to the REVIEW. I have the author's permission to lay it before my readers, also his promise to describe in the May REVIEW his method of curing foul brood, a method that promises to be as much

less troublesome than other methods as burning is less troublesome than boiling the hives. —Ed.]

“ST. CHARLES, Ills., 3-14, '94.

FRIEND HASTY:—REVIEW came to-day. Have seen your remarks on page 76 about disinfecting foul-broody hives. The kerosene plan has been known on Fox river, Ill., for several years and is a grand success. It is way ahead of boiling in hot water and far less trouble. Simply scrape the inside of the hive until most of the bee-glue is removed, then paint the same with kerosene. Place inside a piece of burning paper and let the kerosene burn off and you have a clean box, thoroughly disinfected, and no harm done to the outside, whether painted or not. Don't let the fire burn so long as to char the wood, but when slightly charred no special harm is done as it can be scraped off. One person can thus disinfect fifty hives in a few hours.

The fire can be quickly put out by laying a board over the top or simply by turning the hive over. Try one or more empty hives and see how nicely the plan works.

The first person I know of to discover and put into practice the disinfecting of foul-broody hives by the kerosene and burning plan, was George Thompson, Geneva, Ills., who lost his apiary twice by foul-brood. No foul-brood has re-appeared in any hive thus treated, and such hives have now been in use in his apiary for several years. The plan is so simple, non-expensive and effective, there is now no excuse for using such hives not disinfected.

We do not fear foul-brood any longer in “this neck of the woods.” We think we have found a very simple way to rid our hives of foul-brood whenever it puts in an appearance. We use no drugs nor do we starve the bees. I tried the new plan in my apiary last season on two colonies, the only ones diseased, and found them O. K. the 15th of last November, the day they were taken to the cellar, and if they prove to be free of the disease this season I will then make the method public. The simplicity of the plan may surprise you. The diseased hive remains in the apiary but no robber bees can enter therein. Every bee in the diseased hive is saved and in due time finds herself in another home. The work of the bees goes right along, with no special loss to the owner, while the colony is being treated.

There is one apiary on this (Fox) river that has had the foul-brood disease in it since 1881, and it is in as good condition today as then. This apiary has been about as profitable as any in Illinois during the past twelve years. The owner each fall simply destroys enough bees to keep the apiary down to about eighty colonies. He picks out all that he thinks may be diseased. He then extracts the honey therefrom, melts up the combs, and makes the wax into foundation, and is then ready for the coming year. Whether he disinfects the hives or not I can not say.

The March REVIEW is a splendid number. I always read the REVIEW all the way through.

Very truly yours,

M. M. BALDRIDGE.”



Superiority of Given Foundation.—Needed Improvements in the Press.

R. H. HOLMES.

FRIEND HUTCHINSON:—In reply to your request to write an article giving my views on the subject of foundation, I will say that writing for publication is entirely out of my line, but I have been quite a little interested in the late discussions on the subject in the different bee journals, and especially so in the report of R. L. Taylor's experimental work.

I have made and used the Given foundation for the past ten years; and while I prefer it to any other make, perhaps it would be only fair to say that my experience with other kinds has been limited. However, I have used it both heavy and light in the management of from 100 to 300 colonies each season for ten years and have supplied some of the neighboring bee-keepers for a good portion of the time. My make is limited to a few hundred pounds per season and I have made no effort to extend the sale for the reason that my foundation room is confined to the house kitchen, and this of course limits my capacity for manufacture and also for experimenting in the manufacture of wax.

I have had bee-keepers try the Given foundation for a single season and find no advantage over that usually made on a roller mill. There are others, like myself, who have tried the Given with other kinds and

have a decided preference for the former. In some cases I have gone so far as to cut out the sheets already in the sections to be replaced by the Given.

But it was not my purpose when I began this article to compare the different kinds of foundation but to give my reasons for preferring the kind I use.

First, the most of my work is performed by myself without hiring outside help and I can work the press with little help to better advantage than a mill.

The assertion that the Given foundation is softer than that made between rolls (which some say is only a theory) I believe to be a fact for the reason that, in my experience, the bees accept it more readily than other kinds and work it out faster preparatory to storing honey.

The third reason, which to my mind is more conclusive and outweighs all others, is that the comb made from the Given is the nearest to the natural comb of any I have ever yet seen. Some swarms will work out a thinner comb from the same foundation than others, but taken as a whole, one season with another, for ten years, it has become an established fact, to my mind at least, that we get the least weight of comb from the Given foundation.

Dr. C. C. Miller, on page 8 of the REVIEW, expresses my mind exactly when he says "I doubt if as nice looking foundation can ever come from a Given press as from a mill. But if the bees will take to it and work it more readily, making the thick as thin as desired then we may forego the matter of looks before it is made into comb."

A word in regard to why the Given press has not come into more general use. To my mind the press in its present form is too roughly made and too cumbersome. I admit that to indent a sheet of wax as large as the L. frame requires a tremendous pressure and the parts must necessarily be heavy and very strong. I could point out many defects in the press I use but it will suffice here to say that it is like all new inventions when they are yet in a crude state, and lack the fine adjustment of parts and adaptation to what is required which will be improved by the suggestions which come to us in trial and practical use. To illustrate, compare the latest roller mill with those first made.

Those who have dipped wax well know that it is practically impossible to make the lightest sheets of uniform thickness, and then

when the press is so imperfectly made that the pressure is not evenly distributed over the entire surface the foundation will have the "cloudy" appearance which is so much objected to. The press as formerly made is subject to constant wear in sliding the form in and out of the machine, and in my own case I have been obliged to make new wood parts several times, and each time it requires much patience and perseverance to wedge up with single thicknesses of paper here, or take one out there, to remedy the imperfection of the machine and make the foundation as even in appearance as possible. All this requires more patience than even bee-keepers or foundation manufacturers always possess and I believe many have condemned the Given press on this very account. But until there is some method devised of dipping sheets of wax as light as 10 ft., or thereabouts, to the lb., of uniform thickness, there will be no foundation made on a press, equal in appearance to that from a mill; but to again quote Dr. Miller, "we may forego the matter of looks," etc., provided the comb "gets there" a little ahead.

I was pleased to learn that the "Roots" were considering the matter of manufacturing the Given press. I really hope the matter will not "down" until they give it a thorough test. I believe if they will put the same energy and persistency into this trial as into other departments of their work, they will make it a practical success.

SHOREHAM, Vt.

Feb. 26, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

TERMS:—\$1.00 a year in advance. Two copies \$1.90; three for \$2.70; five for \$4.00; ten or more 70 cents each. If it is desired to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing, otherwise it will be continued.

FLINT, MICHIGAN, APRIL 10, 1894.

PROTECTION for bees in the spring must be tried several years before any definite conclusions can be drawn. My experience has been that in one year it is a great advantage, and in another but little, if any advantage can be seen, all depending upon the season. It never results in harm and has no objection except its cost, which may be slight.

MOST DISAGREEMENTS among men arise from ignorance on fundamental truths.

MR. CORNELL dropped dead in his beeyard on the 7th inst. No particulars; and I stop the press to squeeze in these few lines. He will be sincerely mourned.

AN EXCELLENT PICTURE of S. T. Pettit's face looks kindly out from the front cover of the April *C. B. J.* A picture of his pleasant home accompanied by a short descriptive sketch also appears in that issue. The *C. B. J.* is giving evidence of plenty of hard work and good management.

THE EDITOR of the *C. B. J.*, in referring to the experiments with foundation, says that to test the advantage of one machine over another, it is necessary that the wax be alike, that it be dipped and cooled under similar conditions and that it receive its impressions under the highest possible temperature.

FOUL BROOD is discussed, in what seems to me a very sensible manner, by Bro. Holterman of the *C. B. J.* Mr. McEvoy also reports that foul brood is on the decrease in Ontario. This is hopeful. We may not all agree upon some of the finer points regarding this disease, but it is certain that we are rapidly becoming its master.

BRO. HOLTERMAN of the *C. B. J.* says that since he condemned the Heddon hive he has taken but little notice of what Mr. Heddon has had to say. If condemning an invention destroys the correctness of the inventor's views, it is to be hoped that no more of our leading bee-keepers will be so foolish as to bring out an invention and allow Bro. Holterman to condemn it.

HAND-HOLES, cut in the side of the hive by means of a wabbling saw are only "finger holes," so says C. W. Dayton in the *Progressive*. I must agree with Mr. Dayton that there is no more satisfactory handle to a bee hive than a rim of wood around it near the top. Mr. Dayton also shows up the advantages of a bee-space at the ends of the top bars, that is, between them and the back of the rabbet. He says truly when he says that it is around the end of the top bar that the most propolis is plastered. Leaving a bee

space here does away with the propolis. To keep the frames from sliding endwise a brad is driven into the side bars so that its point projects about one-fourth of an inch.

SUBSCRIPTIONS, in most cases, are sent at the beginning of the year, but there is no reason why you should not subscribe for the *REVIEW* now. For particulars see the last inside cover page. If you are not sufficiently acquainted with the *REVIEW* to wish to subscribe without learning something more of its character, I will send any number of back numbers, up to fifty, at two cents each, I to pick them out, but no two shall be alike.

ADVERTISING of apiarian goods will pay at this time of the year if it ever will; and if there is any advertiser who would like to have me try my hand at composing and "setting up" for him a new advertisement, I shall be pleased to do so, sending him a proof; and there will be no charge unless the advertisement is placed in the *REVIEW*, and then there will be no charge for the work of getting up the advertisement.

FOUNDATION made by a new process (patent applied for I believe) is being manufactured by the Burnett Co., Ludlow Ky. I have received samples that are certainly very fine. In writing of this foundation, Oliver Foster says: "As far as formation and texture of wax are concerned, it is the nearest perfection of anything I have seen, and I feel sanguine that the improvement is a long step towards that attainment."

Full particulars are promised in time for the May *REVIEW*.

C.H. DIBBERN in the *Progressive*, referring to the devotion of so much space in the journals to articles for beginners, asks: "Why continue to beat the old straw, when there is so much that has scarcely been touched, still full of golden grain?" Continuing he says that beginners should read standard works for their instruction, "and not insist that the weekly and monthly bee journals be forever burdened with such stuff." Good advice.

THE AMERICAN BEE JOURNAL man "talks back" because a *Progressive* correspondent thought the *Journal* published too much

"trash." The *Progressive* man thought that a journal should be like a fanning mill—blow away the chaff and lay sound grain before its readers. Bro. York doesn't want it that way—thinks every man should do his own "digesting." Brethren, it depends upon circumstances; if a bee journal editor has no practical knowledge of bees it is wisdom on his part not to try the "fanning mill act," and to even get others to write his apicultural editorials, but when he is capable of so doing, I say, turn on the wind and *blow hard*.



HOW TO WEAR A VEIL WITHOUT TUCKING IT
INSIDE THE COLLAR.

When it is necessary to wear a veil in hot weather who has not wished that there was some way of holding it down, aside from that of tucking it inside the collar? When the neck is hot and sweaty how it feels with a sort of muffer pressed close against it by the collar. Besides this, the veil is held suffocatingly close to the face. All this may be avoided, and I'll tell you how. In a hem in the bottom of the veil run a string, leav-

ing about a foot of the hem, right in front, unoccupied by the string. That is, let the string enter the hem at about six inches to the right of the center of the front, pass it around the back of the neck, bringing it out of the hem at a point six inches to the left of the center. The projecting ends of the string must be long enough to pass under the arms, cross at the back, and then be brought around and tied in front. The string holds the edge of the veil securely out upon the shoulders, while if the right length of hem is left without a string in front, that part will be drawn snugly across the breast.

To Mr. Porter of bee escape fame belongs the honor of devising this unsurpassable way of holding down a bee veil.

NON-SWARMING, by turning the bees from one hive to another, *a la* Langdon, Mr. Manum manages by placing two hives side by side on what might be called a double bottom board, or one bottom board above another, the bees entering at each end of the tube-like bottom board and coming up into the hives through holes cut in the upper floor of the double bottom board. They are turned from one hive to the other by means of slides that open and close the inner entrances. This method did not prove a success last year, the greatest trouble being that while reducing the force of one colony the other is likely to swarm. Not only this, but work in the supers was unsatisfactory, and fall found the brood nests light in stores.

A NON-SWARMING strain of bees could be as easily produced as a non-sitting variety of fowls, provided we could as easily control the mating of the queens; at least, so argues Mr. J. E. Armstrong in the *American Bee Journal*. Against this idea many have urged that all livings have the instinct to "be fruitful and multiply." To this Mr. Armstrong very appropriately replies that to man has been given the power to "subdue and have dominion over every living thing that moveth upon the earth." Mr. Miller gives some very happy illustrations of what man has done in the way of breeding out instincts and traits. Mr. Miller hopes that the mating of queens in confinement may yet be made a success. Those who have read Cheshire know that this can be accomplished only in full flight; and those who have read Mr. Heddon's article on "Practical Breed-

ing," in the REVIEW for September, 1893, know that very nearly as good results can be obtained without mating queens in confinement.

MR. HEDDON'S NEW BEE JOURNAL.

Well, I have lived to see what I had always faintly hoped might greet my vision—a bee journal published by my old friend, James Heddon of Dowagiac, Mich. I say "faintly hoped" because he has so many times talked and planned of starting one, only to drop the project. His journal is after the style that he has always said he should publish, an editorial quarterly. It is made up in newspaper style, having four pages of six columns each. This style is chosen because of its economy—allowing the paper to be furnished at only 25 cents a year. The first issue is Heddon clear through, and all who have read his writings know what that means; sharp, clear, clean-cut ideas with some point to them. There are no side issues, simply bees from beginning to end in a straight forward, business like manner. Considerable space is used in this issue in a sort of introductory way, but in the future it is to be used in describing implements and methods, in which role Mr. Heddon has no superior.

I am sorry that Mr. Heddon found it necessary to issue a full-page supplement devoted to adulteration and a defense of himself against the recent charges made against him, but, under the circumstances, perhaps no less could have been expected, and I feel sure that every one who reads that supplement will decide that they must have *absolute proof* before they can believe that a man possessed of such integrity and talents could be so foolish.

SWEET CLOVER AS A HONEY AND FORAGE PLANT.

I recently expressed doubts as to the value of sweet clover as a cultivated honey plant. This stirred up my old friend, M. M. Baldrige, of St. Charles, Ill., and he spent considerable time in looking up what had been published showing its value, and sent me the references. I have looked up and read most of them (I did not have all of the books to which references were made) and it seems evident that in the dry climate of the West, and in some of the Southern States, sweet clover and alfalfa have been very useful as forage plants and for furnishing honey. In the worn out lands of the South sweet clover

has been a great help in bringing up the lands to a higher state of fertility. Stock doesn't like it at first, but will learn to eat it. I have read of occasional crops of surplus honey being secured in our Northern States from sweet clover, but I have also read some adverse reports. W. G. Larrabee gives one in March *Gleanings*, but this report of Mr. Boardman's is almost the first report I remember having seen from the North where sweet clover was *cultivated* with satisfactory results. Dr. Miller tried raising it and failed. James Nipe, of Wis., tried several acres of it and reported the failure in the REVIEW of March, 1888. It was tried at our Agricultural College at Lansing, and pronounced a failure. Friend Baldrige writes me that he has a surprise in store for me regarding sweet clover. I am perfectly *willing* to be convinced that it will pay our Northern farmer-bee-keepers to raise it.

THE TALK ABOUT ADULTERATION.

"From words to deeds is a great space,"

Of late one or two of our bee journals have been devoting considerable space and energy to bringing prominently before the public the extent to which honey is adulterated, or to which they believe it to be adulterated, and in exposing those whom they think are engaged in that practice. I have every reason to believe that this course is taken from the best of motives, with the hopes that those thus exposed will abandon this deception—if they are guilty. With the history of the past before us I fail to see how such conclusions can be drawn. Theft, counterfeiting, and all forms of crime and misdemeanors are held in check, not by exposing them, but by heavy penalties, either of fine or imprisonment. When a man has reached that moral plane which allows him to commit crimes or misdemeanors, he is past being shamed into good behavior. The only effect of exposing such men when they are engaged in the adulteration of food products, is that of prejudicing the consumer against said product. The only thing that such men can appreciate is the laying upon them of the heavy hand of the law. A man may not care to be exposed, but it is only when he has a heavy fine to pay, or go to prison, that the one tender spot in his callous nature has been touched.

Years ago the bee journals began talking about adulteration of honey; next the agri-

cultural papers took it up: then Prof. Wiley wrote what he did in the *Popular Science Monthly*, and it ran through the general newspapers like wild fire; since then the bee journals have "exposed" every case of adulteration or supposed adulteration that they could hear of, and the result is that, in the minds of the majority of consumers, the term "extracted honey" has become synonymous with adulteration. Continued "exposures" are only continued proofs to the public that its surmises are correct. How any sane man can doubt that such a course is terribly damaging to our pursuit is past my comprehension. I do not advise silence because of any desire to shield evil doers, but if "exposure" does not stop the practice, and most surely does injure the pursuit, it is the height of folly to continue it. "But," says one, "if we don't do anything the adulterators will ruin our business." It is unnecessary to maintain a masterful inactivity. Several States now have a law against the sale of adulterated honey not properly labeled, and others can pass them. If the existing laws are not adequate they can be changed and heavier penalties attached if needed. We have a Bee-Keepers' Union with its constitution so changed that its money and power can be used for this purpose. When the needed laws are secured, then guilty parties can be prosecuted and convicted by means of the Union, just as successfully as bee-keepers have by it been defended against unjust persecutions.

I am aware that there would be considerable difficulty in furnishing absolute proof of adulteration, and for this reason, if for no other, I should favor prosecution instead of exposure. In prosecution everything must be *proven*, or there is no case; in "exposure" there is the temptation to report some suspicious circumstance "for what it is worth and allow the public to draw its own conclusions." Take this case of Mr. Heddon's, for instance, the Union did not consider that there was sufficient evidence to convict. If there is not sufficient evidence to warrant prosecution, there is not enough for exposure.

In closing I cannot refrain from quoting a few lines from an editorial in the *Michigan Farmer* of March 25th, as they express my views exactly.

"Let the war against adulteration go on by all means; the *Farmer* has always cham-

pioned the cause of pure food products of whatever nature, but let it be by deeds, not words that create a sentiment against honey that it will take years to overcome, granting the adulteration is stopped."

EXTRACTED.

Making Foundation on a Press.

In Dr. Miller's "Stray Straws" I find the following:

"Fun was poked at me for talking about making foundation on a press without sheeting. On inquiry I find that a metal press, the Rietsche, has been in use for ten years, the wax poured in the press without sheeting, and that 6,000 such presses are now in use. Will *REVIEW* and *Progressive* please correct?"

When the good Doctor was writing the *REVIEW* he did not have the Rietsche press in mind. Here is what he said:

"With the Given press there is nothing except the melted wax thrown into the press and then the wax pushed up loosely in the side walls."

No fun was poked at the Doctor, simply his error pointed out. For a man who makes a specialty of "Don't knowing," you ought not to feel so very bad Doctor about this little slip.

How to Find a Queen, and How to Clip Her Wings Without Her Knowing it.

O that I had the wings of a—queen!

Unless queen traps or swarm catchers are used there is no more successful method of managing swarming in a large apiary than by having the queens clipped, and I have never seen better directions for doing the clipping than the following written by C. W. Dayton and published last July in *Gleanings*:

"The first determination in the clipping of queens is the season or time of the season. When a farmer has 200 acres of grain to cut with one machine he watches it closely, and begins when it is a little green, and finishes when it is very ripe. If he should not begin until the earliest was thoroughly ripe, the last would be so 'dead ripe' that most of it would shell out so as to be hardly worth the harvesting. One machine is able to cut about 10 acres a day, and 20 days' time will extend from the beginning of the ripening to the over-ripeness of grain. It is no truer of grain than of clipping of queens at the

right season, which comes when there are two or three combs full of brood and patches of brood in three or four other combs. Queens may be clipped when there are only two or three combs of brood; but this would come earlier in the spring, when the warm hours of the day are few and the mornings and evenings are cold. The colonies being low spirited at this time, queens are quite apt to be 'balled,' especially if the queen has been handled or frightened.

Then it is just as necessary to avoid letting the season get too far advanced, as when seven or eight combs will be filled full of brood, making large areas to search in order to find queens; the brood would also extend around the lower and side edges of the combs, where queens would be apt to hide and be hard to see; there are more bees in our way, and, what is still more, when brood is so plentiful the queen seems to be less interested in her work, and is more liable to run from comb to comb, or even run off the combs entirely on to the side of the hive. When there are not more than two or three combs containing brood in the hive it is rarely that the queen will leave it; but if several combs are full of brood, the first desire of the queen seems to be to get off from it at once. Thus it will be inferred that the most propitious time is after the colonies begin to build up, and before they develop very considerable strength; and this period probably does not exceed twenty days. Some colonies would be in the best condition sooner than others, and it would require more or less than twenty days, according to the number of queens and skill of the operator.

Next after the time comes the hive. Some may think one hive as good as another; but this rule is varied. It wants a hive which we can get open and find the queen at her regular work undisturbed; and the first thing encountered is the cover. The latter should be flexible, so as to be removed gradually to prevent jars or snaps. A telescopic cover of lumber, and the frames covered with enamel cloth, accomplishes this; but as enamel cloth is eaten and destroyed by the bees it is too much trouble to keep it renewed; and it is also best to have a $\frac{3}{8}$ space between the cover and top-bars, to avoid propolis. A solid board is propolized around the edges, and nearly always comes up snapping. I have watched many removing the flat board covers, and they stand squarely behind the hive and grasp the cover at each rear corner, and pull straight upward steadily. When the propolis breaks, the cover is raised suddenly and often jumps quite out of their hands. In thus proceeding, the motion is no less pronounced than is the shock to the hive and inmates. It would be a little better to raise one corner first, and, as we pry up with one hand, push down with the other; but even then a stiff cover must make some report.

The most satisfactory cover I have found is made by cleating together three or four pieces about one-fourth inch in thickness, using three cleats. The cleats hold the light lumber straight, as it has not strength to warp like thicker boards. It allows moisture to pass through them easily, and is quick to

become dry again. Of course, this thin light wood could stand very little rain and sun, so I put on another cover of tin. The difficulty with tin lying flat on the ordinary board covers is, that moisture and sweat from the bees collects on the inside and rusts the tin and rots the wood badly. In this thin cover, the cleats are on the upper side—one on each end and one across the center; and when the tin is put on it leaves an air-space of the depth of the thickness of the cleats. Then the tin is tacked to the sides but not at the ends, so that the air and moisture can escape. This cover can be removed with the least jar by prying up the corner; and its bending disposition extends gradually across the hive.

To skillfully hunt out queens, instead of looking for a bee that is a little longer than any other of the multitude, we take in the comb at a glance, and locate the queen by a little circular cluster of bees regularly formed around a central vacant spot, upon which is one bee alone. A jar or snap in removing the cover or lifting the frames dispels this regularity, some bees going on the war-path while the rest rush into clusters, with the queen hiding promiscuously among them with about as much disorder as it would make for a man to enter a ballroom and exclaim at the top of his voice that the building was on fire.

If the colony has brood in five or six combs, and it is earlier than eleven o'clock in the day, we may expect the queen to be on one of the two middle combs. If there are six or seven combs of brood, then it should include the three middle combs. After noon, if the sun shines warmly, she is usually nearly outside the brood-circle and may step over on to an unoccupied comb; so at this time of the day I would not examine the center combs first. By these observances the queen may be found on the first comb examined, one-third of the time, and the second comb would include one-half of the times.

If the hive were opened carefully and the frames handled accordingly, we shall find the queen busily engaged at inspecting cells and laying eggs. At first the light does not disturb her; but in a moment or two she will become disturbed and start off on a rambling tour, so what we do should be done quickly.

Use the small scissors from the counter store, holding them about half open; follow the point along three-fourths of an inch, directly over the queen wherever she moves. Soon she will put her head into a cell and keep it there about two seconds. At the same time her wings rise up at about 25 degrees, when one outside wing may be caught and clipped as soon as caught. This is the easiest, quickest, and best way. One-half of the time is usually spent in catching. Now, you may try this and fail; but the cause of failure is generally because the scissors are held three inches above the queen; then when she stops you move the scissors to make the clip. She starts for another cell just in time to save a wing. Your sudden movement attracts the attention of an attendant bee, which flies up and alights on the points of the scissors. Becom-

ing somewhat vexed at this you open and shut the scissors three or four times to cut her legs off, and finally thrust the bee to the ground, with a full-arm movement. This imparts a tremulous motion to the comb, which is held in the left hand; the queen is disturbed; and when the scissors return to business you will probably try the difficult, uncertain, and dangerous plan of catching a wing as the queen runs, and finally conclude that the plan works better in theory than in practice.

It is not only best to open hives quietly and handle frames carefully in finding queens, but it is a good practice for all the time; and with the really expert apiarist it becomes natural and customary. In the busiest part of the day there are only a few bees that remain as guards; and molestation of the hive is so little expected that they hardly recognize an intruder when he comes, so there is no use to smoke the sentinels at the entrance; and the smell of smoke to a bee or two here and there as the cover is raised is an abundance. Even if the tops of the frames and hive are covered with bees, there may not be a shadow of reason to use smoke on them; but if there is a necessity for smoke, only a bee or two may need it, and those may be distinguished by the manner in which they hold their wings or move along. Such bees should be smoked, because other bees near them will be easily scared, and go down between the combs, and set every thing in a panic; so I hold the smoker-nozzle close enough to the dangerous ones to let them know I can stand a battle with them if necessary, and this changes their threatening manners.

Always go prepared with smoker at full blast, scissors in the right hand vest pocket, and veil on. Kneel on the left knee at the side of the hive on which the sun shines; holding the smoker in the right hand, remove the cover with the left, very slowly at first, and use no smoke unless many bees dart out from under it, and then the smoke should not be driven under the cover, but it should be directed against the hive below the cover so that only those bees which fly out will smell it. Sunlight is nearly as good as smoke. When the cover is high enough, set the smoker down and lean forward, and quickly decide on which comb the queen is most likely to be; and while the left hand carries the cover to the left, and places it upside down on the ground, loosen the particular frame with the right. If one end of the frame is moved backward and forward and upward when the left hand returns to the other end, it will be ready to be immediately raised out of the hive. While it is coming up, search the side toward you. When the bottom-bar has cleared the other frames and hive, you should be ready for the other side by moving the right hand inward toward you, and the left hand far out, causing the comb to move as if the frame were on a pivot in the center of the bottom-bar. This gives a slanting view of that side, which is always the best view; do not stop the comb to look it over, but glance at it while it is given to the right or left hand, and is being

set on end in front of the entrance, or against the farther side of the hive.

While one hand disposes of this frame, the other goes to loosen another. In clipping I hold the frame by one projecting arm in the left hand, and rest the opposite corner on some part of the hive or on my knee to keep it steady. One-half of the queens I clip never know any thing has happened, and I take off the most of the gauze of one outside wing. When I work facing the sun I lean forward and examine the farther side of the comb first, which will be toward the sun, as it is lifted out.

In a description the operation appears as if there were several separate movements; but in practice they are all combined or continued as one move, as neither hand comes to a standstill anywhere, and each is engaged in a different manipulation.

A Condensed View of Current Bee Writings.

E. E. HASTY.

BEFORE weighing the arguments pro and con on the bee-fruit controversy let us look for a moment at the fundamental conditions of the matter. That insects and the fertilizing arrangements of flowers are adapted to each other is too plain for an intelligent mind to deny. But what is the main object of that cross-fertilization which bees are so wonderfully inveigled into performing unwittingly? The object is to give a more vigorous constitution to the seedling plants than they would have if pollen from the same one parent fertilized the seed. What advantage is this greater vigor of seedlings to the ordinary fruit grower? *No advantage at all.* Those who plant seeds to produce new varieties get the advantage, but the man who sells only fruit don't care what the seed might possibly produce if planted; he never plants any. When we first get hold of this truth we naturally feel as if we had been in a prize fight, and the other fellow had scored the first knock-down. It is our business to scramble up, and find out whether there is anything left of us or not.

Well, many-seeded fruits, notably the strawberry, raspberry and blackberry, and to a less degree the apple and pear, require several or many pollen grains to each fruit. To what extent are they one-sided or dwarfed for want of a few more grains? and would abundance of bees insure that few more? Here is a question of importance concerning

which we need more and more careful investigation. *Perhaps* bees can do a valuable work for the fruit-grower here.

Now as to the experiments in covering blooms and decreasing the amount of fruit set thereby. These still need a good deal of verification and examination. Quite possibly something else beside the honey bee has contributed a large share to the results attained. But even taking the results without much discount, what have we? It is tolerably apparent that *in favorable weather* a plantation of almost any kind of fruit ten miles from a bee will set more fruit than can be grown. Part must dry up and fall off. Here is a little tree big enough to bear 100 apples. Without bees it sets 500, of which 400 must fall away. Of what profit is it to turn on a hive of bees and cause it to set 1,000, and have 900 to fall away? Apparently no profit at all. On the other hand in unbroken bad weather, such as prevents fertilization, bees cannot help, because they keep snug in their hives in such weather. There are years however, perhaps a pretty good few of them, when conditions are mixed, when there would be a scant amount of fruit set without bees, and a fuller amount with them. Pollen enough here and there to serve the purpose, but no possibility of scattering it widely enough during the brief hours of sunshine, except the bees help. In my judgment this is our main hold. Let us not weaken our position by too frantic a defense of untenable points. The public on seeing us driven out in disgrace will suspect that all our positions are false.

Now the chips from the articles. Friend Gilliland saw 6,000 bumble-bees at one clover patch. But his experiments show a very high per cent. of seed from covered clovers, 57; and exposing to bees only gave an increase of 15. *Gleanings*, page 45. Friend Fultz reports a good crop of fruit in 1892 with no bees to fertilize the bloom. Also, more recently, a big crop of seed on basswood trees where during bloom frequent inspection showed not a single bee. In fact basswood, as well as a multitude of fruits, must have reproduced for centuries before the honey bee came to America.

During fruit bloom Prof. Cook found by actual count, on one occasion, that honey bees were 20 to 1 to all other insects. His experiments with covered and uncovered flowers are somewhat startling. Of apple only 2 per cent. of the covered, but 20 per

cent. of the uncovered set fruit. On cherry the ratio is 3 to 40. Of pears only 5 per cent. set at best, and none at all when covered. On strawberries the ratio is 11 to 17. But it looks very probable that nature's own processes of aerial fertilization would be greatly interfered with by covering with cheese cloth. The matter is important enough to pay the expense of posting a sentinel and keeping the bees away by hand.

I think the most important thing Prof. Cook contributes is this sentence from the raspberry report.

"In every case the fruit from the covered twigs was inferior." *Gleanings*, 48.

There seems to be less chance for discount on this. It apparently shows that compound fruits require the fullest and best of fertilization for the finest fruit; just enough to keep the incipient fruit from perishing not being sufficient. If this is the case bees may be quite important to the fruit man.

Friend Smith reports an island in lake Erie, with no bees, where apples, pears, plums, cherries, strawberries and raspberries equal to any in the state are grown.

Friend Gilliland reminds us that in the order of creation plants were formed first. So of course in the beginning they could not require insects, however much they have come to lean on insects since. But in *Gleanings*, 234, Prof. Cook replies that flowering plants and bees both appear in the same geological period, the Cretaceous, not flowers in one age and bees in a later one.

Friend Merritt's rather interesting report of lots of apples on the lee side of a tree, and almost none on the windy side seems to be explained equally well with bees and without bees, and so to amount to nothing in evidence. Wind sufficient to keep bees away would presumably spoil natural fertilization.

Friend Doolittle tells us that Wenham, Mass., banished bees on a charge of injuring the apple crop. During several years of banishment apples did better in the surrounding towns, and the bees were invited back again.

Friend Benton reports that cherry orchardists of Vaca Valley, California, are moving to bring back bees which had been driven away; convinced that it will pay by two years' experience of one of their number who put an apiary in his orchard.

Friend Crane tells us that peaches under glass must have bees provided, else no fruit.

But the perfect stillness and other unnatural conditions of a greenhouse doubtless spoil nature's plan of aerial fertilization.

If the brethren could all tinker a little at producing hybrid varieties, and so get actually acquainted with pollen and its wondrous ways, it would be of great help to their judgment in the case. The trouble is that they think pollenization a simple straightforward matter, like getting a little sand in one's eyes.

Prof. Cook's last article (*Gleanings*, 233) is admirable in tone and temper. He also gives the important new fact that bees were admitted under the covers in some of the Michigan experiments and produced similar results there as in the open air. Still unobstructed open air for the bee-bereft boughs would be much more conclusive. The following paragraph of his should have a hearty Amen.

"Let us this season try to experiment so that the blossoms shall be under precisely the same conditions, except for the presence of the bees. Let us put aside all bias and preconceived opinions, and endeavor to settle the question. If it shall be shown by a most cautious line of experiments, that bees are unnecessary to a full fruitage, and of no importance to horticulture, it will not be the first time that theories in science have had to be recast. So we should act in our experiments as if the question were unsolved."

AMERICAN BEE JOURNAL.

Since last time I believe it mostly holds on the even tenor of its way. Not so much feverish scratching around by any of the journals as a year ago. Some of the departments of *A. B. J.* are not a "sure find." Reepen's German reports, for instance, are only semi-occasional; likewise also the portraits and biographical sketches—and of late the Stinger has his business end chopped off. Some of this is just as it ought to be however. We don't want our minds lumbered with the history of every neighborhood bee man; and if we have his "phiz" set before us it will only obscure our memory of the faces we wish to remember, which belong to men of national reputation. The space gained is mostly given to Dr. Miller and his new department of General Questions for beginners—and he won't waste it. The latest number on my table allots five columns to the editor, $4\frac{1}{2}$ to the Dr., 4 to Mrs. Atchley, and somewhat over 4 to Query 914. Then there are 14 columns of "articles," $4\frac{1}{2}$ of Convention, and 7 of Letter-Box.

I believe I have not noticed before in these papers the strong protest of the Dadan's

against rendering wax with acid. No good taste and smell left in it; and bees care something about such matters. One of these protests is found. *A. B. J.*, 211.

And the senators split 13 to 13,
On clipping the wings of our lady the queen.
A. B. J., 208.

Friend Dayton thinks that by furnishing combs, queens and some feed, one California colony can be increased to 128 in a year. *A. B. J.*, 242. Let's go there.

Friend Corey figures the cost of California honey at \$250 per ton, ($12\frac{1}{2}$ cts. per pound.) *A. B. J.*, 248. Better come away from there.

Friend Levering tells of California bees that fly extra long distances, and often work by moonlight. (Trying to reduce that excessive cost of honey.) *A. B. J.*, 249.

Friend McIntyre has a robbing wrinkle which may, in some circumstances come in good play. Trap the robbers and release them at night. It's done by removing the victimized colony and putting an empty hive on its stand so arranged with cones inward that bees can readily get in, but none get out. *A. B. J.*, 249.

Another experiment station. Nebraska this time. The experimenter is a scientist but not a bee-keeper. The utter inability of such a person to weigh contingencies properly (and there are such a multitude of contingencies) must often render his conclusions very inconclusive when they relate to the practical matters of our craft. And if they don't relate to the practical matters will they be worth very much? *A. B. J.* 262.

It's just surprising how the Italian bee has conquered all its foes. I thought there were more dissenters. A vote on the best race results: German, 0; Italian, $19\frac{1}{2}$; (Friend Larrabee is the half man.) Carniolan, $2\frac{1}{2}$; various hybrids, 3; Syrian, 1. So many of the majority are not in the queen business that we can't lay it all to that. *A. B. J.*, 270.

Our smallest queen breeder, Leah Atchley, has gone into the cactus business. I suppose she still offers queens, but the competition of her big mother too nearly extinguishes her; so to keep busy she will send you a cactus by mail. *A. B. J.*, 287.

On page 304 friend Coleman speaks strongly in favor of leaving the queen on the old stand in dividing. He is right. Great waste of queen's time to take her to a new stand—and the queen's time is the most valuable commodity the colony has. I may add, it is also a great waste of eggs and young larvae

to take many of them to the new stand. Take all the solid masses of sealed brood you can get, and a few young larvae. And then there is another sharp wrinkle in keeping the two hives close side by side till the queen cells are sealed, and making a full share of the flying bees go in the new colony by using disguising-boards in front. When the final move is made most of these flying bees will reinforce the old queen.

On page 305 friend Harmer tells the best way to prevent after-swarms—with little work, and all done at one operation. Get all the bees into the swarm, hived on the old stand, and distribute all the combs of brood from which the swarm came—putting them in the upper stories of extracting colonies when there are no more nuclei that need booming. I should call this an excellent plan, wherever experience proves it to work. But if your swarm swarms again, and your extra-big extracting colony quits gathering and swarms also (in extra-swarmer territory I should expect both these things to happen) why then you must haul off for repairs.

Mrs. C. L. Rice had five children so overcome by eating jasmine pollen (bee-bread) that the doctor was sent for. None died. She suggests that all this kind of poisoning may be done by pollen, and that jasmine honey may be all right. Worth thinking of at least. Does anybody know whether newly emerged bees eat pollen? If not of course it must be honey that poisons them. *A. B. J.*, 306.

Eugene Secor has been eating prime comb honey eight years old, kept Jake Smith's way. *A. B. J.*, 327 and *Gleanings* 19.

Jennie Atchley reports it as hard to introduce drones as to introduce a queen. *A. B. J.*, 333. But I presume there would be little difficulty if the colony wanted drones—wanted them badly enough to be about starting to raise some themselves.

More trouble with the alcohol test. Friend Faris claims he used whiskey—a quart of it. Couldn't see any difference between the pure and adulterated samples, and had to try *tasting*. Still no definite results till the quart was well nigh tasted up. *A. B. J.* 346. Discriminating powers weak—so weak he sees no difference between himself and a temperance man.

And this time the round-up is crowded out. Can only find room to say that M. M. Baldrige modestly passes back the credit of the

kerosene and blaze method of disinfecting foul-broody hives to George Thomson, Geneva, Illinois. The great convenience and excellence of the plan is vouched for.

Friend Baldrige thinks he has on trial a simpler and easier method of curing foul-brood; and if nothing breaks he promises to publish it soon. We've got lots of cheerful room for something better in that direction. Moreover they've got down there a queer old-style bee-keeper who, for a dozen years has run his apiary with fair profit; yet he has had foul-brood all the while, and does not try to cure it. Just "takes up" the infected colonies before they get very bad, and increases enough to keep afloat. Truly the wisdom of the unsophisticated is sometimes equal to "the luck of a lousy dog."

RICHARDS, Lucas Co., Ohio, Mar. 21, '94.

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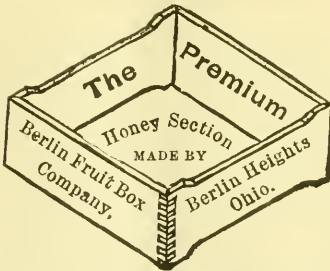
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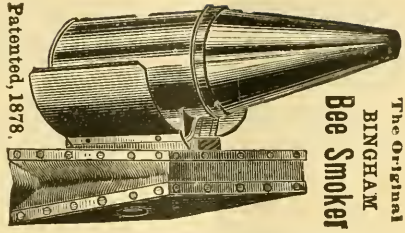


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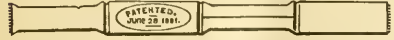
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C. D. DUVALL, Spencerville, Mont. Co., Maryland.

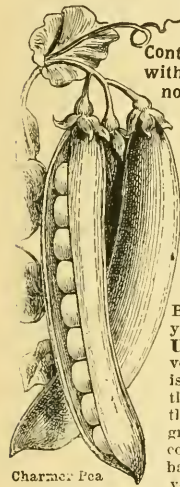


Dr. J. W. CRENSHAW, Versailles, Ky., Offers for Sale

UNTESTED QUEENS

At \$1.00 each; after July 1st., 75 cts. Only the yellowest ("5-banded") variety, and as good queens as anybody can rear. Bred from only the best mothers possible to obtain. Imported stock mated to yellow drones, same price. Any of Root's goods at his prices. Send for circular. Book your orders now and get your queens and supplies when needed. Queens ready in May. 3-94-tf

VICK'S FLORAL GUIDE 1894.



Charmac. Pea

The Pioneer Catalogue of Vegetables and Flowers.

Contains 112 pages 8 x 10 1-2 in., with descriptions that describe, not mislead; illustrations that instruct, not exaggerate.

The cover is charming in harmonious blending of water color prints in green and white, with a gold background,—a dream of beauty. 32 pages of Novelties printed in 8 different colors. All the leading novelties and the best of the old varieties. These hard times you cannot afford to run any risk.

Buy **HONEST GOODS** where you will receive **FULL MEASURE**. It is not necessary to advertise that Vick's seeds grow, this is known the world over, and also that the harvest isays. A very little spent for proper seed will save grocer's and doctor's bills. Many concede Vick's Floral Guide the handsomest catalogue for 1 94. If you love a fine garden send address now, with 10 cents, which may be deducted from first order. \$360 Cash Priz s for Potatoes.

Rochester, N. Y. **JAMES VICK'S SONS.**

BIG DISCOUNT on foundation and sections. Thin foundation 50 cts. per lb; brood 40 cts. No. 1 sections, \$2.75 per M. Everything cheap; price list free. 4-94-6t E. H. TRUMPER, Bankers, Mich.

PATENT. WIRED, COMB FOUNDATION
HAS NO SAG IN BROOD FRAMES.
Thin, Flat - Bottom Foundation
HAS NO FISHBONE IN SURPLUS HONEY.
Being the cleanest, it is usually worked quicker than any fdn. made.
J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),
3-90-tf Sprout Brook, Mont., Co., N^y



Please mention the Review.



FREE: My new price list of pure Italian bees and queens, and white and brown ferrets. 3-94-12t

N. A. KNAPP, Rochester, Ohio.

Queens, Nuclei, Colonies Send for Pricelist. Address S. D. McLEAN, Columbia, Tenn. 1894

3-94-3t

Please mention the Review.

GREAT IMPROVEMENT IN SECTIONS.

Our white poplar and basswood sections will surely please you. Eight - to - the - foot poplar, seven - to - the - foot and 1 7/8 basswood, all 4 1/4 x 4 1/4 inches square. Prices of either kind: 500, \$1.50; 1,000, \$3.00; 2,000, \$5.75; 3,000, \$8.30; 4,000, \$10.80; 5,000, \$13.25. Samples free.

O. H. TOWNSEND,

2-94-tf

Alamo, Kal. Co., Mich.



Illustrated Catalogue free upon application.

THE • REVIEW • FOR • 1894.

Special Topics.

If there is any one thing more than another that has made the REVIEW what it is, it is its discussion of "Special Topics;" the gathering together in one number of the best that is known, of the latest views of the best men upon some special topic. Like a lens, the REVIEW brings together the lines of thought, and so illustrates the subject that it can be clearly seen and understood. While many of the most important subjects have been thus discussed, new ones are continually coming up, and some new discovery often puts an old idea in a new light, hence the REVIEW will always find a fruitful field in the discussion of special topics.

One Journal.

In the main, the contents of our bee journals are made up of original matter. From the very nature of the case, the value of this matter greatly varies. Many bee-keepers cannot afford to take more than one journal, neither have they the time to read all of the journals, and to be able to find all the most valuable matter of all the journals brought together, condensed, reviewed and criticised, is a blessing to the busy man, and to the one who "can afford only one journal." To thus furnish the cream of the other journals is the province of the REVIEW.

Travels Among Bee - Keepers.

To make the best possible bee journal an editor ought not to sit down in his office from one year's end to the other. He ought to have an apiary of his own, to attend conventions, and visit bee-keepers at their homes. Not only will this enable him to keep in touch with his readers, but by visiting apiaries he will run across ideas, implements and methods of which the general mass of bee-keepers is ignorant, their possessors being so accustomed to them that it never occurs to them that everybody does not know of them. In the summer of 1894, in company with his camera, the editor of the REVIEW expects to visit a large number of bee-keepers, making extended trips through Canada, the Eastern, Middle and Western States; and the REVIEW will contain illustrations and descriptions of the bee-keepers visited, their homes, families, apiaries, implements, methods, etc.

Experimental Apiculture.

Last year a few bee-keepers of Michigan worked hard and spent some money in so forcibly bringing before the State Board of Agriculture the necessity for an experimental apiary, that \$500 were appropriated for that purpose, and the Hon. R. L. Taylor appointed apiarist. He has proved most emphatically to be "the right man in the right place." All through the year experiments of a practical nature are under way, and the results are given in the REVIEW AT ONCE, months and months before they appear in the official report. Securing these reports and placing them before the public while they are fresh and can be at once utilized is one of the best things that the REVIEW has ever done for bee-keepers.

Hasty's Review.

E. E. Hasty needs no introduction. No other apicultural writer approaches him in bright, quaint, original expressions. Coupled with this is a thorough knowledge of practical bee culture, and he is to use these two accomplishments the coming year in helping to make the "Extracted Department" of the REVIEW. He is to read all of the journals, and then criticise their contents in that inimitable way of his. The REVIEW is also to come in for its share of criticism. Probably no feature of the REVIEW for 1894 will be more interesting or profitable than "Hasty's Review."

At the Front.

The REVIEW strives most earnestly to stand in the front rank; to publish advanced ideas before they have become a matter of history; to be interesting, enterprising, wide awake, up with the times, and brimful of ideas that are especially helpful to the honey-producer.

This Issue of the Review is Sent to a Large Number of Bee-Keepers who are not Subscribers, and it is for Their Benefit (and Mine) that this page and the Preceding one are Inserted.

BACK NUMBERS.

Most people prefer to have their subscriptions to journals begin with the year, and this plan is also more convenient for the publisher; for these reasons I have printed large editions of the REVIEW from the beginning of 1894; and to those who would now like to subscribe I should be glad to furnish back numbers beginning with the

January

Issue, in which R. L. Taylor writes of "Apicultural Work at Experimental Stations;" Rambler tells of "Some Things California Bee-Keepers do not Want;" Dr. Miller explains why, in his opinion, "Given Foundation Went out of the Market;" he also gives a caution in regard to wintering bees in heated repositories; Jas. Heddon gives his views as to how the REVIEW should be conducted; he also says why the Given press was dropped; Elmer Todd writes of his experience with foul brood and explains when hives need boiling and when they may not; B. Taylor explains the "Advantages of House Apiaries for Wintering and Springing Bees and for Stimulative Feeding;" and S. Corneil gives his experience with two queens in one hive. The

February

Number contains a most excellent article by R. L. Taylor on "Foul Brood, its Symptoms and Cure;" S. Corneil writes on the "Propagation and Dissemination of Foul Brood;" Rambler shows "When Sealed Covers are not Objectionable;" R. McKnight explains "Where Honey Comes From;" Oliver Foster writes very clearly upon "The Essential Qualities of Foundation and how to Secure Them;" There is an editorial "leader" on "How to Make the Best Foundation;" C. W. Dayton writes on "Bee-Escapes, how to put Them on and how they save Labor and Prevent Robbing;" and J. A. Green discusses this question: "Is Bacillus Alvei the Germ of Foul Brood?" In the

March

REVIEW R. L. Taylor says which smoker and which bee escape are his preference and he gives the reasons why; aside from this article, the rest of the correspondence in this number relates to Foundation, the different methods of making it, the manipulation of wax, etc., the following men writing on the subject: Jno.

Myers, C. A. Hatch, M. H. Hunt, C. P. Dadant, J. Van Densen, E. T. Flanagan, and Dr. A. B. Mason. The information brought out is of a very practical and valuable character. There is also an illustration and description of what is probably the best foundation fastener yet brought out. There are two half-tones giving glimpses of parts of the REVIEW apiary, in which a cheap style of spring protection is illustrated.

In each issue, there are, of course, the usual number of short editorials, also Hasty's "Comments on Current Bee Writings."

W. Z. HUTCHINSON, Flint, Mich.

ELMER HUTCHINSON,
Vassar, Michigan, has a lot of
Empty Hives and Combs to sell.
They are of two Styles, the L.
and the New Heddon. Write for
Prices and Particulars.

Tested

Queens are usually sold for \$2.00. I will explain why I wish to sell a few at less than that. As most of my readers know, I requeen my apiary each spring with young

Queens

From the South. This is done to do away with swarming. If done early enough it is usually successful. It will be seen that the queens displaced by these young queens are never more than a year old; in fact, they are fine, tested, Italian queens RIGHT IN THEIR PRIME; yet, in order that they may move off quickly, and thus make room for the untested queens, they will be sold for only

\$1.00.

Or I will send the REVIEW for 1894 and one of these queens for only \$1.75. For \$2.00 I will send the REVIEW, the queen and the book "Advanced Bee Culture." If any prefer the young, laying queens from the South, they can have them instead of the tested queens, at the same price. A discount given on large orders for untested queens. Say how many are wanted, and a price will be made.

W. Z. HUTCHINSON, Flint, Mich.

DADANT'S FOUNDATION

Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. CHAS. DADANT & SON, Hamilton, Ills.

4-94-12t

Please mention the Review.



W. R. STIRLING,

MANUFACTURER OF

The Model Bee-Hive,

Frames, Sections, Feeders, Smokers, Extractors, Honey Cans, Shipping Cases, Bee Veils, etc., also breeder of

Italian Queens.

4-94-4t Send for price list to

W. R. STIRLING, Rondeau, Box 9, Ontario, Canada.

Bee-Keepers' Supplies

At panic prices; No. 1 sections, $4\frac{3}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ or 7 to the foot, 500 for \$1.50; 1,000 for \$3.00; 5,000 for \$12.50. No. 2 sections, \$2.00 per 1,000. Write for free catalogue and price list to J. J. BRADNER,

2-94-3t

Marion, Ind.

ECONOMIST



BEE-HIVE.

Please mention the Review.

Send me Your Name And I will

send my pamphlet "How I produce comb honey," and my catalog of apian supplies free 4-94-3t (GEO. E. HILTON, Fremont, Mich.)

M

Y Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and 5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. W. H. LAWS, Lavaca, Ark. 2-94-4t

GRAY CARNIOLAN

Bees and Queens will be bred for sale the coming season by JOHN ANDREWS, Patten's Mills, N. Y. They winter well and breed up rapidly. Hence are well adapted to both Northern and Southern latitudes. Send for circular. 3-94 tf

Please mention the Review.

I have several hundred

QUEEN CAGES

of different styles and sizes, made by C. W. Costellow, and I should be pleased to send samples and prices any intending to buy cages.

W. Z. HUTCHINSON, Flint, Mich.



BEE-KEEPER; also our beautifully illustrated catalogue

LEAHY M'F'G CO., Higginsville, Missouri.

PROGRESSIVE!

THE PROGRESSIVE BEE-KEEPER is the name of a journal for which you ought to subscribe. Although the price is only 50 cts., the journal is first-class in every respect. Dr. Miller calls it "the really progressive, PROGRESSIVE." During the past year it has received more favorable notices from the bee-keeping press than has any other journal. Its subscription list is six times what it was a year ago when taken in charge by Mr. Leahy.

We are also the largest manufacturers of apian supplies west of the Mississippi. Kindly send us your name and we will send you a sample copy of the PROGRESSIVE of apian supplies.

MAY, 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion : 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows :

On 10 lines and upwards, 3 times, 5 per cent ; 6 times, 15 per cent ; 9 times, 25 per cent ; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent ; 6 times, 20 per cent ; 9 times, 30 per cent ; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent ; 6 times, 30 per cent ; 9 times, 40 per cent ; 12 times, 50 per cent.

Clubbing List.

I will send the REVIEW with—

Gleanings.....	(\$1.00)	.....\$1.75.
American Bee Journal.....	(1.00)	..... 1.75.
Canadian Bee Journal	(1.00)	..... 1.75.
American Bee Keeper	(.50)	..... 1.40.
Progressive Bee Keeper.....	(.50)	..... 1.30.
Bee Keepers' Guide.....	(.50)	..... 1.40.
Apiculturist.....	(.75)	..... 1.65.
Bee-Keepers' Enterprise..	(.50)	..... 1.40.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee - Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

CHICAGO, Ill.—The Chicago market has plenty of honey, and 14c seems to be the outside price obtainable. Any thing that will not grade strictly No. 1 must be sold at 12 to 13. Large quantities have been sold, but the supply is at present in excess of the demand. Extracted finds ready sale at 6 to 6½ for Northern honey; Southern, in barrels, 5. Beeswax, 22 to 24.

Dec. 19. S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

CHICAGO, Ill.—Comb honey is selling in small lots, when choice, at 14 to 15 cts; off grades are hard to dispose of. Extracted is of slow sale at 5 and 6 cts. Beeswax is in good demand at 25 cts for pure goods.

Mar. 7. R. A. BURNETT & Co.,
161 So. Water St., Chicago, Ill.

BUFFALO, N. Y.—There is a liberal stock of honey on hand and trade is dull, but we expect to clean out all this month and next. We quote as follows: Fancy white, 13 to 14; No. 1 white, 11 to 12; fancy dark, 8 to 9; No. 1 dark, 7 to 7½; white extracted, 6; dark, 5; beeswax, 25 to 30.

Mar. 7. BATTERSON & CO.,
167 & 169 Scott St., Buffalo, N. Y.

KANSAS CITY, Mo.—The demand for all kinds of honey, is very light. We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 13 to 14; fancy dark, 10 to 12; No. 1 dark, 10; white extracted, 7 to 7½; amber extracted, 6; dark extracted, 5; beeswax, 20 to 22.

Mar. 7. CLEMONS-MASON CO.,
521 Walnut St. Kansas City Mo.

MINNEAPOLIS, Minn.—The market is very weak at present, but, evidently will be better later on. We quote as follows: Fancy white, 16 to 17; No. 1 white, 15; fancy amber, 13½ to 14; No. 1 amber, 12; fancy dark, 10; white extracted, 6½ to 7; amber extracted, 6; dark extracted, 5½.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Jan. 2.

CHICAGO Ill.—The honey market is very dull at last month's quotations; but we have moved considerable stock at 13 cts and believe that 13 to 14 will rule for the balance of the season. There is plenty of inquiry for beeswax with none to offer. We quote as follows: Fancy white, 13 to 14; No. 1 white, 13; fancy amber, 12; white extracted, 5 to 6; beeswax, 25.

Mar. 7. J. A. LAMON,
44 & 48 So. Water St., Chicago, Ill.

NEW YORK, N. Y.—The demand for comb honey has almost ceased, while the market is yet well stocked. In order to move round lots, the prices given must be "shaded." Extracted is in fair demand, but the supply is abundant. Beeswax meets with a ready sale at the prices given. We quote as follows: Fancy white, 11 to 12; No. 1 white, 10 to 11; fancy amber, 11; fancy dark, 9; white extracted, 5½ to 6; amber extracted, 5½; dark extracted, 5; beeswax, 27 to 28.

HILDRETH BROS. & SEGELKEN,
Mar. 9. 28 & 30 West Broadway New York.

Texas Reared Golden Italian Queens

BRED for BUSINESS and BEAUTY. March, April and May, Untested, \$1.00; Tested, \$1.50. After, Untested, 75c.; Tested, \$1.00. Remit by P. O. Money Order, or Registered Letter. Price-List Free. W. H. WHITE,
5.94.tf Deport, Lamar Co., Tex.

CHAMPION INCUBATORS AND BROODERS
WRITE FOR CATALOGUE
FAMOUS MFG. CO.
RANDOLPH & CANAL STS., CHICAGO, U.S.A.

PLANTING FOR HONEY

Is again being agitated to some extent in the bee journals. There are conditions under which it will pay, and pay well, to plant for honey alone, but they are very few; there are other conditions under which it will pay to plant, or to secure the planting of, such useful crops as will yield honey; and there are localities in which neither will prove profitable. You may lose by not planting and you may lose more by planting; better read what the book, *ADVANCED BEE CULTURE* has to say on the subject. It may put money in your pocket, or save that already there.

Price of the book, 50 cts.; the *REVIEW* one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

GO TO

HEAD QUARTERS FOR 4 AND 5 BANDED QUEENS

Special, breeding queen,	\$5.00
Best, select, tested,	3.00
Tested,	2.50
Untested,	1.00
" per dozen,	9.00

L. L. HEARN,

7-93.tf

Oakvale .W. Va

Please mention the Review.

Finch's Foundation,
MADE BY
An Improved Process,
IS THE
Best and Cheapest.

SEE SAMPLES FROM

W. J. FINCH Jr.,
Springfield, Illinois. 4-94-4t

BEE SUPPLIES!
Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address **T. G. Newman, 147 So. Western Ave., Chicago.**

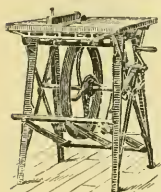
For Beginners PROFITABLE BEE-KEEPING By Mrs. Jennie Atchley, of Texas.

In the first number of the *AMERICAN BEE JOURNAL* for May, 1-94, Mrs. Jennie Atchley commences her *School of Profitable Bee-Keeping*. She begins at the very bottom, and freely gives the results of her 20 years' experience in *Successful Honey-Production and Queen-Rearing*. If you want to learn nearly everything about Bees, **now is the chance**. Subscribe for the "*Bee Journal*" for a year, and read what Mrs. Atchley has to say in her department—"In Sunny Southland." Her "*School*" will continue indefinitely. Tuition Free.

THE *BEE JOURNAL* was established in 1861, has 32 pages every week, and costs only \$1.00 a year. It contains the writings of the best and most successful bee-keepers in America. Sample Copy Free. Also, *200-PAGE BOOK* (Newman's "*Bees and Honey*") Free to each *New Subscriber* for a year. Better begin with the first number in May. P. 17 up!

GEORGE W. YORK & CO., Fifth Avenue, CHICAGO, ILLS.

**Barnes' Foot and Hand
Power Machinery.**



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

3-94-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills

GOLDEN ITALIANS.

If you want bees that are large, beautiful, very gentle and great honey gatherers, try my Golden Italians. They are pronounced very fine by W. Z. Hutchinson and many others. Satisfaction guaranteed. One untested queen, 80 cts., three for \$2.00. One warranted queen, \$1.00, three for \$2.50. Tested queens, \$1.50 each. Selected, tested queens, \$2.00 each.

3-94-tf

C. M. HICKS, Hicksville, Wash. Co., Md.

Bees 6 6 Bees.

If you contemplate buying Bees and Queens the coming season, write for special prices to

LEININGER BROS.,

3-94-tf

Fort Jennings, Ohio.

IF YOU WANT THE

BEE BOOK

That covers the whole apicultural field more completely than any other published, send \$1.00 to Prof. A J. Cook, Claremont, California for his

Bee-Keepers' Guide.

Liberal Discounts to the Trade.

Please mention the Review.

New Customers are What we now Want.

We always keep our *old customers* by FAIR DEALING and giving FULL VALUE. Our 1894 catalogue of all kinds of

BEE - SUPPLIES

A copy of THE AMERICAN BEE-KEEPER and a Souvenir of value will be sent on application. We manufacture all kinds of Bee Hives, the celebrated Falcon Sections, Comb Foundation, etc.

The W. T. FALCONER M'f'g CO.,

(ESTABLISHED 14 YEARS.)

Jamestown, N. Y.

Your

**ATTENTION,
PLEASE.**

One untested queen in June,	\$1.00
One " " July to Sep., .....	.75
Six " queens in June,	5.00
Six " " July to Sep.,	4.00
One 2-frame Nucleus in June,	2.75
One 4-frame " "	4.00

All nuclei contain untested queens. Send for circular and sample of my **5-Banded Beauties.**

J. F. MICHAEL,

1-94-9t

German, Darke Co. Ohio.

I Have Everything

Needed in the Apiary. Latest Improvements. Best Quality. Bottom Prices. My Strain of **GOLDE ITALIAN BEES** have few Equals. Send for Price List.

3-94-tf

E. F. QUIGLEY, Unionville, Mo.

**Italian Queens
AND NUCLEI.**

Five and Three-Banded, bred in separate yards twelve miles apart. Warranted Queens, 75 cents each; three for \$2.00; tested, \$1.00 Good's introducing cage sent extra with each queen. Strong Nucleus with warranted queen, 2-frame, for \$2.00; 3-frame for \$2.50; 4 frame for \$3.00. Safe arrival guaranteed. Special prices on large orders.

1-94-12t

J. H. GOOD,

Nappanee, Ind



AGENTS To

Handle the Best Fire Mat Made, and Other Kitchen Specialties. Prices Lower Than the Lowest.

3-94-3t

(Sample Prepaid, 20 cts.)

FLETCHER FIRE MAT CO.,
6 W. Pearl St., Cincinnati, Ohio.

Names of Bee - Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States) and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00. W. Z. HUTCHINSON, Flint, Mich.

BEE SUPPLIES!

Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address **T. G. Newman, 147 So. Western Ave., Chicago.**

Please mention the Review.

Out on the Prairie,

Away from other varieties of bees, I rear Italian queens that cannot be excelled for Beauty, Gentleness, and Business Qualities; and I offer them for April delivery at the following prices:—

One Untested Queen, 80 cents; three for \$2.25; six for \$4.00. Tested, \$4.25; select, tested breeder, yellow to the tip, \$1.50. 3-94-1f

G. E. DAWSON, Carlisle, Ark.

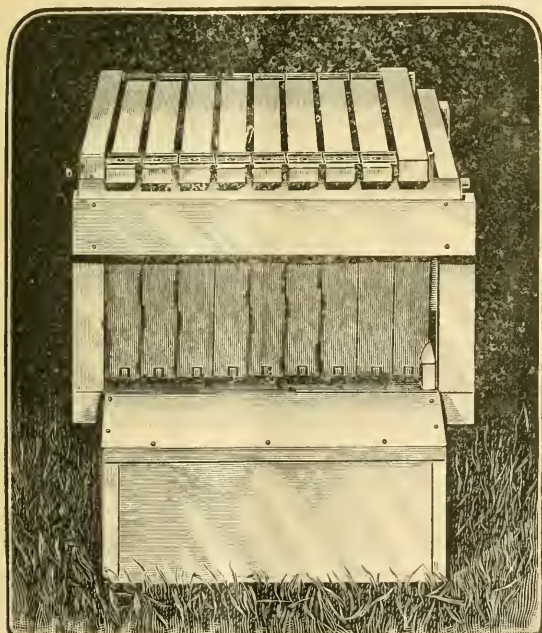
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GOLDEN

ITALIAN

QUEENS,

Rared by the Doolittle method, at 75 cents each for untested queens. Breeding queens, the very best, \$4.00 each. Nuclei, \$1.00 per frame. Full colonies of Italians, \$6.00 each. Safe arrival and satisfaction guaranteed or money refunded. Send for price list. **F. A. CROWELL,** 3-94-1f Granger, Fill. Co., Minn.
(Money Order Office, Cresco, Iowa)



THE "ASPINWALL."

1. The most perfect hive ever offered the public.

2. It has Closed-End Frames, which can be more rapidly handled than any other frame, without killing a single bee.

3. The Top-Bars project over the Hive ends, allowing easy and rapid handling of the Frames. This feature favors narrow spaces between the bars, and makes the most perfect non-burr-comb frame extant.

4. They can be manipulated without working with fingers among the bees, or having them daubed with propolis.

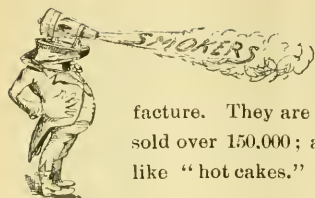
5. The hive may be contracted or expanded as desired.

6. The frames are provided with an improved and rapid method of putting in comb foundation.

7. The frames are L. in size. We also make a deep frame hive L. length.

Send for illustrated circular.

The Aspinwall Manufacturing Co., Jackson, Mich.



The new '94 model Crane is a beauty. Among some of its distinguishing features are an improved

Check-Valve,

a device that forces the air through the cup, even when crammed with fuel, and at the same time prevents smoke from going into the bellows: a

Hinged Top

secured by a malleable iron hinge accurately milled at the joint so that the top will fly squarely in place. No need of burning fingers in replenishing, nor losing the top off.

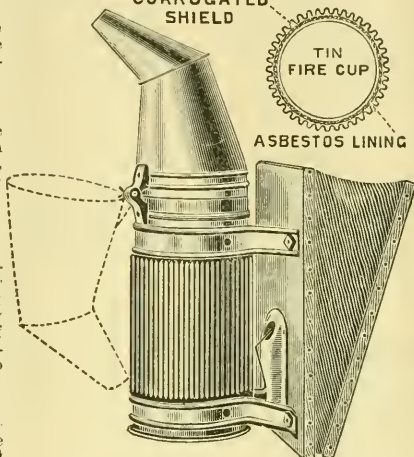
The Lining

this year consists of asbestos sheeting around the outside of the fire-cup; and

CORRUGATED SHIELD

TIN FIRE CUP

ASBESTOS LINING



over this still is a neat corrugated shield. This combination is the most effective of anything we have ever tried. And last but not least, the cup is secured by four small BOLTS, not screws.

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A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, MAY 10, 1894. NO. 5.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

SOME EXPERIMENTS IN WINTERING.



DURING last fall and winter I made such efforts as I could under existing circumstances to get some light on the problems growing out of the matter of wintering bees. My bee-cellar is under my honey

house and is fifteen by thirty feet with a cistern in one end. I have wintered bees in this cellar for seven or eight years with almost uniformly excellent success and yet it now seems certain, from my experiments with a hygrometer, to be a very damp one, there being a difference, at a temperature of from 45° to 50°, between the wet bulb and the dry bulb, of only one-half a degree, which indicates that the percentage of moisture is about 96—almost complete saturation.

It is claimed by many prominent beekeepers that moisture is one of the principal causes, if not the principal cause, of the winter disease of bees known as dysentery, but

if this were true I should have expected to find it prevailing largely among my bees during the last winter, but such did not prove to be the case. In fact, though I suffered a larger percentage of loss than I ever did before in this cellar—about 20 per cent.—yet only a small proportion of those that perished showed even a little evidence of that disorder. I discovered only two cases that could be called really bad, in one of which the colony died and in the other the colony had regained its health and was in good order and of good strength when removed from the cellar, and still remains so. This case was a peculiar one. The hive was an eight-frame L. hive and the bottom board was left on in the wintering. Such a forbidding receptacle for bees as this was when taken from the cellar about the tenth of April, I have seldom seen. The bottom board was covered with a mass of sticky ordure to such an extent that only now and then would a bee venture upon it to gain the outside of the hive. The cover was well sealed on and when pried off it ran with the almost incredible amount of water and the honey board and combs outside the cluster were wet and white with mould. When the bottom board was removed and a clean one substituted, the bees came out to fly as clean, healthy and strong as one would care to see.

I cannot reconcile this case, as well as many others I have examined recently, with the theory that moisture is the cause of dysentery. Yet I think I have good evidence that moisture under certain circumstances

is harmful. When the strength of the colony is sufficient to enable it to keep its immediate neighborhood dry, it appears not to suffer from moisture, but if it is so deficient in numbers and vigor, one or both, that it is unable to do that, it seems reasonable to suppose that it must perish, being either chilled to death in the cluster or else driven to desperation by the misery of the situation, scattering and leaving the hive tenantless. The slight spotting of the combs which often occur; under such circumstances should not, I think, be taken as a sign of the trouble known as dysentery. It is rather the result of the weakness of approaching dissolution than the cause of it.

Last season after the failure of clover and basswood there was very little nectar to be gathered in this locality either during the remainder of the summer or during the fall, from which fact it resulted that at the beginning of winter a large portion of the colonies were not only weak in bees but especially so in young bees. It was not difficult to foresee the probable consequence of this state of things, so I was not surprised at the loss I have incurred. Apparently the old bees died off during the early part of the winter, for more than the usual number left the hives during that time, thus reducing the cluster to a size too small to enable it to successfully combat the unfriendly influences of moisture combined with a cellar temperature. Perhaps in many cases the cellar temperature alone would prove sufficient to create such a feeling of discomfort as to make the bees restless and so cause them one by one to leave the cluster and wander out of the hive and be lost, but I have no doubt that in other cases the added influence of moisture was necessary to accomplish total ruin. That the decline of these colonies came about in the way I have indicated seems substantiated by the fact that in almost all these cases very few dead bees were left in the hives and in only now and then one had the bees last to perish preserved the form of a cluster to the last.

Quite a strong effort was made to determine if possible whether sealed covers were, in cellar wintering, a disadvantage and a large number of hives with such covers as well as of those with loose covers were set apart and carefully examined with the result that where the colonies were of fairly normal strength there was no apparent difference—almost every one of that class winter-

ing very satisfactorily. About the only advantage of the loose covers was that the combs were preserved dry and clean. It was also observed that the entire removal of the bottom board, leaving the bottom of the hive entirely open, served largely the same purpose as a loose cover, though not to quite the same extent. In some of the larger hives, having a bottom board as well as sealed covers, the combs outside the cluster were very wet and mouldy. In the case of the weaker colonies sealed covers were comparatively detrimental. Of course all this is in a cellar where the temperature was maintained during the entire winter at 45° and over, and it can readily be believed that the class of colonies that would fail to cope with the conditions induced by sealed covers out of doors would be very considerably enlarged; not, I think, because the moisture would induce the disease known as dysentery but because it would require stronger colonies to ward off the encroaching chilliness caused by constant excessive evaporation so that the health and vigor of a larger number would be undermined and finally destroyed.

Of course so far it does not appear that sealed covers have any advantage in any case but inasmuch as they cause wet and mouldy combs it would be well worth the while to loosen all covers when the bees are put into the cellar and certainly so unless the bottom boards are entirely removed.

The losses I have incurred speak plainly of the importance of giving strict heed to the old rule: Keep all colonies strong. By doubling up about one-third of my colonies in September I should have escaped with practically no loss.

LAPEER, Mich.

April 23, 1894.



Mr. S. Corneil's Death.

ALLEN PRINGLE.

"Steal thou away—give little warning.
Say not 'good night,'
But in some clime more bright,
Bid me, 'good morning.'"

THE bee-keepers of Canada, in the death of Samuel Corneil, of Lindsay, have lost one of their ablest and best men. Mr. Corneil died suddenly and alone in his backyard on the afternoon of April 7th, presumably of heart failure. He had taken his dinner with his family in his usual health and in good spirits, but it proved to be the

last. But Mr. Corneil's health appears to have been failing him during the spring. The last letter I have from him bears date March 3rd, 1894, and in it he says: "The Dr. advises me to do as little mental work as possible. I have had several slight attacks of vertigo within the past few weeks; but on this day two weeks I was brought home, for the first time in my life, in a bus, as limp as a rag. The Dr. says it is caused by the failure of the stomach to do its work, which, in turn, is caused by nervousness, the result of mental overwork, and worry. Hence his advice to ease off so as to allow the stomach and nervous system to regain their tone."

I make this extract from a private letter knowing it will be read with interest, and, I trust, also with profit to the living—profit to those who need and can take an admonition of that kind, and I count myself among the number.

Personally, I had great respect for Mr. Corneil, and enjoyed his intellectual companionship whenever opportunity for personal intercourse or correspondence presented itself. Although on some subjects outside of apiculture we differed in opinion, and measured swords, Mr. Corneil was built on too broad a plan to allow that to interfere with the cordial relations of personal friendship.

Mr. Corneil was a fair scholar, an able and accurate writer on apicultural subjects in which it may be fairly said he was a close observer and an original investigator. In those branches of science cognate to the science of apiculture he was well posted, and was seldom found nodding in his contributions to the bee journals. Of course he was "set" in his views and opinions, but that may be tolerated in an intelligent and upright man. That he was enthusiastically absorbed in the science and art of apiculture goes without saying. And he "died in harness" among his bees, with the hive he was manipulating still uncovered.

Mr. Corneil was the efficient Secretary of the Ontario Bee-Keepers' Association at the time of his death, and had been one of its directors for many years, and its president a few years ago. He was also one of the successful delegates of Ontario bee-keepers to the Indian and Colonial Exhibition in London in 1886. In 1890, I think, he met some of our American friends at the North

American Bee-Keepers' Association meeting at Albany.

Our Association will greatly miss Mr. Corneil; the bee journals on both sides will miss him; and the fraternity in general will miss him, and deplore the fact that, in his own language from his diary, he "forgot the world and fell asleep."

SELEY, Ont.

April 21, 1894.



Some Foundation Pointers by Rambler.

Careful good makers! else you surely will
Get things too thick for the bee's little bill.



MY experi-
ence in the
manu-
facture
of foundation
may be con-
sidered as lim-
ited. Still,
that experi-
ence covers
several years
and includes
the use of several

machines. I have used both the rolls and the Given press. The rolls seem to give a more uniform thickness to the base of the cell which is readily observed by transmitted light. With the press it is quite difficult to get this uniformity of thickness. With the press I used, a portion of the sheet of foundation would have a very thin base, even to the puncturing of little holes, while another portion would be quite thick. To overcome this defect it was necessary to overlay portions of the dies with sheets of paper until the pressure was uniform. This overlaying, however, was not reliable, for the next time the press was used, the overlaying had to be renewed. For foundation to be used in the brood chamber, I was not so particular to get the base uniform. The Given foundation would not bear very rough handling, but it seemed to be accepted with wonderful alacrity by the bees, and would be drawn into comb when very little honey was being gathered and when foundation from the rolls would be neglected. The difference between the two kinds would not be so marked, or, perhaps, noticeable, during a good flow of honey. Foundation can be made quite rapidly on the press and the results, except for making thin foundation,

were excellent in my experience, and now that the expert mechanics at the Root establishment have taken hold of the press, I hope to see the above defects wholly eliminated.

There is much said and written about the bees working down the base of the cell. As the bee is guided in this work by using its mandibles as a gauge, when it produces comb naturally, it draws out the base of comb between the mandibles just as it does the side walls, this gauge is thus applied to every portion of the comb and thus the uniform resultant thinness.

It seems to me that a true way to get at the exact thickness of comb, is to measure the side walls as well as the base of the cells. As to the experiments in the measurements of the base of the cell, at the Experiment Station, I don't see as it is very clear that the bees reduced the thickness of the base of the cells at all. It is not definitely stated that the first measurement was made before the foundation was given to the bees. If Mr. Washburn's measurements were taken before the foundation was given to the bees, then, according to the general average, some bases were thicker after manipulation by the bees than before, and would show that the bees, not being allowed their natural way of thinning the base by applying their gauge, were as far from getting it right as were the manufacturers of foundation. It is also noticeable that the very thin flat-bottom foundation does not make any better showing than other brands. And right here I would suggest that if flat-bottom foundation could be made on a press it might work better than when so compactly rolled.

There is another point in relation to the side walls of comb foundation; if it is made with a thick rib the bee cannot open its mandibles wide enough to thin it down, and much wax is left at the base. The same applies to side walls of too great depth. A portion of the wax is beyond the thinning power of the bee, for it is all done between the mandibles.

We all know what an intractable substance beeswax is and is subject to changes in the rendering, and a uniform quality of wax will never be attained until there is more care exercised upon this point.

California should produce the best wax in the country for it is nearly all rendered in the sun extractors and has that beautiful yellow color we like to see, but many times

in cooking it is melted in old rusty or black utensils and the beautiful color is materially destroyed.

The most beautiful and almost transparent wax I ever saw was in Campo, Cal., made by Esqr. Herrick. His process of rendering was first to thoroughly wash out all dirt and honey in several changes of tepid water, the rest of the process was performed in porcelain lined or new tin vessels, and everything kept scrupulously clean. If every wax producer would look closely to the matter of cleanliness, the quality of wax and foundation would be improved.

“RAMBLER.”



How to Secure Sections Filled With Drawn Combs for Use During the White Honey Harvest.

B. TAYLOR.



FRIEND Hutchin-son, in April REVIEW, page 97, you ask me to explain how I get the empty combs, that I use to secure the large yields of clover and basswood honey, drawn out in time for the white honey harvest. I will tell you with

pleasure, as I regard this method of increasing the profits of bee-keeping, as the greatest improvement I ever practiced, for by it I can get as many pounds of comb as extracted honey, and have it not only white, but the nicest, straight sections built fast to the wood on all sides.

Now, Mr. Editor, these facts above stated will make this finished comb system for getting large yields of fine; white, section honey a very important question to the bee-keeping fraternity, so I will give the readers of the REVIEW plain directions from beginning to end.

I have the combs for each season's use built the season *previous*. A bright bee man, well known to bee keepers, at the late National Convention at Chicago, told me with evident pride that he "had no use for a comb leveler, as he got nearly all his sections sold each year by making two or three grades of them." In making these grades

the price is rapidly lowered with each grade. With my present management I not only greatly increase the yield but I get all No. 1 honey, and for *all* of which I get the *highest* market price. In times past, like friend Green, (there, now, I've "went and done it" and told his name) I worked by all manner of means to get *all* my sections finished so they would sell at some price. I then contracted the surplus room as the season of surplus was drawing to an end, and this oftentimes caused swarming and much work and loss. I now give *un stinted room* to the end of the white harvest, not even desiring that all the sections be capped. The bees are thus left to work to their *full capacity* in gathering and storing honey until the end of the flow.

At the end of the basswood harvest I remove all the section cases, and, as it is now a time of honey dearth, this temporary severe contraction never causes swarming. These last supers of sections are now at once emptied, the finished sections crated and the unsealed and partly sealed ones extracted. This extracted honey, when properly cured, is very fine table honey, and I now have a ready home cash-market for all I may have of it, at nearly the price of comb honey, never having sold it for less than 12½ cents per pound.

This, you see, will leave many sections of finished, or at least partly drawn, combs. I now return these combs to the supers, generally alternating them with sections filled full of foundation, using separators between each two combs. These separators have the bee-space in the separator and a slot in their centers $\frac{3}{8}$ inch wide their entire length thus giving the bees free passage from section to section. The supers are returned to strong swarms to have the empty combs filled with fall honey, and the foundation ones drawn out into comb.

Early in the fall honey flow the supers are again taken off without any regard as to whether they are finished or not. It is done early so that the bees may fill their hives with stores for winter. Let me say here that I give many colonies brood combs, in place of sections, to be filled with honey to supply swarms that may need stores for winter. All these sections of fall honey are now again extracted and the honey put away to feed the bees again the coming spring, and thus raise a new army of workers for the next white honey season.

I now return the empty combs to the supers and they are all set out at *one time* on a warm clear day to be cleaned by the bees of every particle of honey. I set each super so both bottom and top are entirely exposed, and the bees can enter them in any number without hindrance. The combs are then never torn in the struggle, as there is room for all. In the evening after all the bees have left the supers are removed to the iron curing house, and, the next morning, the bees finding every thing gone, make *no commotion*, in fact, they would not even if the supers had not been removed, for the honey had all been removed and a bee understands this as well or better than many bee-keepers. Now, friends, if these supers had been piled up so but one bee could enter at a time, there would have been several day's struggle before they would have been cleaned and the entire yard would have been kept in commotion all this time, the bees stinging every thing within sight. (Mr. Editor, please don't tell Dr. Miller that I said this.)

We now take the comb leveler, with proper tables to work on, into the curing house and all the combs are carefully leveled and set away to use in snatching another large crop of gilt edged white section honey the coming year.

FORESTVILLE, MINN. April 26, 1894.



Getting Rid of Foul Brood Without Shaking the Bees Off the Combs or Interrupting Them in Their Labor.

M. M. BALDRIDGE.



THE object of this article is not to discuss the cause or causes of foul-brood, but simply to give my plan of getting rid of the malady after it has once got a foot-hold in the apiary. The I propose to give is both very simple

and practical, and is based upon the belief that the germs of foul-brood are carried from a diseased colony to a healthy one, or to an empty hive, both through the *honey* and the *bee-bread*. The plan is, therefore, simply to

transfer all the inmates of the diseased colony to a healthy home without the germs of foul-brood being present in their bodies at the moment the transfer is made.

The best time, perhaps, to begin the work is when the bees are getting plenty of honey from natural sources. This, however, as will be obvious to experts, is not absolutely necessary; but, assuming that the bees are daily at work collecting honey from natural sources I proceed thus:—

(1)—I get a tube made four or five inches long and about one inch in diameter at one end, and about three-eighths of an inch at the other, and solder thereto, at the larger end, at right angles, a piece of tin about two inches square, having a hole cut through the center, of proper size, to match the hole in the tube. I have as many tubes made as there are hives of foul-brood to be treated. The tubes I use are made of perforated tin and they cost me about five cents each by the dozen, but common plain tin will answer about as well.

(2)—Now bore an inch hole through the front end of the diseased hive and fasten a tube over it by tacks driven through the four corners of the flange. I make this hole near the top of the brood chamber, or a few inches above the bottom entrance of the hive.

(3)—I now cage the queen of the diseased colony and lay the cage upon the frames. I prefer to do this near sundown and after the bees are done flying for the day.

(4)—The following morning I go to some healthy colony and select a comb of sealed brood, with or without the adhering bees, and place it in an empty hive and then fill the same with frames and foundation.

(5)—I now close the entrance to the diseased colony so that no bees can get in or out except through the tin tube, and then move this colony off its stand to one side so as to be within two to six inches of the old stand, and fronting the same direction. I now place upon the old stand the prepared hive. I do this work so *gently* and quickly that the bees in the diseased colony do not fill their bodies with honey.

(6)—Towards sundown of the same day, and after the bees are done flying, I take the caged queen away and let her run into the entrance of the new hive. No bees found feeding the queen, or clustered upon the cage should be taken away.

All the work necessary for a month or more is now done. In from 30 to 60 days, as must be apparent, all the bees in the diseased colony will from day to day be transferred to the new hive.

Should a queen hatch meantime she too will find herself excluded from the diseased home in case she should leave it to mate.

As soon as all the bees are gone out of the diseased hive I then remove the same to some room from which no bees can get out, or any get in, and destroy the combs by fire, or by melting into wax. If they contain much good honey I save it. Should I find any bees, I *destroy them at once*.

(7)—I now scrape the diseased hive and burn up the refuse; then paint the inside with kerosene and set on fire. I do this, of course, out-doors, and by dropping a piece of burning paper inside, with the top of the hive open. I watch the burning so as to keep the inside from being charred. The fire may at any stage be smothered out by placing a board over the top, or by turning the hive over if it has a tight bottom. I expose the hive a few days to the air so as to remove any smell of kerosene and then supply it with healthy combs or frames of foundation. The hive is now as safe, in my opinion, to use again as when new, for both the fire and kerosene are powerful disinfectants—as good at least as boiling water. Some claim that it is unnecessary to disinfect the hive and this may be true; but, in any event, the disinfecting can do no harm.

To conclude, as the REVIEW is published for advanced bee-keepers I do not deem it necessary to go into details to explain *why* certain steps, as described, should be taken, nor will I at this time attempt to point out some modifications that might safely be adopted and put into practice; these will be discovered perhaps without any aid from me. But the bee-keeper of limited experience would, perhaps, better adhere as near as possible to the instructions as herein given.

About a year ago I treated two foul broody colonies in my apiary substantially as herein described and to-day (April 30, 1894) in overhauling the same I find them both in good condition and no trace of the disease in either of them.

What Constitutes Ripeness in Honey, and How it may be Secured.

R. M'KNIGHT.

A can of honey soldered in so well—
A watermelon proudly on the swell—
Is either ripe? How can a body tell?

THE subject of ripening honey is receiving some consideration at present. It is a subject, too, that deserves consideration because honey is at its best when ripe. This implies that there is a time when it is unripe, and a possibility of its being over ripe. We know that honey is found, and sometimes marketed, in the three conditions above mentioned. But we do not all know the exact properties that constitute ripeness in honey, because no fixed standard of perfection has been decided upon, or one that embraces all the constituents of honey in their highest state. One, and only one, of the conditions that constitute perfection in honey is ageed upon and accepted as a standard of quality, that is that it shall weigh at least $13\frac{1}{2}$ lbs. to the gallon. But the specific gravity of of honey is not the only test of perfection. Flavor and aroma are quite as important. Its density may decide its nutritive property; but it is the other two that make it grateful or otherwise to the sense of the taste and smell—in a word, that make it palatable. But people's tastes differ and honey collected from different classes of flowers has a corresponding diversity of flavor; hence the difficulty in fixing a standard of quality for honey. I am now speaking of extracted honey, because its quality is determined by the three properties above named; not so comb honey, however, because the flavor of the beeswax it contains masks the inherent flavor and aroma of the honey with which it is partaken. I do not mention color in this connection because I am treating of the ripening of honey, and the ripening process has no appreciable effect upon its color.

I define unripe honey as that in which there is an excess of water; and ripe honey as that which has been brought to the recognized standard of density and possessing the highest possible degree of its inherent flavor and aroma. I say the highest degree possible, because the ripening process, whether carried on in the hive, or by artificial means, prejudicially affects both flavor and aroma.

Most honey when first stored has an excess of water in it. If the flow be scant, and it

remains a sufficient length of time in the unsealed cells, this excess of water will evaporate. The high temperature of the hive facilitating the work of curing. If rapidly gathered it is quickly sealed, and will remain unripe till the excess of water escapes through the pores of the cappings in the form of invisible vapor. If extracted before the excess of water has passed off, the honey will be unripe honey. The fact of its having been sealed is not a proof of its ripeness. A little experience will enable one to tell if honey is up to the standard of density (without an instrumental test) provided its temperature is not too low. But it is not so easy determining this if the honey is cold, therefore the man who is in the habit of curing his honey outside the hive is more likely to put a uniformly good article on the market, than he who is governed by the sealing test.

We may now consider what changes honey undergoes in the process of curing, apart from bringing it to the requisite density by evaporation. The principal change, other than the above, is the partial dissipation of its aroma. What then is aroma? I think it may be defined as the property imparted to honey by the flowers in which it is secreted, manifesting itself mainly through the sense of taste, and this has something to do in constituting flavor but only in so far as the sense of smell manifests itself through the medium of the mouth. It is chiefly by its aroma we are enabled to determine the class of flowers from which honey has been gathered. Aroma is fleeting in its nature. Time and exposure will destroy it to a great extent. Therefore it is never so pronounced in honey as immediately after it has been taken from the flowers. The process of ripening honey in the hive, and out of the hive, is identical in its nature and effect. When once ripe it should be immediately bottled or canned and hermetically sealed, if we wish it to retain its flavor and aroma in their fullest degree. If it be allowed to remain in open tanks or cans when once ripe, both will become deteriorated. It is nonsense to say, as some say, that honey can only be ripened in the hive, and retain its flavor and normal consistency. None who have made this statement have given any reasons for the faith that is in them, unless it be Mr. Demaree, and his are not conclusive.

OWEN SOUND.

April 3, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

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FLINT, MICHIGAN, MAY 10, 1894.

SILENCE is the wit of fools.

OLIVER FOSTER dropped the supply business because he could make more money raising honey. That is encouraging.

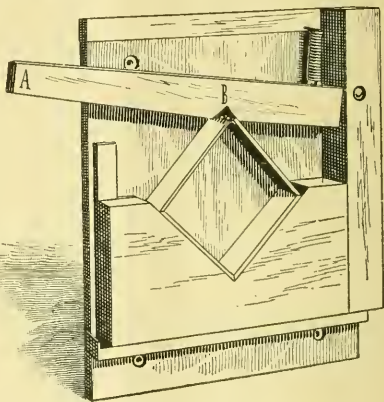
F. A. GEMMILL of Stratford, Ont., has been appointed Secretary of the Ont. B. K. Association, in place of Mr. Corneil, recently deceased.

MR. DAGGITT writes that the words "and hardest" in the eighth line of the first paragraph on page 94, should have been omitted, and that the word "bars" in his last paragraph, 16th line, should be "uprights."

IN DIVIDING a colony of bees, where shall the old queen be left? This query is found in a late issue of the *American Bee Journal*. Thirteen replies say remove her to the new stand, six say keep her on the old stand, and a few evade the question. Two say leave the queen *where there are the most workers*, which is, of course, upon the old stand. Keeping the queen and the workers together is *the point*, and I should be glad to have those who say "put the queen upon the new stand," arise and defend that practice.

MR. R. L. TAYLOR is something of a linguist; besides this, he has a niece living with him, Miss Katherine M. Inglis, who has been an instructor in languages at the Alma college. Between them they read the foreign bee journals; Mr. Taylor pointing out what he considers the most valuable, and Miss Inglis translating it, the results being sent to the REVIEW. The first installment of these notes from foreign journals will appear in the June REVIEW. Mr. F. L. Thompson of Arvada, Nebraska, has also promised to help me in this direction.

EIGHT-FRAME HIVES versus ten-frame hives are being discussed in *Gleanings* in a way that reminds one of old times. Dr. Miller, R. L. Taylor, C. P. Dadant, and others are taking a hand. It seems to me the point is just here: when the flow is early and short as it usually is in this part of the country, the colony in an eight-frame hive gets its combs full of brood and is ready for the sections sooner than is the case with a ten-frame hive, and better results are secured. It is impossible to give a resume of the discussions, and they are too lengthy to copy all of them. It seems to be one of those cases in which you ought to be a subscriber to *Gleanings*.



THE TOWNSEND SECTION PRESS.

MR. O. H. TOWNSEND of Alamo, Michigan, has sent me a sample of a style of section press that he has just invented. I have had an engraving made that very clearly shows the press and the manner in which it is operated. The press may be fastened to the front of a bench and operated by means of a treadle with a strap attached at the end of the lever marked "A," or it may be placed in a horizontal position upon the top of a bench and the lever worked by the hand, in which case it might be well to have a pad placed upon the end of the lever. To operate the machine, the section is folded up and placed in the large notch and the ends brought together inside the notch "B," when the lever is brought down either with the hand or foot, as the case may be, and the joint thus forced together; when the pressure is removed, a spiral spring raises the lever to its former position. I have tried the press and it works satisfactorily. The price is \$1.00.

PREVENTION OF INCREASE is brought about by Geo. F. Robbins, by giving the combs of a colony that has cast a swarm to some weak colony, the weak colony having first been made still weaker by previously moving it to a new location, the flying bees joining the nearest colony. All right, George, but what shall a man do who has no weak colonies?

THE PRACTICAL BEE-KEEPER has received support to such an extent that its owner feels warranted in making of it a monthly at only 50 cents a year. This is encouraging. By the way, its editor, Mr. T. N. Leigh, must be something of a linguist, as he copies freely from the foreign bee journals. One issue contains a translation from the French, of an article written by Dr. Oscar Haenel, on new methods of analyzing honey. He shows that honey must first be subjected to dialysis if definite results are to be secured in using the polariscope. Those who pin their faith upon polarization for detecting glucose in honey ought to read this article.

ANOTHER POINT in holding down a veil as described in last REVIEW is that the veil is held out from the face and neck, thus no bees are caught in the folds touching the neck and sting through, as is so often the case when the veil is tucked inside the collar. As I never taste of honey when working with the bees, and don't wear glasses, it never occurred to me until friend Hasty mentioned it that it might be a convenience to some folks to be able to handily get inside their veil. Mr. Daggitt suggests that there be an elastic in front to allow the veil to be raised. This arrangement would result in numerous folds in front of the face—something that would greatly obstruct the vision.

EXTRACTED.

Given Foundation Made on Rolls.

It is possible that we may yet have foundation made on rolls that will possess the softness of that made on a press. The Roots have been experimenting in this direction and report as follows:

"After making some experiments with the Given foundation-press we have finally come to the conclusion that *if* this foundation is softer, and more readily accepted by the bees, than the ordinary roller foundation, it is due to this fact: The side walls

are made very thick and heavy, so that the surplus of wax is crowded into the walls, without any excess of pressure. With this fact before us we constructed a mill having extra heavy walls, and, to our great delight, the foundation from it seems to be very much softer because the excess of wax, instead of running out into long sheets, went into the walls. An ordinary sheet of wax, after being passed through this mill, increases in length only about 33 per cent. of its original length, instead of, as heretofore, from 200 to 300 per cent. Whether the foundation is as soft as that from the press, can not be definitely proven just yet; but from present indications it is fully so. From some tests we have made, the bees seem to accept it very readily. In our next issue we hope to report further in regard to it; but at present we fear that this very soft foundation would give trouble on horizontally wired frames, because it has not strength enough to prevent it from buckling, unless, indeed, it is made excessively heavy."

How Mr. Heddon Liked the Given Foundation Years Ago.

"Tree and truth keep their youth."

When I asked Mr. Heddon for his views upon the foundation question he replied that "the best he knew, he knew years ago," and referred me to his writings on the subject some ten or twelve years ago in *Gleanings* and the *American Bee Journal*. I quote two short paragraphs.

"The sample that you 'could not locate,' that is almost 'artificial comb,' was a portion of a sheet that we made upon our 12-inch heavy Vandervort mill; and though very many good and experienced judges would choose this in preference to the more homely flatter-lined Given, our experiments proved that the bees took to the Given first, drew it out quicker, faster, further, and thinner, and consequently made a much more delicate and beautiful comb."

"I have conducted careful and comprehensive tests with the three sorts (Root included in the 4th), and that, too, in company with employees, students and visitors. I have also sent two and three sorts to parties ordering, and asked for tests and reports. I have also a part of the time employed an expert mechanic who is noted for his ability as a machinist, to assist in the manufacture of foundation. I found the press much the easiest to operate, and its products much the easiest for the bees to make into the best combs. During my experiments of former years, I had Dunham foundation made by various parties, the best of which was 83 lbs. made by Mrs. Dunham, and of this lot she wrote me she earned wax and all in the making. This, too, fell behind the Given of first manufacture. The Vandervort, while not equal to the Given, always showed a superiority over the Dunham. Now, there are quite a number of Vandervort mills in

use, and some in the hands of those who do or have owned Dunham mills, and I ask for a report from some of these parties who speak more from experience than prejudice. I have many one pound sections of honey marked 'G,' 'V,' and 'D,' and we are eating them on our own table, as we need them, and the G's are the only combs that you cannot detect that foundation was used in."

Positive Prevention of After-Swarming.

The scheme and the schemer so often will shirk, Hurrah for the plan and the man that will work!

I consider the following article written by Frank Coverdale and published in the *American Bee Journal* as one of unusual, practical value. It is true that the Heddon method of preventing after-swarming usually works satisfactorily, and it is equally true that it does sometimes fail, and the application of the bee escape in the manner described gives the finishing touch needed for perfection. —Ed.

"James Heddon, I believe, was the first to give us a practical method for the control of after-swarming; however, the method could not be absolutely depended upon to do the work, but was a grand step in the right direction. Who knows, to a certainty, just when the first queen-cell will hatch in the old hive—whether it be five or fifteen days? A second swarm might issue before the old hive was ever moved to its permanent stand, and again after it had been moved, on account of the first cell hatching so late.

It was when I was busy making hay, when an occasional swarm would leave me, causing much vexation in my mind, and many hours of deep study, how I should overcome this difficulty; and it came to my mind that a bee escape might do the work, so I attached one to a hive, at the first opportunity. A 1½ inch hole was bored in the center of one side near the bottom edge, and a wire-screen cone fitted in the hole, and the entrance entirely closed; the newly-hived swarm was placed close by its side, with the entrance just under the above prepared cone, and every bee that left the old hive became an occupant of the new hive.

In three days an examination was made in the old hive, for I was afraid that too many bees would leave the brood, and destruction be the result. But, oh, how I was delighted! All was lovely still. In three days more another examination was made, with like results, and still another three days later, making nine days. Then I began boring holes in other hives, and treating them as above, with the same results, until all (60 colonies) that swarmed were in the same condition.

Some of the old hives were moved to their new stands in 12, others in 13, 14 and 16 days, the last being rather too long a time—14 days is about right in my location. Then these old colonies can be given a ripe queen cell, or a queen, or the entrance be opened

and left so until all the young bees are hatched, when the entrance can be again closed, and it will unite with the new swarm and the combs will be empty. In fact, you may have full control of the matter, as to managing against second swarms.

The first two years I used the bored holes, covering them over when through, with a piece of section tacked over them; but since then an escape has been used at the entrance; however, at times the latter would get clogged, causing some annoyance, and I now think the bored hole at the side is best.

If the reader will carefully look over the back numbers of the *Bee Journal*, it will be seen that I have touched upon this point before, but dare not recommend it as being entirely practicable. But I hesitate no longer, but advise all who stand in need, to try and be convinced how this plan lessens labor, cost and vexation of after-swarms; and in my location greatly increases a crop of comb honey, and of finer quality than it otherwise would have been.

Fear not that the new swarms will be overcrowded in numbers, and swarm again, but furnish each new hive with starters below and full sheets of comb foundation in all the sections above, and you will soon begin to wonder whether it is best to 'prevent swarming' or not. It is nice to have wood-zinc queen-excluders, then all can be arranged at the time of hiving—such as moving the partly finished sections from the parent colony immediately to the newly hived swarm, and not have to wait two or three days for the queen to establish her brood-nest below."

WELTON, IOWA.

Why Mr. Heddon was Not Prosecuted.

Last month I said that as the Bee-Keepers' Union did not consider that there was sufficient evidence to convict Mr. Heddon, it ought not to have been considered sufficient to warrant an "exposure." In commenting upon this the editor of the *American Bee Journal* said that the case was now a great deal stronger than it was a year ago. In this week's *Bee Journal* Mr. Newman defends the course taken by the Union. Among other things he says:—

"With due deference, I must say that I cannot see wherein the case is stronger now than it was a year ago. Certainly the analysis of the 'Willard honey' is no more reliable than that made by the United States Chemist, Prof. Wiley, who stands at the head of the profession. To show that it is in reality weaker, I have only to state that the same chemist analyzed the 'Jankovsky honey' and pronounced it adulterated with sugar, when another equally good chemist made an analysis of the same honey, and pronounced it pure! This is but confusion worse confounded! To rely upon such evidence in court, to convict, would be extremely hazardous!

As General Manager of the Union I placed all the facts before the Advisory Board, ask-

ing for instructions how to proceed in the case and received replies from every member. Nearly every one cautioned me not to undertake to prosecute the case unless I felt reasonably sure that the evidence was sufficient to convict.

This correspondence was then submitted to the President, and his advice requested. Without betraying any confidence between the executive officers, I think I may say that the legal advice given by President Taylor was sound; I fully concurred in his recommendation, and carried it out. It is in my possession in writing (as well as the correspondence of the Advisory Board), and if necessary to defend the Union, consent can no doubt be obtained to publish it. As these are private consultations between executive officers, the communications must so remain unless permission is given for publicity. Until then the General Manager will shoulder all the blame which unwise enthusiasts may wish to load on the Union for non-action in the matter.

Since then no application has been made to the Union to prosecute Mr. Heddon—except that he has himself very strongly urged the Union to prosecute him in order to prove his innocence—a thing not contemplated by the Constitution, and one which would in all probability not be sanctioned by its members. At least, before such an innovation is made, I think every member should have an opportunity to express his or her opinion by vote.

It matters not how sure some may feel that the evidence was sufficient, even though circumstantial. The law takes a cold view of the matter, and demands ABSOLUTE PROOF. It is not a question of guilt or innocence with the Union, but merely the sufficiency of the evidence to convict.

Had the accused, or his employes or confederates, been seen in the act of sophistication—had the adulterating material been found on his premises, or anywhere in his possession—had the product been obtained and sealed up on his premises, and remained intact until produced in court and submitted to experts—then it would have been different. But all these links in evidence were lacking!

The product relied upon for proof had been shipped unsealed, and it was possible that it might have been tampered with in transit, in the warehouse where stored, or on the way in its second shipment, etc. Unquestionable it was a 'villainous compound.'

As the accused, when shown the samples, positively stated after sampling them: 'These samples never came from my apiary'—would not such a statement in court stand, in the absence of positive testimony to the contrary? Would not the Union have lost its case—squandered its money—injured its reputation, and damaged the industry if it had espoused such a weak case?

With positive proof in its possession, the Union would have prosecuted the case to the full end of the law, for no condemnation is too strong for a sophisticator of that God-given sweet—honey! No living being has any more right to adulterate than he has to

counterfeit 'the coin of the realm.' All the Union needs is positive evidence to convict.

THOMAS G. NEWMAN,
Gen. Manager of B.-K.'s Union."

In the absence of positive proof that Mr. Heddon has adulterated honey, he should not only be given the benefit of the doubt, but allowed every possible opportunity to show the unreliable character of that already given, and I am glad to be able to say that *Gleanings* has reversed its former decision and will allow him to defend himself in his own language.

Bee Escapes.—Black Bees vs. Italians.

The wicked bee when none pursueth,
Into the snowy capping cheweth.

As I have remarked before, it is a little early to talk about bee escapes, but unless bee-keepers are thoroughly convinced before they have honey ready to come off, that escapes are a great help and advantage, the season will quite likely slip by without their giving them a trial. I am thoroughly convinced that bee escapes are really of more value than the majority of bee-keepers imagine them to be, and I believe that the REVIEW cannot do better service than in laying before its readers such testimony to their value as the following, written by C. W. Dayton and published in the *American Bee Keeper*.—ED.

"Before the present forms of escapes were invented I was aware that nearly every bee could be driven hastily from a rack of sections with smoke, but to get every last bee out before a cap is torn was absolutely impossible. One bee, or even a dozen bees, in a whole rack of 21 or 28 sections may seem small—one bee to two sections. If I used escapes simply to rid the sections of bees, my time with them would be soon over. The question is not how quickly or how easily they go out, but it is how much damage they do at the time of the going, and in this, one lone straggler may do more than the thousand that she lags behind.

It depends somewhat upon what kind of honey we are producing. If there are rows of uncapped cells around the edges next to the wood or along the bottom edge alone, it will do but little harm if a few more cells are opened. It will sell about the same and little notice will be taken of it.

But suppose our honey combs are built evenly and with every cell sealed pearly white clear out against the wood? In this case one or two cells torn open become a 'mark' for criticism like a blunder in the center of a beautiful picture. Fancy folks pay fancy prices for fancy goods and choose perfection as discerned by sight and it takes very little to mar a faultless section of honey. Every cell that is bitten out counts.

One plan is to open the hive hastily and send smoke down amongst the sections forcibly to hustle the bees out before they have time to open the cells. The other plan, with the bee escape, they are allowed their own time to get out, and not being scared they do not molest the cappings. In adjusting the escape board it should be done carefully and without disturbance because a jar or rap on the hives is as liable as smoke to set them to taking honey from the cells. In some instances enough cells may be uncapped that it would seem necessary to return the sections to the hives to be refilled and resealed.

Black bees are easier to start out than Italians or hybrids, but a little smoke seems to frighten them so greatly that they run heedlessly about as though they had forgotten where the place of exit was so that a few sticks to the sections to a most vexatious degree and to every turn they make they grasp to the cap of a new cell. Italians do not lose their heads so easily. They know the way out but require a little longer time. Nor are Italians so liable to tear open the cells but show a marked disposition to preserve them.

In finding queens in black colonies the disposition of the bees is less favorable than of Italians. Of course the black queens are smaller and dark, on which account they are more difficult to find, but where there is enough Italian blood so that the queens are large and sometimes yellow the distinctive dispositions of the blacks are often retained.

Where there are several combs of brood it is seldom that three or four can be examined before the blacks will begin to roll and tumble, hang in festoons and drop off on to the ground and set the hive in the most confused condition, so that the queen could only be discovered by chance. At the same time every bee breaks open cells and fills up with honey until it would be easy to mistake workers for queens. In a very short time the brood will have no bees at all upon it and when robbers are around I have thought that the bees joined in pilfering their own combs.

The worst Italians are only slightly inclined this way, and they will stand still and in regular order over the brood, really spreading out as a protection from cold or robbers and though we look the combs over and over again they maintain their position as if to aid us in the search. With such bees we can see just where the sealed and unsealed brood and honey are and find the queen within a circular line of guards at her regular work on the unsealed comb.

As we begin to remove the combs on one side of a hive of a colony of blacks they begin to charge downward and under the bottom bars toward the far side of the hive and when we take out the last combs they are covered with bees four or five deep and when the last comb is taken out a great throng, perhaps the queen with them, will go rushing into the corners and under the replaced combs. While blacks are so easily scared by smoke they deserve even more smoking than Italians or hybrids because in examining the colonies we are far more liable to be stung.

There is found to be an astonishing difference in the dispositions of different colonies

of the same strain of bees and the consequent need of selection in breeding. Breeding can do much toward getting bees out of sections and in the handling of hundreds of colonies it may amount to days of labor.

But to return to escapes. How much labor they may save is a question. I estimated in the BEE-KEEPERS' REVIEW some time ago that twenty escapes could be adjusted to the hives in twenty minutes. In taking the combs out of the hives singly and brushing the bees off I consider five minutes to the hive good speed. My time has been about ten hives extracted in about three hours. When escapes were used it was fifteen to eighteen hives in the same time. But the main advantage is not in the *time consumed*. When brushing the bees off very seldom were the times when sweat in a veritable stream did not pour off my nose into the hives. Then, again, it is very hard on the back to lean in a sort of sidewise way with a seven pound comb in one hand and the brush in the other, and continue it for a long time. If we stand up straight the bees may be thrown harshly against the alighting-boards or young bees lost in the grass. The most escapes I ever put on at once were 48 and it seemed the work of a few moments upon a set of specially arranged colonies.

Twenty escapes in twenty minutes is equal to six hundred in ten hours, a busy, but easy day's work; in fact, the difference between escapes and the smoke and brush way of getting the honey away from the bees may be compared to the old way of binding grain on the old harvesters, by hand, and the new way by using the self-binding machines. The one is down right hard work for two men while the other is fun for a boy, who drives the team.

PASADENA, Cal."

A Condensed View of Current Bee Writings.

E. E. HASTY.

HURRAH for that Porter method of holding down a bee veil! Stuffing veils adown the neck is a hot, uncomfortable nuisance indeed. And when the "gude wife" makes a pair of shirts and gets one collar stranglingly tight, and the other so loose that one can almost pull his head down in as the turtle does his, then the veil won't stay in—else, *vice versa*, won't go in short of assault and battery with intent to kill. REVIEW came at eve, and I had the thing in successful operation next morn. But, would you believe it? I am not altogether happy yet. Like the Children of Israel in Egypt I sometimes "fall a lusting," and want to put my honey-dripping fingers in my mouth. To untie the string of the new device and loosen up takes too much time. Who will invent an elastic

side entrance, or something, that will let me get at my "potato trap" with the minimum of hindrance? Moreover I am sadly dependent on my spectacles, and want to put them off and on frequently. In this I cannot so well deny myself as I might in the other case. I have a dim impression that some one somewhere has published a plan of wearing an elastic across the breast, under which the front of the veil could be tucked—but if so I was so lacking in enterprise as to let it slip. This would be better than the Porter arrangement for the front, but would not make back and shoulders absolutely bee tight. Howsoever, bees mostly don't go under a *heavy* veil when it simply rests by its own weight on the shoulders and back. Before REVIEW came I was using two 2 inch wire nails, sharpened down until they became pins; and with these the veil was pinned to each breast—better than the old style, but inferior to the Porter plan in every way. In summer, when the upper man is clad only in shirt and suspenders, Ernest Root's way does very well. Just put the slack of the veil under the suspender on each shoulder, and pull it tight. But, in such a case, whatever and ever are the ladies going to do, pray tell.

And here's a bungling device of mine which (although it has faults of its own) opens and closes one's front easily for putting on spectacles. Take a dry stick, of suitable elasticity, and a little over a foot long. Notch the ends, and put a long string on each. Now whittle down all except the ends till it is just springy enough, and not too weak. Lay this across the breast, and tie it tightly around the body under the arms. This is to tuck the veil under, a purpose that it answers very well. Might'n't we almost have a special number on, How do you wear a veil? Whatever we do let us pour contempt and hot shot into those stingy veils, made on the model of a bathing suit, that are not long enough to come further than one's collar any way.

I suppose if I try to dodge any red-hot subject, and say nothing about it, the brethren will say to me "You all'ee same sneak, just like other fellow." This is anent the charge that Mr. Heddon adulterates his honey. Don't know my own mind about it—and how then should I help any one else to an opinion? He has sometimes talked a good deal as an adulterator would talk if he dared to—but would an adulterator dare to?

If on an occasion or so he has responded with "sauce" instead of explanation, that ought not to count very much in his case. Mr. Heddon has pepper in his composition.

GLEANINGS.

The course of development which this excellent journal has been taking of late is quite plain to be seen. It is to utilize to the utmost the abilities of a few excellent writers—and overboard into the deep, deep sea with the "let us hear from *all* the brethren" idea. In theory this looks to be wrong; in practice it makes the readable and instructive paper. Only one man out of a thousand can write out what he knows. Pretty much all the rest seem foreordained to write a lot of stuff of no use to any mortal, and leave out the valuable things which they could supply if they would. Strange as this is it is not unique. Let a thousand men go to the world's fair, and how many of the thousand can give the loved ones at home even a tolerable account of what they have seen? And writing is a much rarer gift than talking. Nearly every bee man in a five minutes talk will tell things which would be worthy matter for *Gleanings* if properly dished up. Not one of those things will he tell if he sits down to write, but leave them all out, and write something else. Queer, isn't it? Awfully we need a school, or class, or something, to teach the brethren how to write. "What can the man do that cometh after the king?" Don't go after the king then. Don't pour out your crude and imperfect thoughts and notions on a subject which some master hand has just treated nobly well. "And if I chance to fall below Demosthenes and Cicero"—To the dogs with Demosthenes and Cicero! Desire to have one's article sound like "literature" has killed off more bee writers than all other murrains combined. Have something to say, and say it in your own earnest way. But don't be so silly as to despise literary merit—look out for literary faults: divorce them as fast as possible; and build up a clear, strong, individual style. Literary style is an excellent thing; only don't expect it to pass current without some facts and ideas—don't expect the clothes to walk without a man inside.

Ahem! We were talking about how often certain writers appear in recent numbers of *Gleanings*. March 1st has Rambler three times—presumably four times—Dr. Miller twice, and Prof. Cook twice. It's all right

(A. B. J. sailing on same tack) and the return of Prof Cook to *Gleanings* is one of the best of recent developments. The new man, Karl Mathey opens out middling fair, with his Russian tree, and holes chiseled out of it for colonies of bees. Hard on the thief who wants to run off with a hive, to ask him to pull up that monarch of the forest. And one of *Gleanings'* pretty-well-realized dreams is to have able correspondents in all quarters of the globe.

Now to go away back to Major Shallard's comb spacing article (*Gleanings*, 101) I'll trot out once more an old hum of mine. The Major wants the comb spaced only $1\frac{1}{4}$ inches, and thinks that is the reason his bees build no burrs or braces. I think the bee's reason for building a brace is because the combs wiggle. Naturally they can't wiggle if you jam them up to an inch and eighth. But with that width of spacing I don't think I want the job of looking over the bees for the first time in the spring. I should wiggle if the comb did not.

"Our colonies under telescope covers keep much drier and nicer than those under other sorts of covers." Ernest Root, *Gleanings*, 102.

As dampness is one of the worst foes to be vanquished in successful wintering, we should not forget that we *must*, at all hazards, have the winter's rain and melted snow kept out. That much we can do; and we shall be great fools if we are content with a cover that will not do it.

The "Britishers" balance their dipping boards across a pulley when dipping foundation, clamp on more boards, and make three times the number of sheets with less work. *Gleanings*, 153. Where was Yankee gump-tion sleeping to let them find that out first?

W. L. Coggs shall closes his entrances frosty nights in spring, when brood is plenty and bees comparatively few. Uses a little handful of sawdust; and the bees open up for themselves when it gets warm enough next morn. *Gleanings* 150. A merciful thought put in convenient shape.

Dibbern says drones restrained from flying make riot and confusion in the hive. *Gleanings*, 144. Thought so.

On the question of extracted honey versus comb. R. C. Aikin has had such a thing as to have his best comb colony store more surplus in a season than his best extracting colony. *Gleanings*, 138. This reviewer suspects that when the yield is doubled by extracting it is done in some way that takes the life of the bees, and the life of the honey

market too—bees left in unfit condition for winter, and product such as never ought to be put on any market.

Friend Miller reads *Centrablatt*, and other foreign "blaats" (albeit Iowa's *og Bi-Avl* knocks him out) and he culls the item that a caged virgin queen hung in a hive will make it swarm. If this is sure every time, and not a mere may-be-so and may-be-not, it is likely to be very valuable in some cases. Swarming can be forced out of the way before the honey harvest arrives. Also out-apiaries can be made to swarm on definite days when the keeper will be on hand. The far-south breeders could furnish the virgin queens cheaply if wanted in advance of northern swarming time. I strongly commend this thing to the experiment stations.

Now about that man in *A. B. J.* and *Gleanings* who sells extracted for 24 cents—I just wrote something here about friend Miller and friend York that I scratched out afterward. Suppose a grocer sells you a sack of flour for 24 shillings, and you find out directly that dozens of grocers stand ready to sell you just as heavy and just as good sacks for 10 shillings. How do you feel toward yourself for being taken in so? *And how do you feel toward the grocer?* Well then, put cents in the place of shillings, and honey in the place of flour, and your own toes in the other fellow's tracks, and give just judgment. Ten cents for extracted is not a starvation price, but a good, living price. I both hope and expect to live some day in a world where every inhabitant, myself included, would be incapable of taking 24 pearls where 8 or 10 would be right. And how shall I get used to that sort of thing unless I practice a little?

W. G. Larrabee has lots of sweet clover, but never thinks of depending on it for surplus. *Gleanings*, 180.

And here's a brilliant invention of W. A. Pryal's for shipping queens. (*Gleanings*, 184.) Have two candy holes, the inner one filled with softer candy, which will be hard enough to use when the bees get to it. He also thinks that honey, not candy, is the *ultima Thule* of excellence, if ever we can get there.

Frogs and toads have no sly game to keep bees from stinging when swallowed. Prof. Cook found the stings sticking inside the throat of a frog. *Gleanings*, 184. I suppose it is not the poison that hurts us, but the spasm and inflammation of our poisoned

tissues. And the cold tissues of reptiles seem to be unresponsive, so that there is no spasm or inflammation, consequently no pain.

Doolittle improves the excellent wet grass method of keeping out robbers by putting a little dry grass underneath, and plenty of wet grass on top. *Gleanings*, 192. This I suppose is to enable the bees from within to get back when they force themselves out an inch or so. Some are likely to perish if the whole mass is very wet.

According to M. W. Shepherd (*Gleanings* 225,) when an old maid is rescued too late in life her children are cross and disagreeable. Don't more than half believe it, do you?

Better read the whole article of Dr. Beall on syrup by percolation. (*Gleanings*, 226.) No granulation or souring, and specific gravity of 1.356 as against 1.317 for the best that can be done with heat.

A STINGY ROUND-UP

In the *American Bee-Keeper* for March Doolittle leads off with an important method of increase, and postponement of swarming—the best he has found in his case, and very likely the best for many similar locations. "Similar" means only one harvest, that one pretty early, and its date easy to predict. Don't make artificial colonies too early, else you may have a carnival of swarming just in time to spoil your harvest. Ten days before the harvest begins is the time to fix things. The method makes three colonies and a nucleus from two colonies and a nucleus, thus: The new No. 1 receives all the bees of the original No. 1, but empty combs, all the original combs being carried away. The nucleus just gets one of these combs in exchange for a comb with queen and bees on it. The original No. 2 is just carried away bodily, and becomes No. 3—losing all its flying bees of course, but getting O. K. for business during the ten days. And thus the new No. 2, on the same stand as the original No. 2, has the combs and brood of No. 1, queen and body guard from the nucleus, and the location and flying bees of the original No. 2—and they get ready for business in the ten days. Doolittle's approval is equal to that of any experiment station yet on the globe.

Demaree has experimented on reducing royal nectar in the combs, by heat and a current of air. *Am. Bee-Keeper*, 35.

John F. Gates gives a method of operations, in *Am. Bee-Keeper* 37, which is a curious hybrid between old times and new. And if that new method of starting a swarm at will (as Eugenia routed Rambler) if that's going to work, the Gates method may have a great run. Here we have it. Keep all your old stock in large, first rate box hives: and expect nothing of them but swarms. Hive the swarm on the old stand in small empty frame hives, excluder on top, and get lots of surplus. In the fall kill old queen (if desired) and clap the two hives atop each other, that they may unite at leisure. In the spring extract the frames, render the combs, and have things ready for the same round again—and the goose hangs high, singing what a wise goose am I. Gates ventilates these box hives for winter with a vengeance—top, bottom and front—but perhaps he's all right: I'm rapidly getting broad minded on that subject.

Charles C Hardy (*Am. Bee-Keeper*, 39) says Doolittle's bees murmur in the cellar because they smell mice. H'm, h'm.

I hardly felt like laughing at that balance sheet of *Success* (republished in *Gleanings*, 334.) Too pathetic. Friend Sage, you might have been excused from that. Or does bravado help some souls to bear hard pinches, even if the rest of the world does laugh?

RICHARDS, Lucas Co., Ohio, April 21, '94.

ADVERTISEMENTS

BIG DISCOUNT on foundation and sections. Thin foundation 50 cts. per lb; brood 40 cts. No. 1 sections, \$2.75 per M. Everything cheap; price list free. 4-94-6t E. H. TRUMPER, Bankers, Mich.

DAUGHTERS of one of Doolittle's best, 5-banded breeders mated to selected drones from Jennie Atchley's 5-banded strain, untested, 75 cts; 6 for \$4.25. 5-94-4f L. H. ROBEY, Worthington, W. Va. P. S.—Queens ready May 25th.

Golden Queens

From Tennessee, as good as the best, Untested, \$1.00; tested, \$1.50; selected tested, \$2.50; extra selected, \$4.00; three-banded, tested, for \$1.00.

STEWART BROS.,

5.94.3tr

Sparta, Tenn.

Please mention the Review.

If you are not using the

New Heddon Hive

It may seem incredible that it would enable you to obtain the same results with considerable less labor and much more comfort than with other styles of hives, but a fair and impartial consideration of the reasons, as set forth in my circular, will show that this statement is not overdrawn, and the circular is yours for the asking. 11-93-tf A. E. HOSHAL, Beamsville, Ont.

Muth's HONEY EXTRACTOR PERFECTION Cold-Blast Smokers

Square Glass Honey Jars, Etc.

For Circulars, apply to CHAS. F. MUTH & SON
Cor. Freeman & Central Aves., Cincinnati, O.
Send **10c.** for Practical Hints to Bee-Keepers.

1-94-tf.

Please Mention the Review.

NEW YORK CITY

Is the center of more R. R. and Ex. Co's, than any other place in the country. That means low transportation charges. Combined with this the fact that our prices are low and supplies first-class, shows a reason WHY you should send for our circular.

I. J. STRINGHAM,
105 Park Place, 1-94-12 New York, N. Y.

200 Nuclei For Sale.

Each nucleus contains two frames of bees and brood and a 5-banded Italian queen. The price is \$2.00 each. 1,000 queens, all 5-banded, will be ready to mail the first week in June. Send for sample of bees and price list.

N. H. SMITH,
4.94-tf Box 2, Tilbury Center, Ont., Canada.

Please mention the Review.

SPECIAL FOR

CANADIANS.

Send postal for our Illustrated Catalog of Bee-Keepers' Supplies, Bees, Queens, Honey and Household Conveniences.

MYERS BROS.,

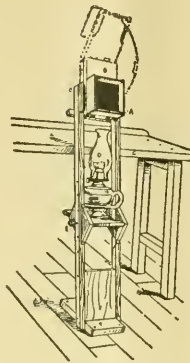
Stratford, Ont., Canada.

Please mention the Review.

BEES **QUEENS**
Smokers, Sections,
Comb Foundation
And all Apian Supplies
cheap. Send for
FREE Catalogue. E. T. FLANAGAN, Belleville, Ill.

7-94-tf.

Please mention the Review.



As the Foundation

Is supported while the section is being brought to an upright position, it never lops over and breaks during this operation. This is the strong point in favor of the Woodcock Foundation Fastener. It has other points in its favor; the foundation is always placed exactly in the center of the section, while the work is done perfectly, quickly and easily. R. L. Taylor and other prominent bee-keepers who have used it are greatly pleased with it. Price, \$1.00. Discount to dealers.

M. WOODCOCK, FLINT, MICHIGAN.

The Practical Bee-Keeper

Possesses brightness, reliability, honesty, purity of tone, circulation, and the confidence of its readers. In addition it is PRACTICAL from cover to cover. Published monthly, 50 cents per annum. Sample copy on application. THE PRACTICAL for one year and one genuine Five-Banded Golden Italian Queen for \$1.00.

THE PRACTICAL BEE-KEEPER,

Tilbury Center, Ontario, Can.

Mrs. Oliver Cole sells a **PORTICO** **HIVE** containing one 2-frame nucleus with PURE ITALIAN QUEEN, YELLOW, BEAUTIFUL, PROLIFIC, in June for \$2.75 each, two for \$5.00.

STRAWBERRY PLANTS of the latest varieties, for sale cheap. Send for circular to

5 94-1t S'erburne, Chenango Co. N. Y.

QUEENS YELLOW AS GOLD,

Rearing from Doolittle's famous strain. Three-banded or leather colored from Imported Italian mothers. These queens are perfection and prices away down. CLEVELAND BROS., Stamper, Miss.

5-94-tf

Please mention the Review.

SECTIONS CHEAP.

Until sold, we will sell the sections listed below, in quantities of 500 or more, at \$1.50 per thousand for creams, and \$1.00 per one thousand for No. 2's; all 4 1/2 x 4 3/4.

41,000, 2-inch creams.

47,000, 1 3/4 inch creams.

116,000, 1 1/2-inch creams.

134,000, 7-to-the-ft creams.

37,000, 2-inch No. 2's

91,000, 1 1/2-16 in. No. 2's.

20,000, 1 1/2-inch No. 2's.

87,000, 1 1/2-16 in. No. 2's.

253,000, 7-to-the-ft No. 2's

PAGE & KEITH, New London, Wis.

4-94-tf.

Please mention the Review.

Dr. J. W. CRENSHAW, Versailles, Ky., Offers for Sale

UNTESTED QUEENS

At \$1.00 each; after July 1st., 75 cts. Only the yellowest ("5-banded") variety, and as good queens as anybody can rear. Bred from only the best mothers possible to obtain. Imported stock mated to yellow drones, same price. Any of Root's goods at his prices. Send for circular. Book your orders now and get your queens and supplies when needed. Queens ready in May. 3-94-tf

THE ODELL TYPE WRITER.

\$20 will buy the ODELL TYPE WRITER and CHECK PERFORATOR, with 78 Characters, and \$15 for the SINGLE CASE ODELL, warranted to do better work than any machine made.

It combines Simplicity with Durability, Speed, Easy of Operation, wears longer without cost of repairs than any other machine. Has no ink ribbon to bother the operator. It is Neat, Substantial, nickel plated, perfect and adapted to all kinds of type writing. Like a printing press, it produces sharp, clean, legible, manuscripts. Two to ten copies can be made at one writing. Any intelligent person can become a good operator in two days. We offer \$1,000 to any operator who can equal the work of the Double Case Odell.

Reliable Agents and Salesmen wanted. Special Inducements to Dealers.

For Pamphlet giving Indorsements, &c., address

ODELL TYPE WRITER CO.,

5-94-3t 358 Dearborn St., Chicago, Ill.

Still Alive!

12 full numbers of

SUCCESS IN BEE CULTURE

50 cents, or SUCCESS one year and Hutchinson's "Advanced Bee Culture" 75 cents.

If you prefer we will send SUCCESS one year and Hilton's book "How I Produce Comb Honey," fresh from our press for 50 cents.

A late sample and two back numbers of THE BEE-KEEPERS' ENTERPRISE, 10 cents.

BURTON L. SAGE, Highwood, Conn.

PATENT. WIRED, COMB FOUNDATION

HAS NO SAG IN BROOD FRAMES.

Thin, Flat - Bottom Foundation

HAS NO FISHBONE IN SURPLUS HONEY.

Being the cleanest. it is usually worked quicker than any fdn. made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),

3-90-tf Sprout Brook, Mont. Co., N.Y

Please mention the Review.



FREE: My new price list of pure Italian bees and queens, and white and brown ferrets. 3-94-12t

N. A. KNAPP, Rochester, Ohio.

Queens, Nuclei, Colonies, Send for Pricelist. Address S. D. McLEAN, Columbia, Tenn. 1894

3-94-3t

Please mention the Review.

GREAT IMPROVEMENT IN SECTIONS.

Our white poplar and basswood sections will surely please you. Eight - to - the - foot poplar, seven - to - the - foot and 1 7/8 basswood, all 4 1/4 x 4 1/4 inches square. Prices of either kind: 500, \$1.50; 1,000, \$3.00; 2,000, \$5.75; 3,000, \$8.30; 4,000, \$10.80; 5,000, \$13.25. Samples free.

O. H. TOWNSEND,

2-94-tf

Alamo, Kal. Co., Mich.



Illustrated Catalogue free upon application

BEE - KEEPERS,

Best Goods at Lowest Prices.

Delivered to your railroad at either Chicago, St. Louis, Mo., Atchinson, Kan., St. Paul, Minn., Des Moines, Dubuque, and Cedar Rapids, Iowa, and other places.

1-94-4t

E. KRETCHMER, Red Oak, Iowa.

Send for free catalogue of 70 pages, describing Everything Used in the Apiary.

We Will Prepay

Freight on Root's polished sections and 16 - section shipping cases, in lots of 5,000 and 200 respectively, to be shipped from the factory to points within 300 miles. Send for catalog. 1-94 gt

B. WALKER, Evart, Mich.

-If you are going to-

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

GOLDEN ITALIAN QUEENS

Now ready for \$1.00 each. Do not order your supplies until you see our circular for 1894. For the price, we have the best spraying outfit made. Send \$1.50 and get one. Wm. H. BRIGHT, 1-94-12t

Mazepa, Minn.

Please mention the Review

ON HAND NOW.

THE MOST COMPLETE STOCK OF BEE HIVES, SECTIONS AND SUPPLIES IN THE NORTHWEST.

W. H. PUTNAM,

1 94-12t.

RIVER FALLS, WIS.

HUSTLERS!

Read what one of the largest bee-keepers of this country says. "The queens (two doz.) came promptly! They are an extra fine lot. The bees are finely marked, gentle, and HUSTLERS when it comes to honey. I have no trouble in picking them out now from over 600 colonies." W. L. COGGSHALL, West Groton, N. Y., October 17, 1893.

Prices for queens bred for business from the above strain, 5-BANDED, are in May, \$1.00; after May, 75 cents; 1/2 dozen in May or June, \$4.00; doz. \$7.50; July and later, six for \$3.50; doz., \$6.50. Single queens WARRANTED purely mated. I Guarantee all queens to arrive safely and to be GOOD RELIABLE queens. Send for free circular. Draw M. O. on, and address

J. B. CASE, Port Orange,

11 93 1f

Vol. Co., Florida.

Please mention the Review.



WALTER S. POWDER,

162 Mass. Ave. Indianapolis, Ind.

SUPPLIES

Standard Goods—Popular Prices—Catalogue Free.

"BUSY BEES"

A book telling how to manage them—to cis. in stamps; or free to those sending names of 5 bee-keepers

Please mention the Review.

KNOCK DOWN!

Yes, I have a large stock of D. T. Hives, Supers, Frames, Sections, etc., all in the "knock down," and ready to ship at a moment's notice. Write at once for large catalogue and price list of everything needed in the apiary.

E. L. KINCAID,

3-94-1f

Walker, Vernon Co., Mo.

Please mention the Review.



GRAY CARNIOLANS

— AND —

FIVE - BANDED. GOLDEN ITALIANS.

We are the most extensive breeders in America of those wonderful, gray Carniolans: the hardiest, the best of honey gatherers and the gentlest bees in the world! Considering all points, we have never found a race of bees (and we have tried them all) that could compare with them. A complete description of this wonderful race of bees will be sent to all who write and ask for it. Bee-keeping friends, give the gray Carniolans a fair trial, and you will be convinced that what we say of them is true.

Our five - banded, golden Italians are guaranteed to be the equal of any in this country, as regards gentleness, hardiness and working qualities, as we follow the best known methods for producing first - class, business queens. Our queen rearing apiaries are four miles apart with lake George between the two races. Prices of queens of either race are as follows.

	May	June	July	Aug.
One untested queen,	\$1.25	\$1.00	75	65
" Tested	2 50	2 00	1 50	1 25

Prices on large orders, imported and best breeding queens sent upon application. 3-94-tf



F. A. LOCKHART & CO.,

Lake George, N. Y.

Please mention the Review



Hunt's Foundation

Was awarded World's Fair medal. Dealers and others, write for samples and prices. The finest polished Sections and Dovetailed Hives in any quantity. Large, Illustrated Price List of everything needed in the apiary sent free; it also contains a large amount of information. Address **M. H. HUNT, Bell Branch, Mich.** 4-94-4t

SNOW WHITE SECTIONS

\$3.00 per 1,000; Dovetailed Hives, nailed up, \$1.00 each; 1½ story hives, furnished for comb honey, \$1.50 each; comb foundation and a full line of bee-keepers' supplies. Twenty page price list free. **J. M. KINZIE,** 1-94-tf Rochester, Mich.

Please mention the Review.

J. W. K. SHAW & CO., Breeders of

ITALIAN • QUEENS,

Have for years furnished the LARGEST Queen Dealers in the United States; but give special attention to Single Orders, at a slight advance on dealer's prices.

Tested Queens, \$1.00 each. Untested, 75c. (six for \$4.00.)

Iberia Par. 4-94.tf LOREAUVILLE, LA.

GOLDEN QUEENS from TEXAS.

MY BEES cannot be surpassed for BUSINESS, BEAUTY AND GENTLENESS. Safe arrival and satisfaction guaranteed.

Untested Queens—March, April and May—\$1.00 each. 150 Fine Tested Queens for early orders, \$1.50 each. Order early. Send for Price-List. **J. D. GIVENS,** 4-94-6t Box 3. LISBON, TEX.

Please mention the Review.

ITALIAN QUEENS AND SUPPLIES FOR 1894.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf. Augusta, Georgia.

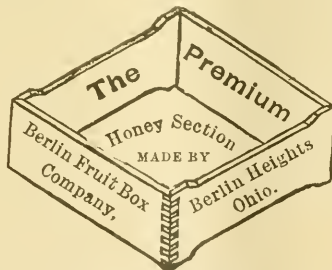
BEE-KEEPERS' SUPPLY HOUSE

J. H. M COOK, 78 Barclay St., N Y. City.

(SUCCESSOR TO A. J. KING.)

4-93-tf

Send for illustrated Catalogue



WE have a large stock of **SECTIONS** now ready, both No. 1 and No. 2. Write for special prices on winter orders in large or small lots, including all other Supplies. Also Berry Crates and Baskets made up or in flat.

Address, **BERLIN FRUIT BOX CO.,** 1-94-6t Berlin Heights, Ohio.



THE IDEAL BEE FOUND AT LAST!

A Superior Strain of Golden Italians

The result of thirteen years' careful breeding and selection. They are gentle, industrious, good comb builders, enter the sections readily, cap their honey the whitest, are not inclined to swarm, and are second to none in beauty: a strain of bees that,

by practical test, has excelled all competitors in storing honey. Price of young queens, warranted purely mated, in April and May, \$1.25 each; six for \$6.00. In June, \$1.00 each; six for \$5.00. From July to Nov., \$1.00 each or six for \$4.50. The price of tested queens, bees by the pound, nuclei and full colonies given upon application. Safe arrival and satisfaction guaranteed or money refunded.

SECTIONS, \$2.00 per 1,000. Dovetailed Hives at bottom prices. For full particulars, send for descriptive catalogue. 1-94-tf

C. D. DUVALL, Spencerville, Mont. Co., Maryland.





QUEENS,

Either golden or leather colored; as good as any and better than many. Try one queen and be convinced. Satisfaction is guaranteed. Warranted queen, \$1.00; tested, \$1.50; selected, \$2.50. Queens ready to ship June 1st. JOS. ERWAY, 5-94-tf Havana, N. Y.

Please mention the Review.

GOLDEN • ITALIAN • QUEENS.

The best of untested, five banded Italian queens at 75 cts each; three for \$2.00; ½ dozen, \$4.00. Untested queens from imported stock at the same price. 2-94-tf

W. A. COMPTON, Lynnville, Tenn.

TELL YOUR READERS

To order queens of J. N. COLWICK, Norse, Texas, where they can get a nice tested **ITALIAN QUEEN** (reared in 1893) for \$1.25. Untested queens in April or May at \$1.00 each or \$9.00 per dozen. Safe arrival guaranteed. Orders may be booked now for bees, queens, drones, etc., and they will be shipped when wanted.

2-94-tf J. N. COLWICK, Norse, Texas.

Please mention the Review.

Combs For Sale.

I have 100 good, straight worker Combs, in Simplicity frames that I will sell for 10 cents each. Also four Heddon hives filled with good straight worker combs, for \$2.10 each. **\$16.00 cash. takes both lots.**

ELMER HUTCHINSON,

5,94.1t

Vassar, Mich.

Home-Made, FOOT-POWER BUZZ-SAW.

I have for sale a home-made, foot-power buzz-saw made by my brother. The frame work and table are well and substantially made, the main shaft and band wheel are of iron, and the mandrel one of Root's \$3.50 mandrels, with a seven inch saw. Although the machine has been used a year or two it is in perfect order, and is probably as desirable in all respects as any foot-power saw made. It is offered for \$18.00.

W. Z. HUTCHINSON, Flint, Mich.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

Please mention the Review

Oil Cooking - Stove for Sale.

Last summer we changed about the internal arrangements of our house, and the wood-stove is now in a room by itself, hence we shall not be annoyed by its heat and will so seldom use our oil-stove that we have decided to offer the latter for sale. It is of the Monitor make, the best of any with which I am acquainted, is perfectly safe, much more so than an ordinary lamp, which cannot be said of the use of gasoline. The reservoir is back away from the burners, of which there are four, and the same number of griddles. Anything that can be done with an ordinary gasoline stove can be done with this one, while at the same time there is perfect safety. The whole outfit, including an oven, cost \$22.00, but it will be sold for only \$10.00, and it is practically as good as new. Descriptive circulars will be sent upon application, or any inquiries cheerfully answered, W. Z. HUTCHINSON,

Flint, Mich.

BEEES FOR SALE.

Last fall I put 135 colonies of Italian and hybrid bees in the cellar, and this spring took out 133 in fine condition. I never had bees winter better or build up faster in the spring; but I have more than I can manage, and must sell about fifty colonies. They are in eight-frame, Langstroth hives, strictly first-class in every respect, and safe arrival will be guaranteed. I have put the price at such a figure that seems they MUST go; it is \$4.00 for a single colony, or only \$3.50 each when five are taken at one time.

WM. IDEN,

Etta Green, Ind.



Bingham Perfect Smokers.
Cheapest and Best on Earth.
Patented 1878, 1882 and 1892.

Bingham & Hetherington Uncapping Knife.



Patented May 20, 1879.

PRICES OF BINGHAM

Perfect Smokers and Bingham & Hetherington Honey Knives.

6 Doctors, 3 1/2 inch.....	\$7.00	1 per mail....	\$1.95	2 per mail, at one time,...	\$3.50
6 Conquerors, 3 inch,....	6.00	1 " "	1.75	" " "	3.00
6 Large, 2 1/2 inch,	4.50	1 " "	1.25	" " "	2.25
6 Extra, 2 "	3.75	1 " "	1.00	" " "	1.90
6 Plain* 2 "	2.40	1 " " .....	.70	" " "	1.30
6 Wonders, 1 1/2 inch, ...	2.50	1 " " .....	.65	" " "	1.20
6 Knives,	3.50	1 " " .....	.80	" " "	1.50

*The Plain does not have the coiled steel wire handle, neither the bent cap for throwing the smoke at right angles. All the others have all our new improvements.

The movable bent cap enables the operator to instantly change a curved shot to a straight one, and vice versa, thus throwing smoke downward without spilling ashes; adds durability and convenience and is cheaply replaced if injured. The wire handle is always cool for opening and closing the smoker when re-filling with fuel, which should be sound, dry stove wood.

T. F. BINGHAM, Abronia, Mich.

“CHERRY VALLEY, N. Y., Feb. 15, 1894. Bingham & Hetherington, Messrs.—I use the Bingham & Hetherington honey knife and the Bingham smoker in my business, because they are more effective for the purpose than any I have yet found. J. E. Hetherington.”

— If you wish the best, low-priced —

TYPE - WRITER.

Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars, or to correspond with any one thinking of buying such a machine.

WRITE US

Before ordering your sections and we will give you **BOTTOM PRICES** on the

“BOSS” ONE-PIECE SECTION,



Also D. T. HIVES, SHIPPING CRATES and other Supplies. We have everything in tip-top order, and can fill orders on short notice. Let us hear from you for prices.

J. FORNCROOK & CO.,

Jan. 1st, 1894. Watertown, Wis.

THE BEST OF ALL ARE THE

ALBINO BEES.

TAKE NOTICE:—After the first of June, I will fill orders for the first 100 untested queens at 60 cents each. Send in your orders at once and avail yourself of this special offer.

S. VALENTINE,

5 94-tt

Hagerstown, Md.

Given Away,

Our new catalogue of Bees and Bee-Keepers' Supplies to any sending their address. It contains the latest prices on **HIVES, CRATES, SECTIONS, FOUNDATION,** and the new **Stirrer FEEDER;** one of the best feeders in the market—just the thing for spring feeding.

OLIVER HOOVER & CO.,

4-94-tf

Riverside, Pa.

BEE SUPPLIES SUCH AS HIVES SECTIONS, FOUNDATION, EXTRACTORS, AND EVERYTHING ELSE USED BY A BEE-KEEPER. ALSO CLOVER SEED, BUCKWHEAT, BEES AND QUEENS. LARGE WHOLESALE AND RETAIL IMMENSE STOCK. ADDRESS **JOS. NYSEWANDER, Des Moines, Iowa.**

CATALOG FREE.

DADANT'S FOUNDATION

Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. **CHAS. DADANT & SON, Hamilton, Ills.**

4-94-12t

Please mention the Review.



W. R. STIRLING,

MANUFACTURER OF

The Model Bee - Hive,

Frames, Sections, Feeders, Smokers, Extractors, Honey Cans, Shipping Cases, Bee Veils, etc., also breeder of

Italian Queens.

4-94-4t Send for price list to

W. R. STIRLING, Rondeau, Box 9, Ontario, Canada.

Send me Your Name

And I will send my pamphlet "How I produce comb honey," and my catalog of apiarian supplies free. 4-94-3t **GEO. E. HILTON, Fremont, Mich.**



Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and

5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS, Lavaca, Ark.** 2-94-1f

GRAY CARNIOLAN

Bees and Queens will be bred for sale the coming season by JOHN ANDREWS, Patten's Mills, N. Y. They winter well and breed up rapidly, Hence are well adapted to both Northern and Southern latitudes. Send for circular. 3-94 tf

Please mention the Review.



4- Golden Italian Queens,

Bred from the best strains for business and beauty. Untested queens at 75 cts. each, or two for \$1.25. **W. J. FOREHAND, Fort Deposit, Ala.** 5 94-tf

Please mention the Review.

I have several hundred

QUEEN CAGES

of different styles and sizes, made by C. W. Costellow, and I should be pleased to send samples and prices any intending to buy cages.

W. Z. HUTCHINSON, Flint, Mich.



BEE-KEEPER; also our beautifully illustrated catalogue of apiarian supplies. **LEAHY M'FG CO., Higginsville, Missouri.**

PROGRESSIVE!

THE PROGRESSIVE BEE-KEEPER is the name of a journal for which you ought to subscribe. Although the price is only 50 cts., the journal is first-class in every respect. Dr. Miller calls it "the really progressive, PROGRESSIVE." During the past year it has received more favorable notices from the bee-keeping press than has any other journal. Its subscription list is six times what it was a year ago when taken in charge by Mr. Leahy.

We are also the largest manufacturers of apiarian supplies west of the Mississippi. Kindly send us your name and we will send you a sample copy of the PROGRESSIVE

JUNE, 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

Clubbing List.

I will send the REVIEW with—		
Gleanings.....	(\$1.00)	\$1.75.
American Bee Journal....	(1.00)	1.75.
Canadian Bee Journal....	(1.00)	1.75.
American Bee Keeper....	(.50)	1.40.
Progressive Bee Keeper....	(.50)	1.30.
Bee Keepers' Guide.....	(.50)	1.40.
Apiculturist.....	(.75)	1.65.
Bee-Keepers' Enterprise..	(.50)	1.40.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1 dark," etc.

NEW YORK, N. Y.—There is no comb honey on the market and no demand for any. The market is well stocked with all grades of extracted honey but the demand is light. We quote common at 50 cts per gallon—better grades at 55 and 60 cts per gallon. Beeswax is firm at 28 cts.

HILDRETH BROS. & SEGELKEN,
June 6. 28 & 30 West Broadway New York.

CHICAGO Ill.—The honey market is very dull at last month's quotations; but we have moved considerable stock at 13 cts and believe that 13 to 14 will rule for the balance of the season. There is plenty of inquiry for beeswax with none to offer. We quote as follows: Fancy white, 13 to 14; No. 1 white, 13; fancy amber, 12; white extracted, 5 to 6; beeswax, 25.

J. A. LAMON,
Mar. 7. 43 So. Water St., Chicago, Ill.

KANSAS CITY, Mo.—We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 12 to 13; No. 1 dark, 8 to 10; white extracted, 6; amber, 5; dark, 4. Beeswax, 20 to 23.

CLEMONS-MASON CO.,
June 6. 521 Walnut St. Kansas City Mo.

BUFFALO, N. Y.—Small amount of honey on hand and trade is slow, mostly for off grades that bring from 7 to 10 cts. We quote as follows: Fancy white, 13 to 14; No. 1 white, 12 to 12½; fancy dark, 8 to 9; No. 1 dark, 7 to 8; beeswax, 25 to 30 cts.

BATTERSON & CO.,
June 5. 167 & 169 Scott St., Buffalo, N. Y.

MINNEAPOLIS, Minn.—The market is very weak at present, but, evidently will be better later on. We quote as follows: Fancy white, 16 to 17; No. 1 white, 15; fancy amber, 13½ to 14; No. 1 amber, 12; fancy dark, 10; white extracted, 6½ to 7; amber extracted, 6; dark extracted, 5½.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Jan. 2.

CHICAGO, Ill.—The supply of comb honey now on hand is confined almost exclusively to the culls of last season's crop—the colors being yellow, brown and black; for such low prices are accepted. A little fine white comb honey that came in this week brought 15 cts. Extracted is dull and ranges from 4 to 6 cts. Beeswax, 25.

R. A. BURNETT & CO.,
June 5. 161 So. Water St., Chicago, Ill.

CHICAGO, Ill.—The only comb honey we have in stock is from California, one pound sections, forty eight to a case, with glass front, and we are selling it at from 12 to 13 cts, a pound depending on quality. Repacked into smaller cases, one cent per pound extra. Demand at this season of the year limited. We are selling basswood, clover and California sage at 6 cts. per pound, while Southern honey is selling at 5 cts. Beeswax, 26 cts. Special quotations furnished on application.

S. T. FISH & Co.,
June 10. 189 So. Water St., Chicago, Ill.

Texas Reared Golden Italian Queens

BRED for BUSINESS and BEAUTY, March, April and May, Untested, \$1.00; Tested, \$1.50. After, Untested, 75c.; Tested, \$1.00. Remit by P. O. Money Order, or Registered Letter. Price-List Free.
W. H. WHITE,
Deport, Lamar Co., Tex.

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AND
BROODERS**
WRITE FOR CATALOGUE
FAMOUS MFG. CO.
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PLANTING FOR HONEY

Is again being agitated to some extent in the bee journals. There are conditions under which it will pay, and pay well, to plant for honey alone, but they are very few; there are other conditions under which it will pay to plant, or to secure the planting of, such useful crops as will yield honey; and there are localities in which neither will prove profitable. You may lose by not planting and you may lose more by planting; better read what the book, *ADVANCED BEE CULTURE* has to say on the subject. It may put money in your pocket, or save that already there.

Price of the book, 50 cts.; the *REVIEW* one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

GO TO

HEAD QUARTERS

FOR 4 AND 5 BANDED

QUEENS

Special, breeding queen,	\$5.00
Best, select, tested,	3.00
Tested,	2.50
Untested,	1.00
per dozen,	9.00

L. L. HEARN.

Oakvale, W. Va.

7-93-tf

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MADE BY

An Improved Process,

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Best and Cheapest.

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W. J. FINCH Jr.,

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"Scientific Queen - Rearing."

By G. M. Doolittle (portrait shown herewith). Tells how the very best Queen-Bees are reared in accord with Nature's way. 176 pages. \$1.00 for this book and "Bee Journal" one year. Address,

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If you are not using the

New Heddon Hive

It may seem incredible that it would enable you to obtain the same results with considerable less labor and much more comfort than with other styles of hives, but a fair and impartial consideration of the reasons, as set forth in my circular, will show that this statement is not overdrawn and the circular is yours for the asking.

11-93-1f A. E. HOSHAL, Beamsville, Ont.

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For Circulars, apply to CHAS. F. MUTH & SON
Cor. Freeman & Central Aves., Cincinnati, O.
Send **10c.** for Practical Hints to Bee Keepers.

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NEW YORK CITY

Is the center of more R. R. and Ex. Co's, than any other place in the country. That means low transportation charges. Combined with this the fact that our prices are low and supplies first-class, shows a reason WHY you should prefer our circular.

L. J. STRINGHAM,

105 Park Place, 1-94-12 New York, N. Y.

200 Nuclei For Sale.

Each nucleus contains two frames of bees and brood and a 5-banded Italian queen. The price is \$2.00 each. 1,000 queens, all 5-banded, will be ready to mail the first week in June. Send for sample of bees and price list.

N. H. SMITH,

1-91-1f Box 2, Tilbury Center, Ont., Canada.

Please mention the Review.

SPECIAL FOR

CANADIANS.

Send postal for our Illustrated Catalog of Bee-Keepers' Supplies, Bees, Queens, Honey and Household Conveniences.

MYERS BROS.,

Stratford, Ont., Canada.

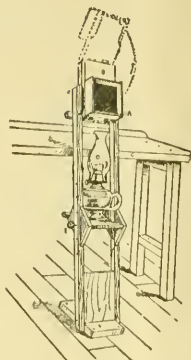
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BEEES QUEENS

Smokers, Sections,
Comb Foundation
And all Apian Supplies
cheap. Send for
FREE Catalogue. E. T. FLANAGAN, Belleville, IL.

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Please mention the Review.



As the Foundation

Is supported while the section is being brought to an upright position, it never lops over and breaks during this operation. This is the strong point in favor of the Woodcock Foundation Fastener. It has other points in its favor; the foundation is always placed exactly in the center of the section, while the work is done perfectly, quickly and easily. R. L. Taylor and other prominent bee-keepers who have used it are greatly pleased with it. Price, \$1.00. Discount to dealers.

M. WOODCOCK, FLINT, MICHIGAN.

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Possesses brightness, reliability, honesty, purity of tone, circulation, and the confidence of its readers. In addition it is PRACTICAL from cover to cover. Published monthly, 50 cents per annum. Sample copy on application. The PRACTICAL for one year and one genuine Five-Banded Golden Italian Queen for \$1.00.

THE PRACTICAL BEE-KEEPER,

Tilbury Center, Ontario, Can.

Mrs. Oliver Cole sells a **PORTICO HIVE** containing one 2-frame nucleus with PURE ITALIAN QUEEN, YELLOW, BEAUTIFUL, PROLIFIC, in June for \$2.75 each, two for \$5.00.

STRAWBERRY PLANTS of the latest varieties, for sale cheap. Send for circular to
5-91-1f S. Erburne, Chenango Co. N. Y.

GOLDEN, UNTESTED QUEENS, raised from Doolittle's best by Doolittle method, 65 cts. each. For breeders the very best \$1.50. These queens are all very yellow—most of them YELLOW AS GOLD. Fine tested from imported Italian mother, \$1.00. Safe delivery. Money order office, Decatur.

CLEVELAND BROS.,

Stamper, Newton Co., Miss.

5-94-1f

SECTIONS CHEAP.

Until sold, we will sell the sections listed below, in quantities of 500 or more, at \$1.50 per thousand for creams, and \$1.00 per one thousand for No. 2's; all 4 1/2 x 4 1/2.

41,000, 2-inch creams.

47,000, 1 3/4 inch creams.

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37,000, 2-inch No. 2's

91,000, 1 1/2-16 in. No. 2's

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87,000, 1 1/2-16 in. No. 2's.

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PAGE & KEITH, New London, Wis.

4-94-1f.

Please mention the Review.

Dr. J. W. CRENSHAW, Versailles, Ky., Offers for Sale

UNTESTED QUEENS

At \$1.00 each; after July 1st., 75 cts. Only the yellowest ("5-banded") variety, and as good queens as anybody can rear. Bred from only the best mothers possible to obtain. Imported stock mated to yellow drones, same price. Any of Root's goods at his prices. Send for circular. Book your orders now and get your queens and supplies when needed. Queens ready in May. 3-91 tf

THE ODELL TYPE WRITER.

\$20 will buy the **ODELL TYPE WRITER** and **CHECK PERFORATOR**, with 78 Characters, and **\$15** for the **SINGLE CASE ODELL**, warranted to do better work than any machine made.

It combines Simplicity with Durability, Speed, Easy of Operation, wears longer without cost of repairs than any other machine. Has no ink ribbon to bother the operator. It is Neat, Substantial, nickel plated, perfect and adapted to all kinds of type writing. Like a printing press, it produces sharp, clean legible, manuscripts. Two to ten copies can be made at one writing. Any intelligent person can become a good operator in two days. We offer **\$1,000** to any operator who can equal the work of the Double Case Odell.

Reliable Agents and Salesmen wanted. Special Inducements to Dealers.

For Pamphlet giving Indorsements, &c., address

ODELL TYPE WRITER CO.,
5-94-3t 358 Dearborn St., Chicago, Ill.

Combs For Sale.

I have 100 good, straight worker Combs, in Simplicity frames that I will sell for 10 cents each. Also four Heddon hives filled with good straight worker combs, for \$2.10 each. **\$16.00 cash. takes both lots.**

ELMER HUTCHINSON,

5,94,1t Vassar, Mich.

PATENT. WIRED, COMB FOUNDATION
HAS NO SAG IN BROOD FRAMES.
Thin, Flat - Bottom Foundation



HAS NO FISHBONE IN SURPLUS HONEY.
Being the cleanest, it is usually worked quicker than any fdn. made.

J. VAN DEUSEN & SONS,
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Please mention the Review.

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O. H. TOWNSEND,

2-94-tf Alamo, Kal. Co., Mich.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

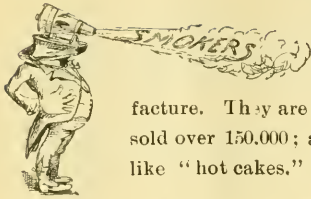
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The best of untested, five-banded Italian queens at 75 cts each; three for \$2.00; 1/2 dozen, \$4.00. Untested queens from imported stock at the same price. 2-94-tf

W. A. COMPTON, Lynnville, Tenn.

Oil Cooking - Stove for Sale.

Last summer we changed about the internal arrangements of our house, and the wood - stove in a room by itself, hence we shall not be annoyed by its heat and will so seldom use our oil stove that we have decided to offer the latter for sale. It is of the Monitor make, the best of any with which I am acquainted, is perfectly safe, much more so than an ordinary lamp, which cannot be said of the use of gasoline. The reservoir is back away from the burners, of which there are four, and the same number of griddles. Anything that can be done with an ordinary gasoline stove can be done with this one, while at the same time there is perfect safety. The whole outfit, including an oven, cost \$22.00, but it will be sold for only \$10.00, and it is practically as good as new. Descriptive circulars will be sent upon application, or any inquiries cheerfully answered, **W. Z. HUTCHINSON,** Flint, Mich.



Strength of Blast

Is not the only good feature of the Smokers we manufacture. They are strong and well made. Of the Clark Cold Blast we have sold over 150,000; and the Crane Hot Blast—well, although new it is taking like "hot cakes."

The new '94 model Crane is a beauty. Among some of its distinguishing features are an improved

Check-Valve,

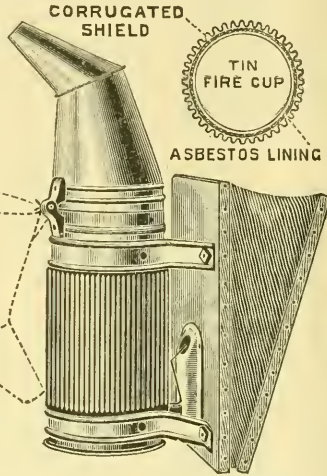
a device that forces the air through the cup, even when crammed with fuel, and at the same time prevents smoke from going into the bellows; a

Hinged Top

secured by a malleable iron hinge accurately milled at the joint so that the top will fly squarely in place. No need of burning fingers in replenishing, nor losing the top off.

The Lining

this year consists of a-b-s-t-o-s sheeting around the outside of the fire-cup; and



over this still is a neat corrugated shield. This combination is the most effective of anything we have ever tried. And last but not least, the cup is secured by four small BOLTS, not screws.

Price of Crane Smoker, each in a neat telescope past board box, \$1.60; or prepaid, \$1.95. Dealers, write for wholesale prices.

N. B.—We are the authorized manufacturers.

Don't forget that our polished

Sections

cannot be excelled. Send for our 52 page catalog, and sample of GLEANINGS IN BEE-CULTURE.

A. I. ROOT, Medina, Ohio.

If You Wish Neat, Artistic

PRINTING,

Have it Done at the Review.

WHY BUY

Untested queens when I will WARRANT my queens purely mated and to give satisfaction.

If you have never tried my queens, send 65 cts. for one. Only one queen at this price and then only to a new customer. Regular price, \$1.00. Be sure to mention the REVIEW.

S. F. TREGO, Swedona, Ill. (M. O. office, Cable.)

1-91-9t

Please mention the Review.

Money Returned TO ALL BUYING Porter Bee-Escapes

And not finding themselves perfectly satisfied after testing them. Leading bee-keepers everywhere use and highly recommend them as great labor saving implements and as the BEST. No others received World's Fair Award. Without giving them a trial it is impossible to realize how much of the most vexatious, annoying and disagreeable work they save. With them the surplus honey can at all times be taken from the hives unstained by smoke, uninjured by the gnawing of the bees, and without inciting robbing, fighting, or any disturbance of the apiary. PRICES: Each, postpaid, with directions, 20 cts; per doz., \$2.25. Testimonials, etc., free. Order from your dealer, or of the manufacturers,

R. & E. C. PORTER, LEWISTOWN, ILLS.

(MENTION REVIEW.) 4-94-1f

Sections, Bee - Hives and other Bee - Keepers' Appliances at
 Bed Rock Prices. Best of Goods at Lowest Prices. Write for
 Catalog and Price List. G. B. LEWIS CO., Watertown, Wis.

The Bee-Keepers' Review

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, JUNE 10, 1894. NO. 6.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

SUGAR FOR WINTER STORES.



WITH a view to bring out in some measure if possible the difference in value between sugar syrup and honey for winter stores I selected, at the proper time in the fall of 1893, twenty-four colonies, one-half of

which were to be fed sugar syrup for winter stores and the other half to be supplied with honey for the same purpose. Considerable care was taken to select and arrange the colonies so as to have the two sets as nearly equal as possible in point of strength but the bees were not weighed separately from the hive, the strength being estimated by the amount of space occupied by the cluster. This is not a satisfactory course to pursue when it can be avoided. I now appreciate the importance of the weighing better than I did at the time the experiment was undertaken and that course will be taken if the experiment is repeated. At some seasons of

the year the manipulation necessary to secure the separate weight of the bees would be so objectionable as to preclude its use, but at the time contemplated it would be neither objectionable nor very difficult. Owing to the character of the latter part of last season few of my colonies were very strong last fall, and in the effort to select colonies with such conditions as would facilitate the operations of the experiment it turned out that those selected were considerably below even the average strength and in this way another mistake was made which should not be repeated. It is necessary to point out further that the colonies selected were partly in two story Heddon hives and partly in one story ones and that in order to deprive one set almost completely of honey and to supply the other set with an abundance of honey for winter stores, it was found necessary to so manipulate the hives that those to be wintered on honey had two story hives and those to be fed sugar syrup one story.

These arrangements were made the last of September and the necessary feeding was done at once.

The hives were first weighed when they were put into the cellar, the 15th of November, and again when taken out the first days of April. It will be observed that two are wanting from the sugar fed set and three from those wintered on honey, but as none of them, as far as appeared, perished on account of dysentery or on account of any peculiarity of either kind of stores, nothing

can be predicated on that fact for or against either kind of food.

The following figures show the weight of each hive at each season and the difference or amount consumed by each in pounds and ounces :

THE SET WITH SUGAR STORES.

Fall Weight.	Spring Weight.	Am't Cons'd.
33-12	29-4	4-8
31	28-8	2-8
30	26	4
33-4	30-8	2-12
29	26-4	2-12
29-8	26-8	3
32-4	29	3-4
32-4	29-8	3-12
26-12	23-4	3-8
26-8	24-4	2-4
		31-4

THE SET WITH HONEY STORES.

54-4	48-8	5-12
57-8	51-12	5-12
56-4	45-8	10-12
63-8	54-12	8-12
45-4	39-8	5-12
47-8	40	7-8
48-4	43-12	4-8
46-8	41-4	5-4
80-12	63	7-12
		61-12

The amount of stores here shown to have been consumed during the winter is, I think, remarkably small, at least it is smaller than any thing I have hitherto become acquainted with and this proportion seemed to hold throughout my apiary. Indeed, in most cases examined, the stores seemed scarcely touched and though I lost a considerable percentage, not a colony perished of starvation. But the important point brought out by this experiment is the economy of feeding sugar syrup for winter stores instead of honey where feeding is necessary. From an examination of the figures we find that the average consumption of sugar stores was but $3\frac{1}{2}$ lbs. while that of honey was $6\frac{7}{8}$ lbs. nearly, or more than twice as much. This has added importance when we remember what has been well established, that granulated sugar syrup is fully equal to the best honey as winter food for bees and far safer for that purpose than any inferior honey.

AN EXPERIMENT IN OUT-OF-DOOR WINTERING.

With a hope of learning something bearing on the subject of out of door wintering, I made the following experiment: In November, at the time when I was putting the bees into the cellar for the winter, I selected six colonies of good average strength, each in a single story Heddon hive, then the hives

were placed one above the other with nothing between them except a single sheet of wire cloth so prepared that each colony was provided with its proper entrance. Of course the lower hive retained its bottom board and the upper one its cover, but the rest of the covers and bottom boards were entirely removed. The lower hive was raised about ten inches from the ground, then the whole was well packed below and with about four inches of dry planer shavings on top and on all sides except about four inches in width of the front left for the entrances. The cover was left sufficiently loose to allow the escape of moisture into the packing and the entrances were closed to within about an inch in width. During the winter these bees had comparatively frequent flights and seemed to be doing well. About the 20th of March some of the upper ones brought in considerable pollen, but the two lower ones exhibited but little signs of life. Then came the blizzard in the last of March and first of April and when that had passed and other colonies began to bring in pollen these remained ominously silent—indeed the silence seemed chronic and an examination revealed that it really was so—they had all passed away. The combs were dry and clean and the stores abundant, but there were no live bees and very few dead ones. There was very little if any appearance that any had finally perished in a cluster. Unless the arrangement of the hives and the thoroughness of the packing had deluded the bees into thinking that it was so warm that they might with safety try the open air and thus ultimately perished, I know not how to account for their utter destruction.

Though the stores of five of the six colonies was largely sugar syrup, the six colonies consumed an average of 5 lbs. 13 oz. over and above the weight of the bees which had perished outside.

LAPPEER, Mich.

May 21, 1894.



Catching, Holding and Clipping Queens.

O. H. TOWNSEND.

THE method of clipping queens as given in April REVIEW I used to consider the best way, having clipped a great many in that way, until Mr. Frank Benton showed me what he considered a better and safer way. When I tried his way, I, too, soon thought it superior to my way. It is as fol-

lows: When the queen is found, pick her from the comb by the wings with the right hand, then pass her to the left hand holding her with the thorax or "shoulders" between the thumb and fore finger, then clip her with the scissors in the right hand. In this way a queen can be clipped every time just as one wants her clipped.

When clipped, take her by the wings with the right hand and place her back on the comb near where she was picked off—and in nearly every case she will act as if nothing had happened.

The only trouble with the inexperienced is they are so afraid that they will hurt her that they are not likely to hold her firm enough. She should be held firmly enough so that one can at least *feel* that they have something between the thumb and finger. ¶

I have nothing to offer in the way of finding the queen, as Mr. Dayton has explained it most thoroughly.

ALAMO, Mich.

May 18, 1894.



Notes From the Pacific Coast.

"RAMBLER."

It doesn't pay in greedy way
To live for grabbage;
Nor yet awhile in sloth most vile
To live a cabbage.



¶ It is dull days
I now with
bee-keepers in
this sunset
country; es-
pecially in the
southern por-
tion of it; less
than six inches
of rain, where
we need twen-
ty or more, is

a sure precursor of the failure of the honey crop, or at least a light yield.

The diversity of elevation and climate in our large State will enable some portion of it to give its wonted yield, and that will save us from the humiliation of having a total failure.

In now and then a locality, we find that the bee-keeper is subject to the nagging process, and one of the great needs of the bee-keeper has been a person with some authority to stand between him and the fruit grower, and act as a peace-maker. It causes no

little rancor between two great industries when things get to such a pass that the fruit man deliberately, under the cover of darkness, when evil men do evil deeds, goes to the lone apiary in the foot hills and saturating the hives with kerosene commits them to the flames. The bee-keeper might retaliate by cutting down an orchard or more in the same stealthy way, but to the honor of bee-keepers there is no such retaliatory meanness on record. Aside from fire there are various other ways in which the bee-keeper is made to feel uncomfortable, and an apiary located where it can be seen for a considerable distance is sure to find itself a sort of a target for the viciously disposed. It is a noticeable fact that while certain fruit men are thus disposed, that many of our leading bee-keepers whose colonies are numbered by the hundreds are also extensive fruit growers; the interests so conflicting in other places, here run without friction. If the bees eat a few grapes the owners put up with it; or if the drying raisins are greatly molested the trays are covered with wire cloth or musquito netting screens, and all is harmony.

It is also noticeable that in all of our horticultural meetings, from State to county associations, there is always a discussion upon the noxious parasites and insects that prey upon fruits: but the honey bee is never discussed in that light, on the contrary if there is discussion at all, it is favorable to the bee; for some fruit grower has made the discovery that his fruits bear better crops if the bee is there to perform the proper and profuse pollenization, the fruit grower thus enlightened feels it his duty to tell the facts to the assembled association. If, perchance, a bee-keeper is in the audience he verily has a glimpse of a millennial time when, "The lion and the lamb" can lie down together in peace.

California has needed more of these intelligent investigators, and we feel very joyful to think that hereafter more of this quality of men will grow in this climate.

The bee-keepers of the East thought, and not without reason, that they had lost a good friend of their industry when Prof. Cook left them and came to this sunset country. We Californians feel that in this great fruit and honey country the Prof.'s field will be greatly broadened, and the educative influence he can exert here, will result in greater good than in any other portion of our coun-

try. The Prof. comes to us and stands between the two great industries, fruit growing and bee-keeping, as a veritable peacemaker.

"Blessed are the peacemakers for they shall be called the Sons of God."

In my school boy days we used to sing a lively song, the inspiring chorus of which ran thus; "Swinging, swinging, 'neath the old apple tree." Alas! we have none of those old apple trees with dense shade, and brawny arms in this valley; and a sorry swing we could have among the sage and the greasewood bushes. But, say friends, I have a hammock on the verandah of my habitation, and allowing the coastwise breeze to swing me in that, revives memories of old, in a location 3,000 miles away. Now, I would tell how this hammock of mine is made, for it is a hom-made affair, but as the readers of the REVIEW insist upon a fellow talking bees, and nothing but bees, I shall say nothing about the burlap sacks sewed together, with sticks across the end, and swung up with baling wire; but I tell you friends, this obscure hammock is just the thing to dump one's self into and to think about the honey bees.

While thus comfortably fixed and thinking of the half a mile walk that I have to perform every time I visit the apiary, it occurred to me that if bee-keepers in this State, could each and every one, have their apiaries located near their residences, and under their own vine and fig tree, where they could, all the year round, hear the busy hum of their workers and be upon more intimate terms with them, I really believe the bee-keeping industry would take upon itself a phase for the better.

In all of the East there is scarcely an apiary that is located away from the residence of the owner thereof; or, if he has several apiaries they are located near the residences of other persons. It is needless to say that the practice is reversed here, for the apiaries are nearly all located out in some lonely nook in the plains, or in the foot hills. A greater number of these apiaries are in such a forlorn condition with old unpainted hives, with brush growing at will amongst them; and yes, now and then a rattlesnake raises its warning rattle, or if he does not raise it, his slimy folds are seen wriggling through the brush. A club or a stone soon puts a quietus to his career, and his rattlers always pay the forfeit as a trophy. With such forlornness, and with bees with an intensified irascible

disposition, who can blame the bee-keeper for keeping away from it as much as possible. It is no wonder that bee paralysis and foul brood get possession of the hives, and that the Eastern bee-keeper coming immediately from a pretty apiary in which are flowers and trailing vines and a place in which it is a pleasure to sit down and beholding the condition of things here exclaims against the general apathy of the fraternity.

The above conditions are, however, all changed even here in California, when the apiary is situated near the residence of the proprietor. The hives are painted, arranged in better order, vines, fruit trees, and rose bushes with a wealth of flowers and tints, such as no other country can produce, all surround the apiary, making it a pleasure to the eye and in fact to all the senses.

Such a revolution in California bee-keeping would result in more enthusiastic bee-keepers, fill our conventions, make better exhibits at our fairs, and place our products upon the markets at a more profitable figure. "The mills of the gods grind slow but very fine." It may be that such a reform may in time be ground out. That it may is the wish of the

"RAMBLEB."



Bee Escapes and How to Use Them.

C. W. DAYTON.

Our gentle bees that never sting—
Thus angels float on downy wing.



REFERRING to Mr. Woodley's remarks on using escapes or, ("super clearers,") on page 99, I would say that my article was written mainly from last season's (1893) experience which was confined, almost entirely, to the removal of

combs for extraction. The season of 1892 I worked an out-apiary of 144 colonies for Chas. Adams, of Colorado, where we aimed to get all comb honey, but as that season was not a good one we were obliged to run most of the weaker colonies for extracted. Not only did I watch the workings of es-

escapes in the out-apiary, but in the home-apiary also, managed by Mr. Adams.

This season I have changed so that if the bees get any honey it will be in the comb in one-pound sections.

In the case of extracted honey it matters little if the cells are uncapped by the bees. Disturbing the bees in the brood chamber is useless; and, if those in the upper story (or super) are much disturbed it might retard the work, because, after the disturbance it would require some time for them to get settled down again and find out that they were separated from the brood apartment. If they uncapped cells it would be to obtain loads of honey and before they would begin to make much effort to find the way through the escape they would take time to unload.

As regards the condition we find the bees in, there are two ways of operation. One is to proceed moderately and subdue the bees with smoke (or carbolized cloths); the other would be to work quickly, without subduing. When the stories are pried up suddenly, amongst the thousands of bees present, there are usually about half a dozen unloaded sentinels (unloaded of honey but loaded with fight) which fly straight out and sting the first object that comes in their way. After the harvest there may be a hundred; some active of wing, while others crawl out, snake-like, as soon as the crevice is wide enough. If these bees smell a little smoke before the crevice is wide enough to admit their bodies they will crawl the other way, which is down on the inside wall of the hive. Where I said that "every bee would get out of the way (of smoke) as soon as possible," I did not mean literally, but that every positively dangerous bee would. These are prepared for instant action and have the notion that they must do something, and being too scared to charge outward they rush back pell mell down into the hive. The other bees are too stupefied for immediate attack. "Sharp blasts" contain less smoke which would be driven through and out again. This does not subdue or force retreat, only confuses for a moment the flying arrows wherever it finds them and with force it is surer to find them all. While the escape board is being fitted on the top of the brood chamber they renew their courage for another charge; but by this time I depend upon having the escape board in a position for protection and by the time the stupid mass gets ready to retreat it finds nothing to retreat for. It is

only those bees which dart straight up from the top of the hive, into my face that I care for. Those which fly downward from the bottom of the super, circle about, and come around to my back, as I stand facing the wind, cause little trouble. By the time they have flown out and looked over the surroundings their spitefulness subsides.

Thirty upper stories make a fair day's work for one man to extract and the adjustment of that number of escapes usually takes from forty minutes to one hour. I would think it would take one-third of that time to prepare the carbolized cloths for use. Nor do I see how a sheet of any kind could be spread over the hive sooner than a light escape board. The bees which are caught under the carbolized sheet would creep out, and this would require some time; but, with the escape board, those at the points of contact are pushed out of the way even sooner than they are able to move themselves. The boards are laid on with a sliding motion and their weight is not enough to crush the bees; when if they are slightly raised again the bees, having been squeezed, will almost jump out. I do not mind killing a bee, or a few bees now and then, but just as few as is consistent with getting through the work. We cannot cultivate a patch of corn without pulling out or covering up some plants, or harvest it without missing ears, or else our carefulness would be more than the gain.

When I used escapes for removing comb honey I put them on in the forenoon as soon as I arrived at the apiary and removed the crates when ready to go home in the evening. This was simply a matter of convenience. As to the management of the bees inside the hive I prefer the middle of the day when they are busy enough not to need smoking and active enough to get out of the way. Yesterday I looked over about thirty strong colonies with neither smoke or veil and that in California means more than it does in the eastern or northern States. While the bees of strong colonies are more apt to volunteer an attack distant from their hives, it is the weaker ones which fight worse when the hive is opened. Being surrounded by the flying bees in examining a strong colony it serves as a protection from the attacks of the angry bees of the rest of the apiary.

With me the crates of filled sections have been cleared in less time and more thoroughly than full stories of full depth extracting combs, and the reason seems to be that the

sectional combs were entirely finished while the lowest third or half of the extracting combs carried more bees and bees which were engaged in comb building and sealing, causing greater reluctance to desertion of unfinished and thereby unprotected combs of honey. On this account two extracting stories or supers should be as advantageous as the tiering-up system for sections; not alone in leaving storage room while one is being extracted, but the length of time it would take the bees to pass through the escapes should be less.

FLORENCE, Calif.

May 10, 1894.



Extracts From Foreign Journals Translated
and Condensed by

MISS KATHERINE M. INGLIS.

"She is like the merchant ships;
She bringeth her food from afar."—BIBLE.

NOTES ON PARTHENOGENESIS.

IN a report read at the XVIIIth general assembly of the Apicultural Society of Alsace-Lorraine in September, 1893, Pastor Klein presents a concise summing up of his opinions on parthenogenesis, for and against, at the present day, and their practical value to the bee-keepers.

It is well known, he says, that the queen impresses her own character on the population of which she is the mother. The theory of parthenogenesis teaches us how far this influence extends. It shows that while the origin of the nature of the workers and the young queens depends on both the queen and the drone—the drones owe their existence and their qualities to the queen alone.

After a hasty review of the general conditions of the propagation of animal life, from gemmation to the highest step of the ladder known to science at present, reproduction by sexual organs, he says that the two organs, the ovary and the testicle may exist in the same individual, which is then called hermaphrodite, and this brings us to the discussion concerning the queen bee. "She is," he says, "according to the present point of view a female in the true sense of the word; in the tubes or follicles which form the essential part of the ovaries (there are two) the eggs are formed, which by the

two oviducts penetrate into a unique conduit, called the *col du vagin* (vagina.) Laterally to this conduit is found the spermatheca. Fertilization of the queen by the drone, takes place once only in her life, and in the act of copulation the female receives the spermatozoa or spermatozoids, which are then preserved in the spermatheca where they are kept living and capable of movement in a liquid secreted by two glands near the spermatheca. When an egg passes before the orifice of the spermatheca it receives a very small quantity of the seminal liquid containing the spermatozoa, which penetrate into the egg and fertilize it. The egg thus fertilized produces either a complete queen, or an incomplete queen, that is one whose genital organs are too little developed, a worker. If on the contrary, for one reason or another—opinions differ on this subject—an egg has not received the spermatozoids it produces a drone. This is equally the case when the queen is not fertilized, and when her provision of spermatozoa received from the drone is exhausted. Thus the eggs which have not received the male sperm, are procreated as if by a virgin. There has been parthenogenesis not by the non-fertilization of the queen but by the non-fertilization of the egg." Dr. Dzierzon is the leader in advancing this theory and is warmly supported by Professors Lenckart and Von Siebold.

On the other hand there are those who attack this theory sharply, the leader being Herr Metzger, a chemist of Budapest. Metzger's theories are at present in a state of variability, and it is not easy to give a clear resume of his arguments. He claims, however, in the first place that the spermatheca is not only a receptacle for the spermatozoa of the drone, but has the property or faculty of producing germ cells from which result the filaments by means of which she fertilizes the eggs producing workers, when the sperm she has received from the drone is exhausted. "Besides the ovary the queen thus possesses a fertilizing organ; she is hermaphrodite, and as she is at the same time female, she represents an entirely new species of hermaphrodite being, she is a demi-hermaphrodite. The drone eggs are fertilized also, although in a different manner from those of the workers. The queen is a hermaphrodite. There is no such thing as parthenogenesis. These are the first statements of the new theory."

Metzger claims further that it is the liquid contained in the spermatheca which fertilizes the drone eggs, and according to his final conception, the liquid of the spermatheca contains corpuscles in the form of batonette or small rods, a hundred times smaller than the spermatozoa, and these batonette pass the narrow opening of the spermatheca to fertilize the egg in its passage into the vagina. Metzger and Weygandt von Flacht claim that their theory is supported by observations with the microscope, and also by certain exceptions to the law of parthenogenesis which have been observed here and there, such as the occasional discovery of crossed or Italian drones in a hive where the queen is black. But the one stronghold of Metzger and his adherents is the existence in the spermatheca of a liquid capable of fertilizing drone eggs. Even this is controverted by Reepen in the *Deutscher Bienen-freund* No. 16, 1893, where he states that queens have been found who had no spermatheca and who still laid drone eggs. Lenckart, Schoenefeld, and Reepen oppose Metzger's theories. On the other hand, Vogel and Dr. Dzierzon maintain the theory of a seminal liquid and the doctrine of hermaphroditism. In conclusion Pastor Klein says: "Parthenogenesis remains the luminous point of the noble art of apiculture, a solid and scientific foundation for an important branch of apicultural improvement (*exploitation*), a proof of its continuous efforts and painstaking observations, and science will always render it acknowledgment for all these services."

In the *Leipsiger Bienen Zeitung* for February, 1894, Dr. Dzierzon sharply attacks Herr Oldenburger on the subject of parthenogenesis. Dr. Dzierzon holds that the term can only be applied to an unfertilized queen, and that applied to drone eggs it is a misnomer. Oldenburger on the other hand, holds that the term may be used in connection with the non-fertilization of the egg, and in this use of the term he is supported by Professor Leuckart who says that scientific terms, and among these he classes parthenogenesis, are often used with a signification which transcends their peculiar and original meaning. Dr. Dzierzon is also indignant that Herr Oldenburger should couple his name with that of Metzger's in regard to the latter's new theory. He says the only point he holds in common with Metzger is that of the possibility of the existence of a

seminal liquid, differing from sperm but fitted for the fertilization of drone eggs, in the spermatheca of the queen.

In *L'Apiculteur* for February, 1894, M. Chabanne combats the position of M. Lefebvre—that parthenogenesis is a result of the nourishment of the queen, holding that there are germs in the pollen by which she is fertilized—and calls upon the shades of Brown-Sequard and Darwin to defend us from the absurdities into which the theory of a fertilizing pollen would lead us. M. Chabanne himself can only say that parthenogenesis is a natural law, no more explicable than the laws of force, heat, gravity, etc.

PLANTING FOR HONEY.

We notice that the German bee journals endeavor to encourage in every way the raising of honey-yielding plants and shrubs. One enthusiastic writer in the *Leipseger Bienen Zeitung* for December, '93, says: "To the bee-keeper each waste spot of earth should say 'Here is a place for a shrub or tree.'" He particularly recommends the snowberry or Peter's bush. In the same journal for February, '94, the American Juneberry is highly recommended, not only for the attractions it offers the bees, but also as an ornamental shrub, and for its fruit-bearing qualities.

In the *Revue Internationale d'Apiculture* (Swiss) for March, '94, the editor commenting on an article by Mr. R. L. Taylor on foul brood, published in the *BEE-KEEPERS' REVIEW*, says in contradiction of Mr. Taylor's statement that drugs are of no benefit in this trouble, that he, M. Bertrand, has obtained a radical cure of thirty-seven colonies by the use of salicylic acid.

LARGE HIVES AND WEIGHT OF SWARMS.

L'Abbe Martin in *L'Apiculteur* for April, 1894, gives a novel reason for the use of large hives. It is his opinion that at the time of swarming only half the bees are at home, the other half being in the fields. He claims that he has made frequent experiments, and found it a constant experience, that having weighed a swarm at the time of swarming, and again in the evening, the weight the second time is double that of the first. This, he says, is true in the case of artificial as well as of natural swarming. Of course he must place the swarms on the old stand, and even then his statement seems incredible.

A COLONY OF BEES AS AN INCUBATOR.

We find in *L'Apiculteur* for February '94, a new argument in favor of combining bee-keeping and poultry raising. A certain M. Beanne, in mowing a field last July, discovered a partridge nest containing fourteen eggs. They had been brooded two weeks and he determined to make the attempt to hatch them. As he had no artificial brooder, and could not find a sitting hen, he made an experiment. In an Abbott hive, containing a strong May swarm, he placed on top of the frames a layer of wadding and on this the eggs which were then covered with another layer of wadding, over all he placed oat-chaff. Eight days after, fourteen little partridges were hatched. They were put in a box covered with wadding and placed near the fire, where they received their first meal of ants' eggs, and a cake made of yolk of egg and bread crumbs. Finally they were returned to their hive. They lived thus for four days and were then given to a neighbor. It may be that some method may be discovered of arranging the upper part of a hive in such a manner as to utilize the heat for artificial incubation. Perhaps it is worth the trial.

LAPEER, Mich.

April 20, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

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 FLINT, MICHIGAN JUNE 10, 1894.

IT IS POSSIBLE for you to get so far to one side of a subject that you cannot see the other side.

MRS. ATCHLEY, under the heading of "Profitable Bee Keeping," is writing a series of interesting articles for the *American Bee Journal*.

BRO. YORK calls my attention to the fact that he did not say positively that the case against Bro. Heddon was stronger than it was a year ago; he simply said it "seemed stronger."

THE FIRST BULLETIN to be gotten out by experimenter Taylor will not be out so soon as he thought. There will be the usual delay in printing, but this will enable him to get in the report of the full year's work.

UNQUEENING a hive because a new queen has been ordered is something of which some bee-keepers are guilty. Don't do it. There are sometimes delays in shipping queens. Don't remove the old queen until you have her would-be-successor safely in your hand.

THE PRACTICAL BEE-KEEPER of Canada is doing nicely. It seems to belong to that class of journals now greatly on the increase, those that will allow a man to be heard even if his views may be opposed to those of the editor's—yes, even if those views are not popular.

F. A. GEMMILL has declined to accept the Secretaryship of the Ontario Bee-Keepers' Association, and it has been tendered to Wm. Couse, of Streetville, who was for several years its very efficient Secretary. He has accepted—yes, and he has "got married" too. Congratulations are extended to Mrs. Couse, her husband and to the O. B. K. A.

GLEANINGS is beginning to give a little picture of the author at the head of his article, *a la REVIEW*. But then, the REVIEW got the idea from the *Cosmopolitan* and from some printers' journal, I have forgotten which one now. It starts out with a picture of Karl Rudolph Mathey, also giving a short biographical sketch at the bottom of the column the same as the REVIEW has done. If *Gleanings* will only continue to give pictures of good looking men, the REVIEW will not be jealous because of the adoption of this feature.

HATCHING little partridges over a colony of bees is mentioned in the translations given this month. I doubt if this would have been successful had not the period of incubation been well advanced. I have several times tried hatching hens' eggs in a lamp nursery where I hatched queens, and I failed. I think the temperature is not high enough. In a nursery for hatching queens the temperature must not go over 100°, and it is better not to have it go above 95°, while I believe that in an incubator for hatching eggs, it should go above 100°.

CALIFORNIA will have a short crop this year if things turn out as it appears they will. Dealers out there are trying to get up a "corner" on honey.

MARK your queen cages, you gentlemen who send out queens. A good plan is to have "stickers" with your name and address printed and blank spaces left for writing the address of the purchaser. A rubber stamp will answer nicely. If you have neither, then write on the cage with a pencil, "From Mr. Golden Band." A man may order queens at the same time from different breeders and it is very pleasant to know whom they are from, especially if some of them are tested and others not.

THE ILLINOIS State Bee-Keepers' Association has had an appropriation of \$500.00 yearly to use in getting out a report of its proceedings and mailing copies to members and others. The second annual report is here. It is very nicely gotten up, the nicest of any report that I have ever seen, but I notice that the Legislature has failed to make the appropriation this year, hence, we shall probably see no more of those handsome reports and must content ourselves with simply reading the reports of meetings as they appear in the journals.

CARNIOLANS GREAT BREEDERS.

For several years I have had a few colonies of Carniolans. There is no question but they are great breeders, especially so in the spring. I am not sure but this trait might not be used to advantage by Northern honey raisers in getting populous colonies in time for the white clover harvest. I do think, however, that this great brood-rearing disposition needs joining with the sense, or thrift, of the Italians. To illustrate: I now have two colonies of pure Carniolans. They both swarmed June 2nd. I examined their hives and found every comb jammed full of brood, with not half a pound of honey in the hive. I also found another weak colony of Italians actually starving. No honey was coming in. The Carniolans will rear brood and swarm so long as there is a drop of honey in the hive, and it makes no difference if none is coming in. This may be a good trait in some respects, but it needs joining with some other traits.

QUEENS CRAMP, curl up apparently dead sometimes when they are caught and held by both wings. Only a few times in my life have I seen them do this. Mr. Doolittle says in *Gleanings* that this is caused by the queen catching one of her feet in the vulva and holding it there. If you catch a queen and she curls up apparently dead, don't throw her away, but wait for her to recover.

W. Z. HUTCHINSON contributes an article to the *Progressive* in which he calls attention to the undesirability of buying and selling bees by the pound. He says that the difficulty is that the bees and brood are like man and wife—they ought not to be separated. The bees need the brood and the brood needs the bees. Without the addition of hatching brood the old bees die and dwindle away before any surplus is obtained, and without the bees to care for it the brood is neglected and its production is checked. If you are going to buy bees, better buy brood and all.

SWARM CATCHERS and queen traps both have their uses and places. In a small apiary where the likelihood of two or more swarms issuing at the same time is slight, the trap works to its best advantage. As the apiary increases in size, so that several swarms will often be in the air at one time, there is considerable work in straightening out the snarls that result from the uniting of swarms in the air. It can be done, however, simply by giving to each hive its proportion of bees and a queen. But, in an apiary large enough to require the constant attendance of some one, swarm catchers show their superiority. It is not necessary to stand around with swarm catcher in hand ready to jump and run the moment that a swarm starts to come out. The first few bees that leave the hive set up the swarming note: no bee-keeper who has ever heard it will fail to hear and recognize it at once—before more than one-tenth of the swarm is in the air. To place the catcher in front of the hive is the work of an instant, and that ends all trouble with that swarm, and the apiarist is ready for the next one. With plenty of catchers on hand there is nothing easier than to catch and keep by itself each swarm that issues. The few bees that come out before the catcher is applied are not lost; they simply return to the old stand, or join the van guard of some other swarm and return to *their* hive.

MISS WILSON, a sister-in-law of Dr. Miller's, has an elastic around the lower edge of her bee-veil, then draws down the front of it and fastens it with a safety pin to her dress waist. This arrangement holds the veil out away from the face and neck, while it allows one to get at the mouth and eyes when spectacles need adjusting, or fingers need licking. With this arrangement there would be no folds in front from the use of an elastic. This item is picked from *Gleanings*.

C. G. LOOFT, of Cochranton, Ohio, calls my attention to the fact that he invented and described in *Gleanings* for 1891, page 419, a section press exactly like the one invented by Mr. Townsend and described in last REVIEW. I had forgotten about the matter, or, of course, I should have called Mr. Townsend's attention to it when he sent me his press. I presume this is a case in which two persons have hit upon the same idea independent of each other.

HONEY on the fingers is removed by licking the fingers. At least E. R. Root does that way; I have followed the same fashion, and I think we two are not alone in the practice, but I can never lick *my* fingers so clean that a trace of stickiness does not remain, and how pesky mean it does feel when the fingers stick together and stick to the smoker, and I have frequently stood it as long as I could and finally gone to the honey house and washed my hands and fingers and wiped them on a towel, and then gone back to my work feeling as much more comfortable as though I had had a bath, a clean shave, and my boots blacked. Honestly, I wish that there were some way of cleaning one's fingers of honey, so clean that they would not be sticky, without the trouble of going to the honey house and washing them. But then, there are greater trials than this to bear.

SUCCESS IN BEE CULTURE, so says *Gleanings*, has not been a success financially, and will be discontinued, the money being returned to those who have paid in advance. I am sorry to learn this, as I liked Bro. Sage and his sprightly little monthly. He was a splendid printer, and, being greatly interested in bees, he believed that at odd times he might "set up" the matter for a journal. He soon found that making a good journal was about all that one man could do, and he

wisely decided that it would be very poor policy to give up a paying business for the uncertainties of journalism. I fear that many who start bee journals do so with no conception of the amount of thought, labor and money that must be expended before even a good journal can be placed on a paying basis. As I look back over the years that have slipped by since I started the REVIEW, I am reminded of what Mr. M. H. Hunt once said to me. I was referring to the fine quality of the foundation that he makes, when he said, "Yes, I have learned how to make good foundation, and I don't begrudge the time, and labor, and money that it has cost me, but if I had known in the outset of the obstacles that I would have to overcome, I fear that I should never had the courage to start in."

FOUL BROOD; ITS NATURAL HISTORY AND RATIONAL TREATMENT.

The above is the title of a little book of 47 pages, written by Dr. Wm. R. Howard, of Ft. Worth, Texas, and published by Geo. W. York & Co., of Chicago. Price 25 cents. It is one of those few books that we have that are difficult to review. The *author* has done the "boiling down." He shows conclusively that *bacillus alvei* and its poisonous compounds are the cause of foul brood; that the decomposition of chilled or dead brood does not produce foul brood; that the spores of foul brood when excluded from the air retain their vitality indefinitely but that an exposure of from 24 to 36 hours will kill them; that a temperature approaching the boiling point must be continued nearly an hour to destroy them; and that an exposure to a temperature below zero for three days will not destroy them.

He found by experiment that in a moist chamber the germs of putrefaction would pass from one part to another and attack the non-infected brood. *Bacillus alvei* did not pass from one plate to another, thus showing that the spores are not thrown out upon the air. He calls attention to the fact that if foul brood germs floated in the air there would be no hope of ever curing the disease. The Dr. says that many putrefactive germs produce poisons that may be left in the cells and cause the death of the next brood that is reared. It is quite likely that brood dying from this cause has sometimes been mistaken for foul brood.

The author is certain, and gives proof, that the disease may be communicated by the contaminated honey, combs and pollen, says that the use of any drugs in the treatment of the disease is a waste of time and material, and that "any method which has not for its object the entire removal of all infectious material beyond the reach of both bees and brood will prove detrimental and destructive, and be sure to encourage the recurrence of the disease."

The Dr. agrees with Mr. McEvoy that hives do not need disinfecting. If the hive were clean and free from bits of comb or propolis, or daubs of infected honey, I might see why it would not need disinfecting, and the plan of leaving the bees to build comb four days, and then cutting it out, *a la* McEvoy, would give the bees an opportunity to clean up all bits of honey. The Dr. endorses the McEvoy treatment, and in so doing speaks of it as being at first unpopular. I do not remember that his *method of treatment* has been criticised, except that many think that the cutting out of the first four day's work is time wasted, but there have been some very strong arguments brought against Mr. McEvoy's theory that the disease originated in dead and putrefying brood, and none have brought any stronger than has the author, Dr. Howard.

REMOVING HIVE COVERS.

Those using flat hive-covers placed bespace above the frames and resting upon the upper edge of the hive, know how such covers are stuck fast with propolis, and how, unless honey boards are used, brace combs are built against the covers. Mr. J. N. Patterson, of England, Pa., has written and told me how he removes these covers. It is exactly the way in which I remove them; in fact, it is one of those little things that I have known so well and so long that I supposed everybody else knew of it, but, perhaps they do not. Here it is: kneel at one side of the hive, place one knee against the side of the hive, grasp the opposite edge of the cover with both hands and gradually but steadily pull it towards you an inch or two, enough to loosen the propolis and break the brace combs. When the pressure is first applied it may seem that the cover cannot be moved in this manner, especially if the weather is a little cool, but if it is *continued* the cover will finally move. If the weather is too cool and the cover very firmly glued down, it will

then be necessary to first slightly loosen the cover around the edges with a screw driver or knife, when the brace combs may be broken in the manner described. Unless the frames are very firmly attached to the hive at the ends of their top bars, the raising up of the cover often brings with it one or more of the combs. This breaking of the brace combs before the cover is raised does away with this trouble. Unless the combs are very firmly fixed in the hive, it is better to break the brace combs by forcing the cover *endwise* of the frames, otherwise one or more combs may be forced against the sides of adjoining combs.

ABSCONDING SWARMS.

A subscriber asks me to say what he can do to prevent swarms from absconding. I think that swarms abscond because there is something about the hive that is unpleasant to the bees. The hive may be old, dirty and ill-smelling. In such a case it should be thoroughly washed and aired. Putting old, mouldy and dirty combs in a hive may have the same effect. If such combs must be used, better give them, one at a time, to some established colony to be cleaned up. A newly hived swarm should be shaded, as the bees are under great excitement, and filled with honey, and they cannot bear the heat that at ordinary times might not be oppressive. A small hive or contracted brood nest also causes swarming-out.

I remember one season in particular in which I had a great deal of trouble from swarms swarming-out and trying to leave for the woods. Almost invariably, a swarm clusters soon after leaving the parent colony, but, after being hived, if it leaves, it almost invariably leaves without clustering. In this season that I speak of it was no uncommon thing to re-hive a swarm twice before it would stay, and in a few instances a swarm was re-hived as many as four times. The queens' wings were not clipped, and you may be sure that my brother and I learned the full value of the Whitman fountain pump for controlling swarms that are on roving bent. With one to bring the water, and one to use the pump, a swarm of bees cannot, or does not, get away if seen when it first comes out, but if allowed to get a start, get away from the base of supplies (water), the chances of success for the bee-keeper are very slight. At this stage of the game the bees have a very tantalizing habit

of rising up so high in the air that they cannot be reached with the water. (Better clip your queens, or use traps or swarm catchers according to the circumstances.)

But to return: I was raising comb honey and practicing contraction of the brood nest. The swarms were hived on the old stand upon five L. frames or in one section of the Heddon hive. The sections were transferred from the old to the new hive. It finally occurred to me that it was the crowded condition of the hive that caused the swarming-out. I changed my plans slightly. I gave each swarm either a full, eight-frame L. hive, or both sections of the Heddon hive. They were left in this condition three days, by which time the bees had recovered from the swarming fever and settled down to steady work, and would bear crowding without swarming-out. At this time the lower section of the Heddon hive was removed and the bees shaken out, or, if in an L. hive, dummies were put in at the sides, contracting the brood nest to five frames. Starters only were used in the frames and these would be nicely started in the frames removed. The section of the Heddon hive that was removed was in nice shape to use for the upper section of the next hive into which a swarm was hived, and the L. frames removed were in good condition to place in the center of the hive that was used for the hiving of a swarm. But to the point: with this method of management I have never had a swarm leave the hive into which it was placed.

Have clean sweet hives, keep them in the shade and shade them after the bees are hived, give a generous entrance, and don't crowd the bees too much for the first two or three days, and I think there will be little trouble from absconding swarms.

Some have advised giving a comb brood, but I have tried that too many times to my sorrow.

EXTRACTED.

A Bee Escape With an Abundant Exit.

"This is the way, walk ye in it."—BIBLE.

Upon reading the articles of Mr. Aikin, in which larger exits are advised for bee escapes, Mr. J. W. Wilcox, of Scales Mound, Ill., called my attention to a contribution of his published in the *American Bee Journal*

of September 17, 1891, wherein is described an escape that has an abundant exit, and one that, Mr. W. says, gives perfect satisfaction. Here is the article describing the escape:

"Since a great many bee-keepers are trying bee escapes, and succeeding more or less, permit me to relate what success I have had in the matter. After two seasons of experimenting with bee escapes, I tried the following about two weeks ago, and found what I was seeking; namely, a 'perfect escape'—one that will free a super, or supers, of bees in a very short time.

Make a rim the size of the super, and $1\frac{1}{2}$ inches high; nail on a bottom of $\frac{1}{2}$ -inch lumber; in one end of the rim, cut an opening 3 inches long and $\frac{3}{4}$ wide, for bees to pass out, place this under your supers bottom down on the hive, with the escape-hole in the rim over the bee-entrance to the hive. Make a triangle of $\frac{1}{2}$ inch strips large enough to reach from the escape-hole to the hive entrance; but do not join the apex of the triangle by one inch, but leave it for the bees to pass through, and into the hive. Over the triangle tack wire-cloth, and then fasten to the front of the hive, so as to cover the escape-hole in the rim, the opening in the triangle to connect with the hive entrance.

When this is adjusted properly, it is a pleasure to see the bees come humming down the front of the hive from the escape-hole in the rim to the entrance of the hive. With this escape I have had no failure to entirely free the super of bees in an incredibly short time; and to adjust it requires very little more time than to put on a super. This triangle, covered with wire-cloth, will prevent robber bees from entering supers, and at the same time conduct the bees to the hive entrance below."

How to Take Care of Queens When There is a Surplus.

For holding aright an elephant white,
To breed her, then to feed her.

I have just read in *Gleanings* an article written by Mrs. Atchley. I wish that she had written it about fifteen years ago. It brings so clearly to my mind the time when I was making a specialty of queen-rearing. There is no trouble in rearing young queens so that one can be given to a nucleus as soon as the laying queen is out of the way, and if orders only come in fast enough to take the queens as soon as they begin to lay, everything passes along smoothly, but, alas, orders for queens are quite erratic, they come by fits and starts. One week a breeder may be over-run with orders, then there will be a dearth for two weeks, during which time the nuclei will fill up with laying queens, and young queens that keep hatching must

be killed as there is no place in which to put them. Could the laying queens have been taken out and in some way safely kept until orders came for them, the profits would have been doubled during those two weeks. I remember one time in particular in which I had scarcely an order for two weeks, and then there came a day in which I shipped sixty queens, orders for half of them coming in one mail, but during those two weeks I probably killed as many as sixty young queens, possibly more, and every one would have brought nearly a dollar if it could have been saved. I think that most breeders have had similar experiences. I often tried dividing up the nuclei, but robbing and swarming out put an end to this plan. It seems, however, that Mrs. Atchley has found a plan for keeping laying queens in perfect health with only from fifty to one hundred workers, and at the same time there is no loss from swarming-out or from robbers, at least, here is what she says :

"For the last two years I have not had a chance to put in practice my plans ; but I have tried them sufficiently to know that it is an excellent way to keep queens that we have no immediate use for, and at the same time we wish to keep the nuclei at work raising queens as fast as the young queens have laid two or three combs of eggs. I used to keep them caged on a table, ready to go at a moment's notice, when an order came. Well, sometimes orders did not come for several days, and my queens, of course, were more or less injured if kept too long in this way ; and to make it profitable we can not afford to let the nuclei keep their queens till orders come to take them. To overcome this trouble I went to work and constructed a lot of small hives, just large enough to hold two sections $4\frac{1}{4}$ inches square by $1\frac{1}{2}$ inches wide. All these sections that we had unfinished we laid by to go in our little nuclei. Now, we could take from fifty to one hundred workers, or enough to keep the queen in good shape. It is no trouble to speak of, to prepare two or three hundred of these little nuclei, something after the little Alley nuclei. We may use little frames if we choose. I use the sections, as they usually have plenty of honey to last the queen and bees a month or more, and the queen will go to laying, and assume the same attitude as a large colony. Then the queen is never so filled with eggs that it would be dangerous to cage and mail her right off. I do not like to cage and mail a queen that is in full laying plight without giving her time to unload herself of eggs. Well, the little-nuclei plan has the queens in good shape to be mailed at once without any danger of being injured.

To keep the queens and bees from swarming-out I use, over the entrance, one perforation of queen-excluder zinc, and robber bees will never enter through the zinc to

amount to anything. These little hives can be placed on a shelf in the shade, moderately close together. We may make a record of where each queen was taken from ; and if we keep any of them long enough they can be tested, and all the finest ones selected to fill orders for select queens. Robbers have never bothered our little hives, as we seldom have a surplus of queens till the weather gets warm and honey is coming in so there is no danger of robbers. I do not like the idea of raising queens in little hives, as the queen and bees are too likely to swarm out, as we cannot keep excluding zinc on till the queens have mated, which gives them every chance to leave. If the bees should take a notion to swarm out of the little hives, where our laying queens are, there will always be bees enough return to be a good retinue for the queen. Then these little nuclei are good to introduce another queen to as soon as one is sold out. I think I can raise a third more queens with a given number of nuclei by this method. These little hives can be made cheaply at the factories, as scraps will answer for them. If you do not think this a good way to keep your surplus queens, just try it.

BEEVILLE, TEXAS, JAN. 27."

It seems to me that a Heddon super would be an excellent thing to use for a hive for these little section-nuclei. Eight, or even ten, of these little clusters could be kept in one of these supers. I think I shall try it this summer, just for the fun of it, if for nothing more.

A Condensed View of Current Bee Writings.

E. E. HASTY.

PROMISING, very promising is that method of dealing with foul brood which comrade Baldrige brings out in last Review ; yet we get bitten so often when we say that a new method will succeed "of course," that perhaps we might postpone crowning him one of the benefactors of apiculture until a more extensive trial of the plan is had. To be crowned, and then a few weeks later to have the crown yanked off (scalp along with it) is no fun. Fortunately the new plan is easy enough, and attractive enough to secure it a trial ; and with the trials the merits or demerits of the thing will come to the front. One of the best things about it is that when reasonable care is exercised surrounding bees are so little exposed to any risk.

Ah, yes ! and there's comrade B. Taylor's plan for securing a supply of sections al-

ready filled with comb. REVIEW is to be complimented for harvesting two such plums in one issue. Taylor, like myself and many others, wishes to supply his home market with both comb and extracted; and his particular scheme is to take his extracted honey from unsealed sections, and use the empty sections next year. Most of the dark section honey he thus throws over into the extracted tank, and uses it for bee feed next spring. Hardly answer for those who have to lean as heavily on the fall yield for a main crop as I do. "He that is able to receive it, let him receive it." I'm thinking of a funny little cartoon in the *Chicago Herald*. A boodle Councilman is got up as a musician, and compelled to play on his viol a new ballad entitled, "Nothing in it for Me." He plays it—but mumbles underneath his breath, "Don't believe I was made to play this pop'lar music." Next big ship friend Taylor sends over I hope there'll be something in it for me.

A GENEROUS ROUND - UP

The *American Bee-Keeper* opens its May editorial with a raid on the habit of calling fellow bee-keepers "Brother." The main reason assigned is that the word often does not agree very well with the spirit manifested. Now see here, Brother A. B. K., I have noticed the same practice among lawyers pleading on opposite sides at the bar. They seem to use it as a gentle corrective for the ever-present temptation to get by the ears, which their profession brings. Don't we need the gentle corrective too? To the (John Bull) dogs with those foreign papers in which they never say, Brother!

"The more I read the denser the fog that beclouds my brain." T. H. Stephens, *Apiculturist*, 18.

Lots of bee boys in the same fix. Our personal experience and our reading should *balance each other*. All experience and no reading is a poor plan—too much like the dark ages. Excessive reading beyond our experience is just what comrade S. indicates, fog and bewilderment. Yet whining and sputtering about the fog will not dissipate it. Climb up Practical Hill on your own hands and feet until you get above the fog.

Alley, on the 20th page of *Api.* says a lot of things about testing a young queen by the looks, some of which are not generally in mind. He thinks the manner of depositing eggs, and the cant of the eggs as they lie in the cell disclose certain facts in regard to

the quality of the queen. (Might tell us some more about "them 'are" so we can understand it too.) And if the hole out of which the young queen has crawled is small or ragged she should be killed at once—only a compromise between a queen and a worker.

On the honey selling question editor Leahy is a man after my own heart. He kept his town of 2,000 people "supplied" with honey. That is to say a few tumblers (at 18 cts.) stood in each grocery; and once in a while, at long intervals, a tumbler sold. By and by he got a crop of 7,000 pounds, and supposed of course he would have to ship it to some big city. How big was the best offer he could get? It was 6¼ cents. The thought came to him, Our people would buy large quantities *at that price*. Why not let 'em—and save the risks—and cost of shipping packages? He yielded to the thought, canvassed the town with samples (not at 6¼ though, but at 8 and 9) and the first night had to stay up till midnight filling the pitchers and things—and carried the money to the bank in a bag. See *Progressive*, 46.

In *Progressive* 66, Mr. Doolittle gives two methods for preventing after swarms which he thinks reliable, one for the cases where the old colony is moved, and one for the cases where the old colony, not being moved, retains part of the old bees. The former is, Get entirely rid of the old bees for 12 hours, and then give the youngsters a fertile queen; and "betweenst 'em" they'll polish off the young pretenders. This is probably O. K. The other method is, Discover the young queen piping the night before they intend to swarm; shake off all the bees next morn. and carefully destroy every queen cell. Here I would put in a faint protest. I don't know that the plan is unreliable; but I should expect that quite a sprinkle of them would go anyhow, if the queens had been piping 12 hours or more. What I do know is that in my own efforts I have succeeded in preventing the after swarming, and got for my pay a fearful percentage of totally queenless colonies.

R. C. Aikin improves the Doolittle plan of getting perfect combs built (by weak colonies) by having plenty of drone comb in one outside frame. Then more combs will be correctly built before a change will be made to drone size. *Progressive*, 67.

D. L. Tracy, of Denver, makes a success of preventing foul brood by the use of dilute

carbolic acid. For four years neighbors all around had it badly and he escaped. He merely sprinkles heavily the *tops of the frames* three times each breeding season. Formula: Carbolic acid 1, salt 3, water 296. See *Progressive*, page 76. Easy enough to try—But don't put on fire-proof paint as a preventative *after your building is all in a blaze at one end*. That's about the way half the boys would do—if they did anything.

"Not even Benton has ever sent a Carniolan queen to this country that produced ALL steel gray bees." Alley in *Apiculturist*, 37.

Possibly Alley may be a little rank here—possibly the topic is getting threadbare—but 'pears like it is only with all sorts of racket by all sorts of people that we can get hold of final truth on the simplest matters.

The *Apiculturist* for April is got out as a little handbook of bee-keeping for beginners—not a bad idea. Among other progressed ideas I see he advises trebling the force of field bees when the harvest is bad, and the sections get ahead provokingly slow. Just remove to a distance two adjacent hives, and thus concentrate in one hive the flying bees and surplus of three. *Api.*, 51. Doubtless a good kink for sometimes; but I should fear that the *other times* would prove numerous.

"I have known drones to be reared on one side of a comb, while worker brood was reared on the side opposite, notwithstanding the fact that some writers assert that such a thing never happens." Alley in *Api.*, 56.

"Should any one whose eye this meets receive a hive of bees say one that has been on the road two or three days, the first thing to do is to dash a pint of water over bees and combs." *Api.*, 60.

Comrade Osburn, of Cuba, is bemoaning a short crop of honey, as you may notice in *A. B. K.*, 70. By the way, how short do you suppose it is? Not very much over the trifle of 27 tons.

On page 231 of *Gleanings* friend Muth-Rasmussen (fine of \$50.00 for parting his name in the middle) makes a strong denial of the report that bees are more vindictive in California than elsewhere. He says, and seems to prove it, that the trouble is the fierce blaze of the sunshine; and that bees *sufficiently* shaded are almost uniformly gentle there. Ernest's counter suggestions do not cover the ground, because here in Ohio we never have such a terrific downpour of heat. I rather think Mr. M.-R. has hit it. The melting of wax and propolis inside their walls, with frequent and long struggles to

keep their entire work from melting down, is sufficient to account for irascibility. It is well known that bees frequently irritated become cross for life. Propolis on a hot board acts as fly-paper; and I have seen, even here in Ohio, multitudes of bees dead in it. Who could expect bees to be serene in temper while surrounded by dying comrades stuck fast by their feet?

Comrade Elwood wants half the convicts of a prison fed on pure syrup and half on glucose until the glucose problem is settled for sure. *Gleanings*, 313. Sounds a little rough. But then at present not merely half but pretty nearly all the children of honest folks are fed with glucose; and nobody keeps the statistics as to whether it kills 'em or not.

Another one of those splendid little kinks which cost nothing and help a heap comes over clear from Gravenhorst in Germany. Drive five minutes with a load of bees; then stand still five minutes. During the little rest they will recover their wits, and be the better for it all the rest of the journey. *Gleanings*, 315.

Friend Templin wants our hybrid bees (incorrectly so termed) called "mongrels." *Gleanings*. No go. We'll never stand that, never. The word mongrel conveys the undesirable meaning of disgrace and worthlessness, while some hybrid bees are among the best bees existing. This is a plain case of getting out of one fault by getting into a worse one. "Hybrid" will have to stand till some term is offered that does not insult the bees and their breeders.

What a good job R. L. Taylor does on wax sheeting! *Gleanings*, 322. Soak the boards three days—Quite important to have salted water—Right temperature for dipping 155° F.—Take care there! Water may be many degrees too hot when the wax above has got only a few degrees too hot. Then it will puzzle you by getting worse and worse quite awhile after you have taken it off the stove.

"If the sheet cracks irregularly, either the board is too cold, the wax too warm, or there is a cold draft in the room."

"If there is a straight horizontal crack in the sheet there has been a sudden jar or short stop page of the board in its descent into the wax."

Mathey urges yellow vaseline as an improved grease to prevent propolizing. *Gleanings*, 331.

HOWARD'S FOUL BROOD.

This excellent little book is pretty hard to review. Won't do to quote half a book; and

this one is so concise and meaty that it would take the equivalent of that to give a fair idea of it. Almost any one can command time to read it; and, being cheap, the excuse for scientific ignorance of foul brood, on the part of our rank and file of honey men, is pretty much taken away. It is no disgrace for a man to dissent from scientific dogmas, but to dissent from what one evidently does not comprehend, that is a little disgraceful. Buy this book and read it (Geo. W. York, Chicago), and get the comprehension that will enable you to dissent like a man.

And for the rest a little rather desultory sampling must suffice. It is hardly practicable, for instance, to *condense* the answer to the question on page 9: "How do germs induce disease?" The answer might with profit be largely expanded instead of condensed. The upshot is, partly by their own multiplication, feeding, scrabbling, obstructing passages, damaging surroundings; but still more by the queer chemical poisons which they elaborate and pour out—their little weapon, as the skunk's verjuice is his big weapon. An army of invisible skunks inside the bulk of a grain of sand! The germ of foul brood, with its poison, injected into mice, or other small animals, kills them quickly. (Page 8.) Presumably it is the poison that does the job both for the mice and for the young bee.

"We have good evidence that the spores of bacillus alvei are not thrown out into the air" Page 13.

This is arrived at by cultivating the germ in a prepared chamber, and trying to make it pass across short spaces. It will not do so. If the spores floated in the air, thisle down fashion, as some germ spores do, little spaces would be no barrier. A point the author makes on page 15 seems plausible. All putrefaction is work done by different sorts of germs; and some putrefactive germs also pour out poison. Enough of this different but analogous poison is sometimes left in cells to kill the first brood reared in them. Here the owner may think that he has foul brood when there is nothing which will propagate itself for any length of time—poison, but no live poisoners to keep up the supply of it. In free air foul brood germs and spores soon die; but protected from the air their vitality, waiting a chance to do mischief, lasts a long time. They also grow best where very little oxygen can get—

and belong to a subdivision with a queer name that has that characteristic.

He got one culture out of ten to grow after the tube it was in had been under boiling water 45 minutes. This is not quite so severe as direct contact with boiling water; but the germ of foul brood is evidently a salamander. No degree or repetition of cold which he tried was fatal to the germ in any case. But thoroughly exposed to the air some of the germs died in 12 hours, most of them in 24; and all were dead in 48 hours. This is a good point to hold on to. It makes rather impressive (but not quite impossible) the theory that bees carry the infection on their legs to the anthers of flowers, and then other bees carry the infection home to other hives.

"Spores exposed to atmospheric air do not retain their vitality for a sufficient length of time to reinfect a colony treated by a method which delays brood-rearing more than four days after infection has been effectually removed." Page 47.

As a parting shot I would say, Look out for the spores that have got sealed into the propolis of the hive wall (to be unsealed by next summer's heat) and those that have penetrated the dozy wood of the bottom board. It don't require any floating in the air to get there. Bees pull at the dirty masses with their bills, and then wipe their bills, dear doctors.

RICHARDS, Lucas Co., Ohio, May 25, '94.

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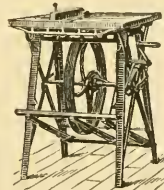
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That covers the whole apicultural field more completely than any other published, send \$1.00 to Prof. A. J. Cook, Claremont, California for his

Bee-Keepers' Guide.

Liberal Discounts to the Trade.

Bees ☉ ☉ Bees.

If you contemplate buying Bees and Queens the coming season, write for special prices to

LEININGER BROS.,

3-94-tf

Fort Jennings, Ohio.



MY FRIENDS:—I am here to tell you if you want honey to sell in the fall, buy your **Queens** from

C. F. BECKEY, Manito Beach, Michigan. He has those gentle, tested, five band Italian hustlers, for \$1.50; untested, \$1.00, 3 for \$2.50, 6 for \$5.00, 12 for \$8.00, or best breeder for \$2.00. Safe arrival guaranteed.

6 94 1t

Please mention Review.

BEE - KEEPERS,

Best Goods at Lowest Prices.

Delivered to your railroad at either Chicago, St. Louis, Mo., Atchinson, Kan., St. Paul, Minn., Des Moines, Dubuque, and Cedar Rapids, Iowa, and other places.

1-94-4t

E. KRETCHMER, Red Oak, Iowa.

Send for free catalogue of 70 pages, describing Everything Used in the Apiary.

We Will Prepay

Freight on Root's polished sections and 16-section shipping cases, in lots of 5,000 and 200 respectively, to be shipped from the factory to points within 30 miles. Send for catalog. 4-94-3t

B. WALKER, Evart, Mich.

—If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

GOLDEN ITALIAN QUEENS

Now ready for \$1.00 each. Do not order your supplies until you see our circular for 1894. For the price, we have the best spraying outfit made. Send \$1.50 and get one. Wm. H. BRIGHT, 1-94-12t Mazeppa, Minn.

Please mention the Review.

ON HAND NOW.

THE MOST COMPLETE STOCK OF BEE HIVES, SECTIONS AND SUPPLIES IN THE NORTHWEST.

W. H. PUTNAM,

1 94-12t.

RIVER FALLS, WIS.

HUSTLERS!

Read what one of the largest bee-keepers of this country says. "The queens (two doz.) came promptly. They are an extra fine lot. The bees are finely marked, gentle, and HUSTLERS when it comes to honey. I have no trouble in picking them out now from over 600 colonies." W. L. COGGSHALL, West Groton, N. Y., October 17, 1893.

Prices for queens bred for business from the above strain, 5-BANDED, are in May, \$1.00; after May, 75 cents; 1/2 dozen in May or June, \$4.00; doz. \$7.50; July and later, six for \$3.50; doz. \$6.50. Single queens WARRANTED purely mated. 1 Guarantee all queens to arrive safely and to be GOOD RELIABLE queens. Send for free circular. Draw M. O. on, and address

J. B. CASE, Port Orange,

11-93-1t

Vol. Co., Florida.

Please mention the Review.

If You Want Bees

That will just "roll" in the honey, try MOORE'S STRAIN OF ITALIANS, the result of fifteen year's careful breeding.

Dr. H. Lung, Lexington, Ky. says: "I have had the pleasure of seeing many FINE STRAINS of bees, yet I have NEVER seen such industrious, energetic bees—a grand triumph in breeding. I must extend my admiration for your success as a bee propagator."

Warranted queens, \$1 00 each; three for \$2 50. Safe arrival and satisfaction guaranteed.

Reference: A. I. Root, Medina, Ohio, who has purchased of me 666 queens.

J. P. MOORE,

6-94-1t

Norgan, Pendleton Co., Ky.

Please mention the Review.

KNOCK DOWN!

Yes, I have a large stock of D. T. HIVES, Supers, Frames, Sections, etc., all in the "knock down," and ready to ship at a moment's notice.

Write at once for large catalogue and price list of everything needed in the apiary.

E. L. KINCAID,

3-94-1t

Walker, Vernon Co., Mo.

Please mention the Review.

Warranted Queens 80c. EACH,

From the old reliable Kenward-Hall Apiary. Tested, \$1.00 each; untested, 75c.

\$8.00 per dozen.

J. W. K. SHAW & CO.,

4 94-1t

Loreauville, La.

Our New Style Frame

Gives better satisfaction than anything we have gotten out for several seasons. Our THIN WALLED HIVE is the BEST and CHEAPEST on the market. With our OUTSIDE WINTER CASE it makes the best OUT DOOR WINTER HIVE, and the cheapest. We are the ORIGINAL makers of POLISHED SECTIONS, and our goods are acknowledged to be the best, and cheap as any.

Illustrated Catalogue and copy of the AMERICAN BEE KEEPER free on application.

THE W. T. FALCONER M'FG. CO.,

Jamestown, N. Y.



Hunt's Foundation

Was awarded World's Fair medal. Dealers and others, write for samples and prices. The finest polished Sections and Dovetailed Hives in any quantity. Large, Illustrated Price List of everything needed in the apiary sent free; it also contains a large amount of information. Address M. H. HUNT, Bell Branch, Mich. 4-94-4t

Headless Queens.

I only mean that in my yard all queens become "headless" unless their bees prove to be gentle, beautiful and great honey gatherers. I have both the three and five-banded varieties, bred in separate yards, twelve miles apart. Warranted queens only 60 cts. each; tested, 90 cts. Strong, two-frame nuclei. \$1.90 each. Three-frame, \$2.35; four-frame, \$2.80. Safe arrival guaranteed.

1-94-12t. J. H. GOOD, Nappanee, Ind.

HARDY Business Queens.

Bee-keepers of the North, we can furnish you now with hardy bred queens of either the 5 banded golden Italians, or gray Carniolans. Our prices are very reasonable. Send for them before placing your orders. Satisfaction guaranteed. A complete description and price list free. 6-94 tf

F. A. LOCKHART & CO., LAKE GEORG, N. Y.

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GOLDEN QUEENS from TEXAS.

MY BEES cannot be surpassed for BUSINESS, BEAUTY AND GENTLENESS. Safe arrival and satisfaction guaranteed.

Untested Queens—March, April and May—\$1.00 each. 150 Fine Tested Queens for early orders, \$1.50 each. Order early. Send for Price-List.

J. D. GIVENS,
Box 3, LISBON, TEX.

4-91-6t

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ITALIAN QUEENS AND SUPPLIES FOR 1894.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf.

Augusta, Georgia.

BEE-KEEPERS' SUPPLY HOUSE

J. H. M COOK, 78 Barclay St., N. Y. City.

(SUCCESSOR TO A. J. KING.)

4-93-tf

Send for illustrated Catalogue



WE have a large stock of SECTIONS now ready, both No. 1 and No. 2. Write for special prices on winter orders in large or small lots, including all other Supplies. Also Berry Crates and Baskets made up or in flat.

Address, BERLIN FRUIT BOX CO., Berlin Heights, Ohio.

1-94-6t



THE IDEAL BEE FOUND AT LAST!

A Superior Strain of Golden Italians

The result of thirteen years' careful breeding and selection. They are gentle, industrious, good comb builders, enter the sections readily, cap their honey the whitest, are not inclined to swarm, and are second to none in beauty; a strain of bees that, by practical test, has excelled all competitors in storing honey. Price of young queens, warranted purely mated, in April and May, \$1.25 each; six for \$6.00. In June, \$1.00 each; six for \$5.00. From July to Nov., \$1.00 each or six for \$4.50. The price of tested queens, bees by the pound, nuclei and full colonies given upon application. Safe arrival and satisfaction guaranteed or money refunded.

SECTIONS, \$2.00 per 1,000. Lovetailed Hives at bottom prices. For full particulars, send for descriptive catalogue. 1-91-tf

C. D. DUVALL, Spencerville, Mont. Co., Maryland.





WHERE ALL QUEENS ARE MATED ON AN ISLAND 5 MILES FROM MAIN LAND TO HAND PICKED DRONES THEY ARE ACKNOWLEDGED BY ALL TO BE THE FINEST IN THE WORLD.

WE HAVE MATING UNDER PERFECT CONTROL. IF YOU WOULD SEE THEM IN SITU, DROP US A CARD & YOU WILL GET BY RETURN MAIL TWO SAMPLES OF BEES, 5 Banded Italians & Grey Carniolans, finest of their kind in existence. IF YOU ARE TIRED OF BUYING 5 Banded Queens which produce 3-4 Banded Bees, GIVE US A TRY AND WE WILL SURPRISE YOU. IF YOU HAVE NEVER SEEN OUR STOCK DROP US A CARD & LET US SHOW YOU WHAT WE HAVE. ADDRESS A. W. BROWN PORT ROWAN CANADA



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— If you wish the best, low-priced —

TYPE - WRITER.

Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars, or to correspond with any one thinking of buying such a machine.

WRITE US

Before ordering your sections and we will give you **BOTTOM PRICES** on the

"BOSS" ONE-PIECE SECTION,



Also D. T. HIVES, SHIPPING CRATES and other Supplies. We have everything in tip-top order, and can fill orders on short notice. Let us hear from you for prices.

J. FORNCROOK & CO.,

Jan. 1st, 1894.

Watertown, Wis.

Home-Made, FOOT-POWER BUZZ-SAW.

I have for sale a home made, foot power buzz saw made by my brother. The frame work and table are well and substantially made, the main shaft and band wheel are of iron, and the mandrel one of Root's \$3.50 mandrels, with a seven inch saw. Although the machine has been used a year or two it is in perfect order, and is probably as desirable in all respects as any foot-power saw made. It is offered for \$18.00.
W. Z. HUTCHINSON, Flint, Mich.

TELL YOUR READERS

To order queens of J. N. COLWICK, Norse, Texas, where they can get a nice tested **ITALIAN QUEEN** (reared in 1893) for \$1.25. Untested queens in April or May at \$1.00 each or \$9.00 per dozen. Safe arrival guaranteed. Orders may be booked now for bees, queens, drones, etc., and they will be shipped when wanted.

2-94-tf

J. N. COLWICK, Norse, Texas.

Please mention the Review.

THE BEST OF ALL ARE THE

ALBINO BEES.

TAKE NOTICE:—After the first of June, I will fill orders for the first 100 untested queens at 60 cents each. Send in your orders at once and avail yourself of this special offer.

S. VALENTINE,

Hagerstown, Md.

5-94-tf

Given Away,

Our new catalogue of Bees and Bee-Keepers' Supplies to any sending their address. It contains the latest prices on **HIVES, CRATES, SECTIONS, FOUNDATION**, and the new Stirrer **FEEDER**; one of the best feeders in the market—just the thing for spring feeding.

OLIVER HOOVER & CO.,

4-94-tf

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BEE SUPPLIES SUCH AS HIVES SECTIONS, FOUNDATION, EXTRACTORS, AND EVERYTHING ELSE USED BY A BEE-KEEPER, ALSO CLOVER SEED, BUCKWHEAT, BEES AND QUEENS, LARGE WHOLESALE AND RETAIL CATALOG FREE. IMMENSE STOCK. ADDRESS **JOS. NYSEWANDER, Des Moines, Iowa.**

DADANT'S FOUNDATION

Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. **CHAS. DADANT & SON, Hamilton, Ills.**

4-94-12t

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W. R. STIRLING,

MANUFACTURER OF

The Model Bee-Hive,

Frames, Sections, Feeders, Smokers, Extractors, Honey Cans, Shipping Cases, Bee Veils, etc., also breeder of

Italian Queens,

4-94-4t Send for price list to

W. R. STIRLING, Rondeau, Box 9, Ontario, Canada



BINGHAM PERFECT

BEE SMOKER

Pat'd 1878, 1882, & 1892.

Cheapest & Best on Earth.

Send Card for Circular to

Bingham & Hetherington
ARRONIA, MICH.

Please mention the Review.



Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and 5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS,** Lavaca, Ark.

5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS,** Lavaca, Ark.

Please mention the Review.



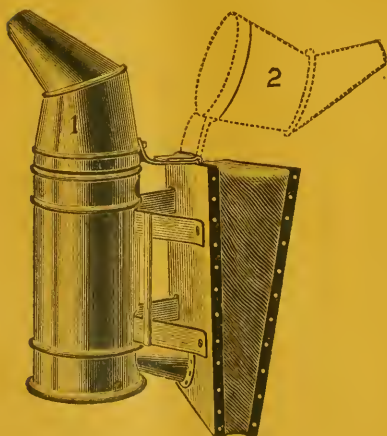
HONEY JARS, Beautiful, Accurate and Cheap. The trade supplied. Bee Supplies; Root's goods at Root's prices and the best shipping point in the country. Write for prices.

WALTER S. POWDER,

1 84-12t

Indianapolis, Ind.

Please mention the Review.



ALL BEE-KEEPERS

Want a Good Bee Smoker.

The Higginsville Smoker is designed to supply this want at a reasonable price.

The Higginsville Smoker is a "daisy," has a 3 inch fire box, a hinged curved nozzle that will turn back out of the way while lighting, and has a bar of folded tin running horizontally with the fire box to keep the hand from coming in contact with the hot fire box.

We claim the following points for this smoker: Cheapness, Excellence, Strong blast, Heavy volume of smoke and no burnt fingers.

Price, 60c. each; 6 for \$3.00; \$5.00 per doz.

20 cents extra by mail. Special prices to dealers.

If you will send us your name plainly written on a postal card we will mail you our catalogue of Bee-Keepers' supplies, also a copy of the Progressive Bee Keeper, a journal devoted to Bees and Honey.

Address:

LEAHY M'F'G. CO., Higginsville, Mo.

JULY, 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

Clubbing List.

I will send the REVIEW with—

Gleanings, (\$1.00)	\$1.75.
American Bee Journal . . . (1.00)	1.75.
Canadian Bee Journal . . . (1.00)	1.75.
American Bee Keeper . . . (.50)	1.40.
Progressive Bee Keeper . . . (.50)	1.30.
Bee Keepers' Guide (.50)	1.40.
Apiculturist (.75)	1.65.
Bee-Keepers' Enterprise . . (.50)	1.40.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1 dark," etc.

NEW YORK, N. Y.—There is no comb honey on the market; of extracted there is a good supply, but the demand is very limited and the following prices are hard to obtain for round lots. White, 60 to 65 cents per gallon; amber, 55 to 60; dark, 50 to 55 Beeswax, 27 to 28.

HILDRETH BROS. & SEGELKEN,
July 15, 28 & 30 West Broadway New York.

CHICAGO III.—The honey market is very dull at last month's quotations; but we have moved considerable stock at 13 cts and believe that 13 to 14 will rule for the balance of the season. There is plenty of inquiry for beeswax with none to offer. We quote as follows: Fancy white, 13 to 14; No. 1 white, 13; fancy amber, 12; white extracted, 5 to 6; beeswax, 25.

J. A. LAMON,
Mar. 7, 43 So. Water St., Chicago, Ill.

KANSAS CITY, Mo.—We quote as follows: No. 1 white, 15 to 16; No. 1 amber, 14 to 15; No. 1 dark, 9 to 12; white extracted, 6; amber, 5; dark, 4. Beeswax, 20 to 25.

CLEMONS-MASON CO.,
July 9, 521 Walnut St. Kansas City Mo.

BUFFALO, N. Y.—Small amount of honey on hand and trade is slow, mostly for off grades that bring from 7 to 10 cts. We quote as follows: Fancy white, 13 to 14; No. 1 white, 12 to 12½; fancy dark, 8 to 9; No. 1 dark, 7 to 8; beeswax, 25 to 30. cts.

BATTERSON & CO.,
June 5, 167 & 169 Scott St., Buffalo, N. Y.

MINNEAPOLIS, Minn.—The market is very weak at present, but, evidently will be better later on. We quote as follows: Fancy white, 16 to 17; No. 1 white, 15; fancy amber, 13½ to 14; No. 1 amber, 12; fancy dark, 10; white extracted, 6½ to 7; amber extracted, 6; dark extracted, 5½.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Jan. 2.

CHICAGO, Ill.—Some of the new crop of white comb honey is at hand, and is selling at 16 cents a pound;—old honey is out; and extracted is selling at from 5 to 7 cts. per pound. Beeswax, 25 cts.

R. A. BURNETT & CO.,
July 5, 163 So. Water St., Chicago, Ill.

CHICAGO, Ill.—Comb honey will be of active sale this fall and we advise early consignments of the best grades of comb. We expect fancy white to bring 16 cts. Extracted is selling at 5 to 6 cts. Correspondence solicited.

S. T. FISH & Co.,
July 17, 189 So. Water St., Chicago, Ill.

I AM keeping a lot of queens according to the plan described by Mrs. Atchley in the last REVIEW, and am well pleased with it. Unless orders are unusually large, it enables me to fill them by return mail. **W. Z. HUTCHINSON,**
Flint, Mich.

Texas Reared Golden Italian Queens

BRED for BUSINESS and BEAUTY. March, April and May, Untested, \$1.00; Tested, \$1.50. After, Untested, 75c; Tested, \$1.00. Remit by P. O. Money Order, or Registered Letter. Price-List Free. **W. H. WHITE,**
5.94.tf Depart, Lamar Co., Tex.

Please mention the Review.

— If you wish the best, low-priced —

TYPE - WRITER.

Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars, or to correspond with any one thinking of buying such a machine.

FEEDING BACK

Honey to secure the completion of unfinished sections can be made very profitable if rightly managed during the hot weather of July and August. In "ADVANCED BEE CULTURE" may be found complete instructions regarding the selection and preparation of colonies, preparation of the feed, manipulation necessary to secure the rapid capping of the combs, time for removing the honey, and how to manage if a few sections in a case are not quite complete; in short; all of the "kinks" that have been learned from years of experience and the "feeding back" of tons of honey.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

GO TO

HEAD QUARTERS

FOR 4 AND 5 BANDED

QUEENS

Special, breeding queen,	\$5.00
Best, select, tested,	3.00
Tested,	2.50
Untested,	1.00
per dozen,	9.00

L. L. HEARN,

Oakvale, W. Va.

7-93.-tf

Please mention the Review

Finch's Foundation,

MADE BY

An Improved Process,
IS THE

Best and Cheapest.

SEE SAMPLES FROM

W. J. FINCH Jr.,

Springfield, Illinois.

4-94-4t

BEE SUPPLIES!

Send for free copy of ILLUSTRATED CATALOGUE—describing everything useful to a BEE-KEEPER. Address T. G. Newman, 147 So. Western Ave., Chicago.

FREE—To New Subscribers, a Choice of these BEE-BOOKS

Newman's "Bees and Honey."

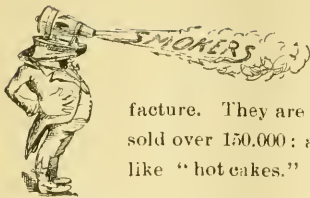
This book treats of the management of an apiary for pleasure and profit. Over 200 pages, and over 200 illustrations. The book for beginners or the more advanced. Send \$1.00 for the **American Bee Journal 1 year** (weekly) and get the book **Free**. The "Bee Journal" has 32 pages—established in 1861. Sample **FREE**.



"Scientific Queen - Rearing."

By G. M. Doolittle (portrait shown herewith). Tells how the very best Queen-Bees are reared in accord with Nature's way. 176 pages. \$1.00 for this book and "Bee Journal" one year. Address.

GEORGE W. YORK & CO.
56 Fifth Avenue, - CHICAGO, ILL.



Strength of Blast

Is not the only good feature of the Smokers we manufacture. They are strong and well made. Of the Clark Cold Blast we have sold over 150,000; and the Crane Hot Blast—well, although new it is taking like "hot cakes."

The new '94 model Crane is a beauty. Among some of its distinguishing features are an improved

Check-Valve,

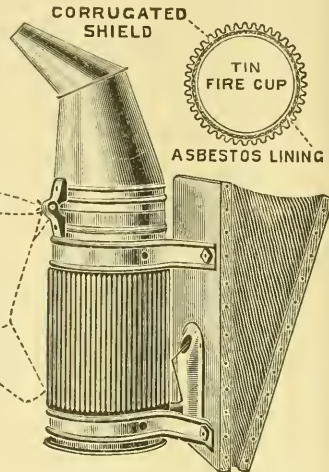
a device that forces the air through the eye, even when crammed with fuel, and at the same time prevents smoke from going into the bellows; a

Hinged Top

secured by a malleable iron hinge accurately milled at the joint so that the top will fit squarely in place. No need of burning fingers in repolishing, nor losing the top off.

The Lining

this year consists of abestos sheeting around the outside of the fire-cup; and



over this still is a neat corrugated shield. This combination is the most effective of anything we have ever tried. And last but not least, the cup is secured by four small BOLTS, not screws.

Price of Crane Smoker, each in a neat telescope cast-iron box, \$1.60; prepaid, \$1.95. Dealers, write for wholesale prices.

N. B.—We are the authorized manufacturers.

Don't forget that our polished

Sections cannot be excelled. Send for our 52 page catalog, and sample of GLEANINGS IN BEE-CULTURE.

A. I. ROOT, Medina, Ohio.

Special Offer.

In order to introduce our five-banded, golden, and three-banded, leather-colored bees in your locality, we will sell queens at the following prices: untested, 60 cts.; warranted, 75 cts.; tested, \$1.00; select, \$2.00; the very best breeding queen, \$6.00. We have two, large queen-rearing yards containing nearly 500 nuclei.

LEININGER BROS.,

3-91-1f Fort Jennings, Ohio.

Please mention the Review.

PATENT. WIRED, COMB FOUNDATION

HAS NO SAG IN BROOD FRAMES.

Thin, Flat - Bottom Foundation

HAS NO FISHBONE IN SURPLUS HONEY.

Being the cleanest, it is usually worked quicker than any fdn. made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),

3-90-1f Sprout Brook, Mont. Co., N.Y.

Please mention the Review.



Warranted,

Purely mated queens of my choice, five-banded, golden, Italian stock at \$1.00 each; six for \$5.00. Satisfaction guaranteed. Try one and you will want more.

S. F. TREGO, Swedona, Ill.
(M. O. office, Cable.)

1-91-9t

Please mention the Review.

QUIGLEY'S

QUEENS

Produce Big Yellow Bees that Winter Out-Doors, Gather Lots of Honey, and are Gentle. Warranted Purely Mated, each \$1.00; six for \$5.00; 12 for \$8.00. They are Beauties! Safe arrival and satisfaction guaranteed. 3-94-1f

In ordering be sure and mention the REVIEW.
E. F. QUIGLEY, Unionville, Mo.

Please mention the Review.

MONEY RETURNED

to all buying PORTER BEE ESCAPES not satisfied after testing them. Prominent bee-keepers everywhere use and highly recommend them as the best. No others received a World's Fair award. Testimonials, etc., free. Prices: Each, postpaid with directions, 20 cts.; per doz., \$2.25. Order from your dealer, or the mfrs., R. & E. C. PORTER, LEWISTOWN, ILL.

to all buying PORTER BEE ESCAPES not satisfied after testing them. Prominent bee-keepers everywhere use and highly recommend them as the best. No others received a World's Fair award. Testimonials, etc., free. Prices: Each, postpaid with directions, 20 cts.; per doz., \$2.25. Order from your dealer, or the mfrs., R. & E. C. PORTER, LEWISTOWN, ILL.

The Bee-Keepers' Review

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, JULY 10, 1894. NO. 7.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

SPRING PROTECTION AND STIMULATIVE
FEEDING.



IN making experiments with bees it goes without saying that the rule that prevails in experimentation in other matters holds with them, viz., that the larger the number of individuals taken into considera-

tion in an experiment the more reliable are the results obtained, or, at least, the less liable are the results to be vitiated by contingencies resulting from inscrutable circumstances; with this fact in mind, arrangements were made early in the season to conduct some experiments on a scale of some magnitude looking to a solution of some of the problems relating to the spring protection of bees and to the so-called stimulative feeding of bees. The plan was to keep a "hive history" of each of the colonies considered in the experiment as fully as it might be practicable to do so from the

time the bees began to gather pollen in the spring until the close of the honey season and to include in the experiment three or four times as many bees as the apiary belonging to the station contains. The experiment was begun with upwards of eighty colonies, but on account of the condition of the bees and other circumstances losses were sustained and subtraction made which have reduced the number to sixty-one. Of this latter number, nine two-story Heddon hives and twelve one-story ones were packed in sawdust from the 10th of April till the 10th of June, while twenty, two-story ones and twenty one-story ones were unpacked. Sawdust was used because planer shavings which would have been preferred could not be obtained. The sawdust was apparently dry but close examination showed it was not entirely so—not being thoroughly seasoned. In consequence of this defect care was taken to remove the covers from the packing during sunny days until the packing was entirely dry. This operation must have had an added advantage since it was found it permitted the sun to penetrate to the hives and store much heat in the sawdust.

The packing was from two to three inches thick on the front of the hives, three inches on top of covers and about four inches on the back ends and sides except where two or more hives were adjacent when the space between was entirely filled.

On the removal of the colonies from the cellar just before the packing was done they were divided into two classes one consisting

of those that, judging from their condition, would be likely to require two sections of the Heddon hive before time for unpacking, and the other of those that would not be likely to need more than one section. Each of the latter class was allowed but one section and each of the former two. After being thus arranged each hive was weighed and a careful estimate made of the strength of the colony it contained and a record thereof made on the spot. The strength of the colonies was estimated by the number of spaces occupied by the bees when closely clustered on account of cold weather. When the colony showed a strength somewhat in excess of what would be indicated by a given number of spaces that excess was indicated by the plus (+) sign and a still greater excess by two or more such signs. In a like manner different degrees of deficiency were indicated by one or more minus (-) signs. Each of these signs may be fairly considered as having a value of one-fourth a whole space and in the additions made in the accompanying table they are so treated.

Table showing partial results of experiments made in packing colonies in the spring and in feeding to stimulate breeding, etc.

TWO-STORY HEDDON HIVES PACKED AND FED.

Hive No.	Space occupied by bees April 10.	Total weight April 10.	Strength June 10 in L. frames of brood.	Total weight June 10.
1	6 -	36	6 -	34
2	6 + +	54 ³ / ₄	6 + +	48
6	5	42	6 + +	42 ¹ / ₄
7	4 -	43 ¹ / ₂	6 +	43 ¹ / ₂
9	5 +	46 ¹ / ₂	6	43 ¹ / ₄
	26 ¹ / ₄	222 ³ / ₄	31	211

SAME UNFED.

3	6 +	41	5	38
4	4 -	47 ¹ / ₄	4	42 ¹ / ₄
5	4 -	46	7 + +	51 ³ / ₄
8	6 -	38 ¹ / ₂	6	36 ¹ / ₂
	19 ¹ / ₂	17.3 ₄	22 ¹ / ₂	168 ¹ / ₄

TWO-STORY HEDDON HIVES UNPACKED AND FED.

2	7 -	51	7 + +	52 ³ / ₄
4	6 -	35	6 + + +	40 ¹ / ₄
7	5	58	7 + +	66 ³ / ₄
10	5 +	52	6	51
17	3 +	42 ¹ / ₂	5 +	44 ³ / ₄
	26	238 ¹ / ₂	33	252 ¹ / ₂

Hive No.	Space occupied by bees April 10.	Total weight April 10.	Strength June 10 in L. frames of brood.	Total weight June 10.
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SAME UNFED.

1	7	52 ¹ / ₂	6	59 ¹ / ₂
3	5	47 ³ / ₄	6 + +	54 ³ / ₄
5	5 -	40	6	42 ¹ / ₂
6	5	42 ³ / ₄	6 +	44 ¹ / ₂
8	4 +	37	5 -	40
9	4	40	7 + +	44
11	6	50 ¹ / ₄	6 -	51
12	6	46 ¹ / ₂	7 + +	54
13	3	37 ¹ / ₂	5	44 ³ / ₄
14	4	42 ¹ / ₂	7 +	48 ³ / ₄
15	5 +	52 ³ / ₄	6	53
16	4	33	5	38 ³ / ₄
18	3 -	40 ¹ / ₄	4 -	39 ¹ / ₄
19	3 +	43 ³ / ₄	6	44 ¹ / ₂
20	4 -	32	5	34 ³ / ₄
	67 ³ / ₄	642	88	693 ¹ / ₂

ONE-STORY HEDDON HIVES PACKED AND FED.

1	4 -	31 ¹ / ₄	3 +	27 ¹ / ₂
2	4 -	28	6	28
7	5 +	31	4	27
9	4 -	29 ³ / ₄	4 -	25 ¹ / ₄
11	6 +	31	5	27
	22 ³ / ₄	151	22	134 ³ / ₄

SAME UNFED.

3	4 +	29	2	24 ³ / ₄
4	5 -	31 ¹ / ₂	4 -	27
5	1	20	9	22 ¹ / ₄
6	6 -	32 ¹ / ₂	6	31
7	4 +	33 ³ / ₄	6	31 ¹ / ₂
10	5	36	4 -	28 ¹ / ₂
12	3	31 ¹ / ₄	3	26 ³ / ₄
	28	222	26 ¹ / ₄	188 ¹ / ₄

ONE STORY HEDDON HIVES UNPACKED AND FED.

3	4 -	25 ³ / ₄	2	23
5	4 -	25 ³ / ₄	4 +	25 ³ / ₄
9	4	26 ³ / ₄	6	50 ³ / ₄ H
13	4	26 ¹ / ₂	5	26 ¹ / ₂
16	4 -	25 ¹ / ₄	3 +	24 ¹ / ₄
17	4	27 ¹ / ₂	6	29
	23 ¹ / ₄	30	26 ¹ / ₂	128 ¹ / ₄

SAME UNFED.

1	4	26 ³ / ₄	5	24 ³ / ₄
2	5 -	28 ³ / ₄	6	48 H
4	5 -	26	4 + +	25 ¹ / ₂
6	4 -	25	4 + +	25 ¹ / ₄
7	6 -	32 ³ / ₄	6	33
8	4	26 ³ / ₄	5 +	24 ¹ / ₂
10	4	26 ¹ / ₂	5	26 ¹ / ₄
11	3	24	3	25 ¹ / ₄
12	4	25 ¹ / ₄	5 -	26 ¹ / ₂
14	4	28	6 +	47 ¹ / ₄ H
15	4	28	5 +	30 ³ / ₄ H
18	4 -	24 ³ / ₄	3 +	23 ³ / ₄
19	7	30 ¹ / ₂	7	44 H
20	3	24 ¹ / ₄	3	23 ¹ / ₄
	59 ³ / ₄	259 ¹ / ₂	69 ¹ / ₂	256 ³ / ₄

The stimulative feeding was begun at the close of apple blossom, May 20th, and was kept up till the tenth of June. When a colony would take so much that a pound of thin syrup made of one pound of sugar to

two of water was given daily, but the majority of the colonies fed, on account of a combination of a lack of strength and of bad weather, would not take so much as a general thing. The colonies packed were fed at the entrance in a simplicity feeder towards evening as soon as the bees ceased flying, the others were fed from the top of the hive. The unpacked colonies not thus fed were each supplied with combs of honey in an extra section of the hive from which the bees were at liberty to take what they wished but these combs were removed before re-weighing. The packed colonies not given the stimulative feed, on account of the inconvenience of it, were not given combs of honey but all had an abundance of stores.

After the sawdust was removed from those packed the strength of each colony was again carefully estimated and weighed as before, each having the same hive as before except numbers 2, 9, 14, 15 and 19 of the one-story unpacked hives, each of which on account of increasing strength required more room and was accordingly given an additional section containing some honey the weight of which by an oversight at the time of adding them, was not taken. These colonies are indicated in the table by the letter H and it should be noted that in making the additions of the weights in the table the figures indicating the weights of these colonies are disregarded.

The estimate of strength at this time was based upon the amount of brood possessed

figures are, I think, about fifty per cent. higher than would be required to express the brood in L. frames. But it is hardly safe to compare hives of different dimensions by estimates.

The results have been a great surprise to me for while I have doubted whether the advantage resulting from packing and stimulative feeding would repay the required labor and expense, I have never heretofore seriously doubted that there would be some considerable advantage in them. I recommend the accompanying table to the careful study of all who are interested in getting at the truth in these most important matters relating to apiculture and only if this recommendation is heeded will I fail to begrudge the great amount of labor involved in securing the facts required to construct it. It need hardly be said that there are indications that it may be found of value in the solutions of other questions than these already mentioned.

I will give here in conclusion in brief some of the results which may be gleaned from the totals found in the table, first calling attention to the fact that the difference in condition between June 10th and April 10th is arrived at by comparing the number of frames of brood June 10th with the number of spaces occupied by the bees April 10th and expressing the difference in frames of brood, and of course the result is the average per colony. The minus sign indicates a loss.

TWO-STORY HIVES.			
Packed and fed.....	gain	95 frame brood	2.35— pounds.
Packed and not fed.....	“	.75 “ “	1.06— “
Unpacked and fed.....	“	1.40 “ “	2.8 “
Unpacked and not fed.....	“	7.35 “ “	3.53 “
ONE-STORY HIVES.			
Packed and fed.....	“	.15— “ “	3.35— “
Packed and not fed.....	“	.25— “ “	4.82— “
Not packed and fed.....	“	.54 “ “	.35— “
Not packed and not fed.....	“	.70 “ “	1.75— “
TWO-STORY HIVES.			
Packed.....	“	.85 “ “	1.70— “
Not packed.....	“	1.37 “ “	2.61+ “
Fed.....	“	1.17 “ “	.22 “
Not fed.....	“	1.05 “ “	1.18 “
ONE-STORY HIVES.			
Packed.....	“	.20— “ “	4.08— “
Not packed.....	“	.62 “ “	1.05— “
Fed.....	“	.20 “ “	1.85— “
Not fed.....	“	.22 “ “	3.28— “

by each colony. In the case of the two-story hives the figures express as near as may be the amount in L. frames as they are usually filled. In the case of the one-story hives the

So in every way in which comparison can be made the unpacked colonies have the advantage both in increase of strength and in weight, and it should be said also that out

of thirteen two-story hives packed there was a loss of four against none among those not packed, while of the one story ones the loss among the packed ones was more than twice as great as among the unpacked ones.

For stimulative feeding it is to be said that it shows a very trifling advantage in three cases and is at a disadvantage in the fourth case.

It should be remembered, however, that in order to be conclusive repeated experiments must be made, as the results may depend on the character of the season.

This hive history is to be continued during the season and interesting results may be looked for if there should be a fair honey flow which is to be hoped for though the present prospect is very unpromising.

LAPEER, Mich.

June 29, 1894.



The Working of Bee - Escapes in General; The Philosophy of the Matter.

C. W. DAYTON.

How is it? Look with eyes and see,
And not within thy study chair
With restful heels thrust up somewhere,
Decide just how it ought to be.



I had confidently I hoped that the article in the last REVIEW would release me from further discussion of the subject but after reading it over I see that I am afflicted with the disease described by Friend (Mr.) Hasty on page 139 of the May RE-

VIEW—wrote what I did not mean to say, namely, “before the bees would take time to find their way through they would take time to unload.” While they would likely take the “time” I doubt if many “unload.” They seem to load up to go through the escape about the same as when smoked out, but I do not remember of having seen any cells uncapped, as by the smoke plan, even where the combs had every cell sealed; so I

infer that nearly all bees which are found on finished combs, in supers, go there with a load. In a super of entirely sealed combs they would remain loaded because there would not be any suitable place for it. I say suitable because I believe they aim to dispose of their loads where it will be immediately taken care of and where the sealers are at work, rather than *any* vacant cell. In tiering up, the bees in the finished crate would likely be straggling loaded ones. After the harvest unloaded bees might be there, but finished combs should be removed while the honey flow continues. It is partly finished ones which are allowed to remain until it is certain the harvest is entirely over.

The article should have stated that the number used was either 48, 60 or 72 and no crates were removed except by the aid of escapes. This is as far as extensive experience goes, and I believe there is much truth in the following paragraph from page 158 of the *Progressive Bee-Keeper*. “Those having several hundred colonies can not have the intimate acquaintance with individual colonies that enables the small bee-keeper to experiment with this one and that one.” It is an experiment to ascertain if an escape is of any use at all, but it may be a far greater or more complicated or expensive one to adopt it into the present system of management. So we may advise the operator to understand the disposition of the bees upon every inch of *one* escape and its board before applying it to the management of 100 colonies.

“Fitness of person is taking the highest rank in the bee business in the place of honey producing hives and fixtures,” first appeared in the *American Bee-Keeper*, then on page 355 of the *American Bee Journal*. Now if we extract so much of this abundant store of “fitness” as was derived from experiments with and the manipulation of the hives and fixtures, how much will you give for his assistance in your apiary this summer? And unless we continue to experiment with escapes and other recent additions to the “hive and fixture” line will not the “fitness of person” have about attained its climax?

I first began experimenting with escapes, to get bees out of supers when I worked all day in the printing office, putting the escapes on the hives in the morning and carrying the crates of honey into the house in the

evening. These were of the earliest form of cones. As early as 1883 I saw others use cones and used several myself to trap robbers in hives which were being robbed. The earliest form of cones consisted of many converging wires like the all-wire rat trap; where the rats could crowd their way in but could not crowd out against the points of convergent wire. For bees a simple wire cloth cone was made and then the lateral wires raveled out. In fact the first escapes were faithful copies of the rat trap. From this inventors switched off on to the simple wire cloth cone. This was a faithful copy of the principles of the fly trap. Then came escapes with lateral leaf springs. These are convergent, and a lateral leaf spring is the union of several converging wires into one. Many of the converging wires and all of the gated traps provided the unobstructed floor for the bees to walk upon. Cones, converging wires, springs, gates, exits and floors were hashed up and lay for a long time upon the apicultural board and enter into present and future escapes by the simple process of selection and placing upon a separate dish.

The inventor of a device is required to construct a model or prepare specifications of his preferred way, which, considering use and manufacture, is supposed to be the best way. In order to do this in most apicultural inventions requires a most thorough understanding of the various dispositions and instincts of the bees. Then the particular device is patented and not the principles it may involve. Thus a patent is only a partial protection as it leaves so broad unprotected territory. It is a guide-board to show inventors where to find productive ground.

By a study of the action of the bees toward escapes we find them to be very much like those of a hog or setting hen. If we undertake to trap the hen off the nest we are likely to not get her right away because she is not disposed to leave the nest until she gets ready. Then when we attempt to drive a hog he is very careful not to step over or rub against anything, until, when he finds himself cornered, then it turns into a desperate case and he prepares to squeeze through or lift anything that comes in his way; and failing in thus making a hole in the fence, he turns and attempts to run over, or under, the operator. When the bee escape is first adjusted the bees remain quiet and undisturbed for about an hour. If a bee goes in and tries the springs, it tries them

lightly, then perhaps comes out and another bee does the same. If it happens to pass through it may think it a mistake and try to get back at the side of the springs. This sort of procedure goes on until some of them start to go down into the brood chamber for some purpose. They are confused on finding a bottom board so near. After rubbing their eyes once or twice they start for the accustomed entrance. If the entrance were there, or some other outside exit, they would take wing and alight at the entrance of the hive, below, and the other bees in the super would be none the wiser until each bee, (like the setting hen), got ready to perform the same operation. And they are so slow in getting ready that it spoils all practicability of the outside exit. As no entrance is found they examine the other crevices until they realize that they are confined, and then curiosity changes into uneasiness, and in a very short time nearly all in the super join in a demoralized throng which continues to course about, part on the side walls of the super and part on the escape board and they tumble into the corners where the super and escape board meet several bees deep; and the greatest accumulation is on the side of the super where they expect the entrance to be. At the same time they pull and bite at every crevice to force an opening.

Now I have known a swarm to begin to issue from a hive and in order to adjust a swarm catcher a block of wood one inch square and a foot or more in length was placed against the entrance to stop the bees for a moment. This block was quickly pushed away and even rolled over when it was an inch or more away from the entrance. This is the kind of force and energy we have in a swarm of confined bees and I have seen them go through a single-exit Porter escape four abreast and two deep, or at the rate of 500 per minute.

The first evidence an excited bee gets that she is no. a mile from the brood nest instead of only $\frac{3}{8}$ of an inch is when she catches a whiff of air that emanates through the escape. She instantly turns round, fans the wings twice, and, not being sure of her discovery, runs toward the opening two inches. The draft comes more unmistakably, and after fanning again for about two seconds, runs hastily forward again. When you are about to grasp a hog by the hind leg or tail he does not stop to test the flexibility of the

boards or measure the crevice but he goes through by a desperate, centrally directed plunge. So the excited bee goes through the exit of the escape with hardly a slack in the rapid pace. Placing her front feet on a brood frame she continues to fan for a long time, wafting the air from the brood chamber through the escape for the guidance of other bees. As each succeeding bee comes through they take their place a little farther back and assist in the wing operation. This line of fanning bees finally extends all the way back through the escape into the super, where they stand in line around the entrance to the escape. Other bees in the super recognizing this consoling draft, come toward it. By force of habit they almost stop to fan where they are. But then, as yet, they hardly know the reason for fanning. What little scent comes through the escape is caught upon the wings of those arranged around the escape entrance, and mixed with the air of the super, is violently dispelled amongst the combs. This uncertainty causes the rear bees to crowd forward until a solid line forms around the entrance to the escape. This checks the draft still more and also adds to the uncertainty. But more bees come and climb over the backs of the others until the line becomes top-heavy and they roll into the escape from all sides. This makes confusion complete; the rear fans cease and they plunge forward, *en masse*, in the direction of the still undisturbed fans, through the exit of the escape. After the channel of the escape is full of bees it is heaped up, and in looking in from the top there is a disordered mass of bees that excludes all glimpses of the escape, each bee trying to get through first. If a few bees were to try to get through and fail, they would return, and the excitement would grow less, but, instead, they succeed and are encouraged, and the longer they are kept in suspense the harder they fan after getting into the brood chamber, and thereby excitement increases. The atmosphere from the brood chamber is as precious to their excited throats as honey would be in the time of starvation: and they are not satisfied until they are safely and surely at home in the brood chamber. When this excitement begins I have never known it to take thirty minutes before four-fifths of the bees had passed out through the lateral springs but in the case of simple cones they went out singly and so slowly that they seem to get over the

excitement and then take their time. While the exit should possess enough obscurity to cause this excitement, it is an extreme to locate it in the center of the board—the most unexpected place for a bee to look for an exit. An unexcited bee draws no followers because it does not fan. When the first excited bee discovers the way to the brood chamber it fans. An unexcited bee is not attracted by fanning. It is the fanning, resulting from excitement, that draws the bees through the escape with any sort of rapidity. So as soon as they become excited the exit should be quickly and certainly found in order that they may pass through while excitement runs high. While they are pulling slivers from every joint, if the door to the exit weighed an ounce, there would enough gather around to raise it. Each unexcited bee might, in time, lift a door or spring for itself, and all, finally, get out; but not with the rapid movement as when air from the brood chamber is wafted through an enclosed passage, which is also the passage way for extremely anxious bees.

Those escapes having perforated coverings, as in the Hastings, or with wire cloth coverings, as in the Lareese, are mistaken in principle, and misleading to the bees; and still more so when the entrance to the passage is in the center and the exit near the margin of the boards. And in any escape there should be space provided for fanning bees inside the passage after going through the gates or springs. A certain number of firemen may form a line to pass buckets of water to the roof of a burning building, but if they divide and attempt to run two lines of buckets it may be as well to go across the road and sit on the fence to enjoy the conflagration. So long as the escape operation is confined to one exit the more perfect will be the line of fanners and the more liability to incite a concentrated tumult and the more certainty of the tumult continuing until the bees are practically all out of the super. Nor need one expect much uneasiness late in the day. Like setting hens, queenless bees become quiet and camp where night finds them. The entrance of a powerful colony may be closed during the night but the same thing during the warmth and light of a business day is quite a different matter.

Swarm Catchers Versus Queen Traps; High Hopes for the Self Hiver.

C. H. DIBBERN.

I HAVE read your editorial on page 163 of the June Review, and must say that almost every statement made, conflicts with all my experience. In the first place it is stated that "queen traps (the self hiver works the same way, but accomplishes more) and swarm catchers both have their uses, and places." I well remember using swarm catchers along in the seventies, and thought them a good thing. But how I did sweat, as I went running from one end of the apiary to the other with the catchers, only to find most of the bees already in the air. Then another would swarm, and another, and there would be more running and perspiring. About half the time I would catch the queen, and usually a small swarm would settle in one corner. Then the bees that had got away from other hives, would settle on the outside, until the whole catcher looked like a great bunch of bees. Other hives would now swarm, and a good many bees would be out before I would see them, or had time to run for more catchers, and all would be sure to go to the biggest bunch. Though I had a half dozen catchers scattered around the apiary where I thought them most needed, I would often have them all full, and still other hives would be swarming, only to double up with those on the outside of catchers, containing the most bees. Now, when the swarming would let up, I would proceed to hive the bees. Of course I would hive the swarms on the old stand, but often another difficulty would present itself, most of the bees and queens had gone back to the old hive, and I would have to let them try it over again. Then when I came to the big swarm catchers, with one swarm in, and two or three outside, I had an interesting job. These would usually require two or three hives, and perhaps all the queens would get into the same hive. Then there would be fighting, and balling queens, and oh my! how cross the bees were! Now when all the bees have been shaken out of the catchers perhaps a bunch "as big as a barrel" would be hanging overhead on the limb of some tall tree. Then there would be climbing, and sawing off of limbs, and more hiving, fighting and balling of queens. Finally when the sun was getting low, I would begin to figure up

the net results of the day's work, and it was work, although people riding by in carriages may have thought I was having great fun, I would perhaps find I had secured two or three fairly good swarms, one or two whoppers, and several hives would be entirely deserted, though they had not swarmed out.

The following day the same interesting program would usually be repeated, with some variations. The swarm catchers have not been in use for some years now, and are safely stored in the loft over the honey house. If any of the readers of the Review have use for them, I will sell them "dirt cheap." No sir! the swarm catcher may do for the man with a half dozen colonies, who has nothing else to do but watch for the first few bees to begin circling around, but for the apiarist who numbers his colonies by the hundred, never!

But what about the queen-trap or self-hiver? I have now used the hiver in various forms quite extensively for four years, and though I have met many difficulties, I have had almost no trouble whatever from swarms doubling up, though I have often had from three to five in the air at the same time. There is no "doubling up in the air" possible, though every hive in the apiary swarmed at once, if the queens are retained each where they start from, or in an empty hive. I know what I'm writing about, as I'm hiving, or rather letting the bees live themselves every day. I have lately so changed my hiver, that I catch the entire swarm as surely as they start to swarm, and there is no going back, or absconding either. Do I run around with swarm catchers, or empty hives through the hot sun? Not much! I sometimes lie in the hammock, and just see them hive themselves as when my hives are properly ranged, there is little else to do, unless it is to change over the honey cases. Do I get good working colonies?—The very best, as the plan secures most of the hatching bees from the old hive, to any desired extent. I am not quite ready to give the full details of my hiver, but I firmly believe I have fully solved the swarming, or non-swarming problem. I do not even need to prepare hives any faster than swarms are ready to occupy them, so that all that racket about so many empty hives in the apiary is done away with.

MILAN, Ills.

JUNE 18, 1894.

The Advantages of Swarm Catchers and How They Are to be Used.

B. TAYLOR.

[Knowing that Mr. Taylor had had much experience with Swarm Catchers, I thought it would be well to place his experience along by the side of Mr. Dibbern's, hence I sent Mr. Taylor a copy of Mr. Dibbern's article and asked him to send his views for publication. Here is his reply.—ED.]



FRIEND Hutchin-
son, here is my reply to your request for my experience with swarm catchers. Your estimate in the June REVIEW of their value as compared with drone traps and self hivers is very fair. I will agree that to use them success-

fully requires wide-awake diligence, and I know of no way of making sloth pay in anything.

On July 5th, 1892, I caught and successfully hived 25 swarms from 11 to 2 o'clock; and in the first five days of the same month we caught and hived 95 swarms without getting two swarms mixed in a single instance.

So much in reply to Mr. Dibbern's doleful story.

I have now reduced my bees to less than a hundred colonies. Physical disability makes this necessary. Each morning the first thing that is done is to scatter four or five catchers over the yard. With each is placed a notched lath that holds them up, so there need be no delay in bringing them into instant use.

All tall trees near the apiary are removed and we take but little trouble to watch for and catch the first swarm each day. With the use of a bunch of bushes, on which I now get all swarms to alight, I love to hive in the old-fashioned way, indeed, if only one swarm would come off at a time I would ask nothing better than the bushes. When a swarm has settled on a bush and another starts, I can take the first away some distance to a shady place and keep it for two or three hours. With the catchers I can keep them as long as I wish—two days if necessary.

The catchers are of great value in controlling swarms that often desert their hives. After having work nicely started such

swarms always go at once to the woods without alighting. Catch such and keep them in the cellar for thirty-six hours, then re-hive them in the hive from whence they came and they always remain.

I get many valuable uses from the catchers besides those mentioned and I recommend them as a great convenience in a bee yard of many or few colonies. I have not a farthing's interest in their manufacture or sale.

Now as to Mr. Dibbern's attempted burlesque upon catchers. I have no doubt that every thing he says of his performance is strictly true. With his catchers and him to manage them it is all quite possible, but the style of catcher and yard arrangement that could make such a farce possible is to me a mystery. I think Mr. D. must furnish a large factor in the show himself. I know a man may represent such a degree of awkwardness as to make almost anything possible. His exhibition must have been very amusing to the citizens of Milan; in my mind's eye I can see them collected in the inviting shade of neighboring trees taking in the circus; and I fancy I can hear them cheer loudly when Mr. Dibbern makes a specially brilliant run. Mr. D. says that when he began to hive his bees, after one of his rib-splitting entertainments, that "most of his bees with their *queens* would have returned to hives from which they came," and the next day he would have to repeat the performance.

O Dibbern, Dibbern! thou that has stoned the prophets, and tried to slay those that tried to comfort thee; how often would I have sheltered thee as a hen gathers her chickens under her wings, but ye would not.

Brother and sister bee-keepers, did you ever know a swarm with its queen to *voluntarily return to the hive from which it came?* What odd bees the Milan strain must be. Mr. D. says he now has the self-hiver perfected but is not willing to yet give the secret. I hope he has, and, if so, I will pay a round sum for its use, but I have ever doubted and still doubt that the self-hiver will ever be made a practical success. But few bee-keepers have tried so extensively as I have, every contrivance of my own and others, to regulate and control this swarming business in an easy way, and I am constrained to admit that the goal has not been reached nor any advance made that is of any *practical value*, and I advise struggling bee-

keepers to hold tight to their pocket books until they know what they are paying for.

FORESTVILLE, Minn. June 29, 1894.



Swarm-Catchers Work Satisfactorily.

J. A. GOLDEN.

He who weds Miss Catcher doeth well—
And 'tother fellow's welcome quite to tell
That he who weds her not doth better.



EDITOR REVIEW: When reading your editorial on page 163 of the June issue, in regard to swarm catchers, thinks I to myself, W. Z. will surely have some of the big bee guns, who keep bees by the hun-

dreds of colonies, and want to do all the work of hiving them *themselves*, rise up and say, "your theory, Mr. Hutchinson, has not been my experience;" but, as your views of the superiority of the swarm catcher over that of the traps so nicely agree with *my* experience along this line, I thought I would give a word of consolation to the old bee-keepers as well as the lady bee-keepers that do not indulge in tree-climbing or like the straightening out of swarms clustered together, which so often occurs when the queen trap is used, but prefer right down, unruffled enjoyment in swarming time.

In a well regulated apiary of, say from fifty to one hundred colonies, I should use the swarm catcher: larger apiaries require additional assistance. I know that some say that swarm catchers are big heavy concerns and a nuisance, which is a positive "not so" in our experience. I don't know how much brother B. Taylor's catchers weigh, but I do know ours weighs only from 2½ to 3 pounds and they are not clumsy to handle.

You have very wisely said in your editorial that it is not necessary to stand around with a swarm catcher in hand ready to jump and run, etc., etc. With properly arranged catchers placed promiscuously in an apiary of fifty colonies, one need not get on much of a hustle to place catchers on from five to eight hives should that many swarms all

start at the same time, and succeed in getting a queen in each catcher.

Whether one-half or three-fourth of the bees get out before the catcher is placed in position or not, one can catch the queen, and all her daughters will return and settle on the wire screen of the catcher, when the catcher can be set in the shade, the bees sprinkled and cared for, thus the swarm catcher has its superiority over the trap.

I purchased a right from Mr. H. Alley, and manufactured and used quite a number of the traps, using the Chicago zinc, and no queen escaped, but the zinc proved a great hindrance to the worker bees when storing nectar and pollen, consequently, no traps are used by us except to clean out useless drones.

Now, Mr. Editor, as bees are very peculiar animals, I shouldn't be surprised if we hear conflicting experiences along this line, and perhaps the self-hiver will be advocated as the greatest of any device for the controlling of swarms. Having never used one I can say nothing for or against except that I suspect a queen would slip through occasionally, so, give us the swarm catcher now and all the time, and there will be no doubling up of swarms nor ruffling of tempers.

REINERSVILLE, Ohio. June 26, 1894.



The Best Size of Hives for use in Raising Comb Honey.

G. M. DOOLITTLE.



SEE by the papers of late that the old question of "size of hives" is being revived. Although old, this is yet an important subject and one that the thinking mind will not put carelessly aside, for

in this question lies something that touches the financial side of our pursuit to an extent great enough to make it an object for us to spend upon it some thought and experiments.

When I first began to keep bees, like nearly every one else, I adopted the hive used by

those around me. This was the ten-frame Langstroth hive. Soon after this I became acquainted with the writings of Elisha Gallup, who figured largely in the bee-keeping literature of twenty-five years ago, and after an experiment of two years, I changed from the Langstroth to the Gallup hive, and am still using the Gallup frame in my home yard. Twenty-five years ago, Quinby, Langstroth, Gallup, and nearly every one else recommended a hive holding from 2,000 to 2,500 cubic inches, and supposing that such size was the best for profit I made my Gallup hives to hold twelve frames, this giving about the same room there was in the Quinby and Langstroth.

Of course it is to be understood that this article is written from a comb honey standpoint, for at the time I commenced keeping bees and for some years after, the extractor was unknown. Working for comb honey and working for extracted honey, are two different things, and it is a noticeable fact that those who clamor most loudly for large hives are among those who work for extracted honey more largely than for comb. I never questioned the advisability of large hives when working for extracted honey; but after using the standard Gallup hives three seasons exclusively for comb honey I began to question their practicability for such purpose, and will here tell the readers of the Review how I decided upon the size of the brood chamber which I have been using for nearly twenty years.

After using the twelve frame Gallup hive for two years, while looking over the bees one spring, I noticed that nearly every hive had from two to four combs of nice white honey unused, and I kept watch of the matter to see if this honey was turned into brood, and the brood from it became bees in time to do work in the honey harvest, as I considered that such changing of honey into bees had much to do with the yield of comb honey I would secure. A careful watching showed that honey was not converted into brood, but on the contrary more honey was added to it during the season. This careful watching also showed that the average queen would not occupy more than 800 square inches of comb with brood for any length of time; hence I began to see that my twelve Gallup frames gave me about 650 square inches of comb to be occupied with honey and pollen nearly all the time, as they gave about 1450 square inches of comb as a whole.

I especially noticed this fact, when hiving new swarms on the whole twelve frames, for they would not enter the sections to any amount until all the brood frames were full, when I had from 500 to 600 square inches of comb filled with the nicest of white honey, which would be from 25 to 30 pounds. This honey was just the honey I wanted in the sections, but with these twelve-frame hives I could not get it there, and must sell it as chunk honey, if I sold it at all.

In talking with a bee-keeper one day on this point he told me that this storing of honey in the brood frames was just what he wanted, as it insured the safe wintering of the bees after a poor season, and we far better have some extra honey in the hives than occasionally lose our bees in winter for lack of stores. After he had gone I fell to reasoning and I soon saw that if I held to the twelve frame hives I was using, my bees would be wintering on from 25 to 30 pounds of the very choicest of honey, which should go into the sections and be turned into cash, and in case of a poor season the bees should be looked after to see if they had honey enough for winter and if not they could be fed sugar syrup to make up the deficiency, said syrup costing less than half what the honey would bring when sold in the market. Again, I found that where the bees commenced storing honey to any amount in the brood nest, and especially is this true with the Italians, that the tendency was for them to keep storing there instead of going into the sections, or boxes as we used and called them then, the result of which was that when fall came I had but little honey in the surplus apartment, much honey in the body of the hive and few bees for winter, owing to the honey in the brood combs crowding out the brood which gave the bees for winter. Seeing things as I believed in their true light, I next began figuring what size hive was best. The queen I found needed 800 square inches of comb during the best of her breeding, and as it was necessary that some room be allowed for pollen and a little honey for present uses, I supposed that one-fourth the room occupied by the queen would be about right for this, so settled that 1,000 square inches of comb would be about right. But as it was impossible to have a certain number of frames figure out an even 1,000, I took the number that gave me the nearest that amount, which was nine. Eight gave 820 square inches, while nine gave 1,035.

Not to go too hasty I first made some dummies and reduced the size of the brood chamber with these, using about one-third of the hives I had in use in the experiment. When fall came I found that the hives thus treated gave fully one-fourth more surplus honey than did those still having the 12 frames, while nearly every hive had fully honey enough for winter. The next year I used dummies in three-fourths of the hives I had built, while the new ones built held but nine frames. In striking an average that fall I found that the few hives having twelve frames gave only about two-thirds as much surplus honey as did those having but nine, so I hesitated no longer in deciding that nine Gallup frames gave plenty of room for the best results when working for comb honey. As intimated above I arrived at this conclusion nearly twenty years ago and have seen no reason for reversing the same during all these years, in which time I have experimented with hives holding all the way from seven to sixteen of these frames. When I first began with the small hives my main fear was that the bees would generally lack for stores for winter, but in this I have been happily disappointed, for if my memory serves me right, three falls have been all that the bees have been short of stores during that time.

BORODINO, N. Y.

June 22, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

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 FLINT, MICHIGAN. JULY 10, 1894.

PERSISTENT PEOPLE begin their success where others end in failure.

EXPENSES are sometimes profitable—saving is sometimes extravagance.

COMES that I do not expect to use this season have kept nicely hung an inch apart in a dark cool cellar. They have not been fumigated, and I see no need of it.

THE AMERICAN BEE JOURNAL has added a medical department.

464 SECTIONS were filled with foundation in one hour by Chas. Koeppen of this place, he using the Woodcock fastener.

W. C. FRAZIER says in *Gleanings* that a cross between imported and golden stock is undesirable; that the result is not so good as either variety. It is what breeders term "too violent" a cross.

CARNIOLANS have done fairly well with me this season in gathering honey. One colony in particular has done as well as any in the yard, and the combs are very neat and white like those built by the black bees.

A WET SPONGE is handy both for cleaning sticky fingers and wiping daubs of honey from implements; so writes Arthur C. Miller. If you don't have a tool box in which to carry it, try an oil cloth pocket (oiled muslin) made and worn like the nail pockets carpenters use.

SEPARATORS VS. NO SEPARATORS receive attention in *Gleanings* at the hands of Dr. Miller and R. L. Taylor. I have used very few separators, and in my locality and with my management I see but little use for them. Where the flow is short and abundant there is less need of them than where it is slight and long drawn out, or subject to frequent interruptions.

DADANT's plan of preventing increase by hiving a swarm for 48 hours in a box or hive placed by the side of the parent colony and then returning the swarm to the hive from whence it came, did not prove a success with Mr. C. H. Murray of Elkhart, Ind. Ten days afterwards the colony swarmed again. I am not sure as to the length of time that Mr. Dadant expects a colony thus treated to refrain from swarming; whether it is a week or ten days or for the whole season.

THE NORTH AMERICAN Bee-keepers' Association will hold its next annual meeting October 16, 17 and 18, in St. Joseph, Missouri. Its efficient Secretary Mr. Frank Benton is sending out some most excellent printed matter in the shape of circulars calling attention to the advantages of

membership. The President, Mr. Emerson T. Abbott, of St. Joseph, Mo., requests that each one who expects to attend will drop him a postal, as the knowledge will help him in securing reduced rates.

MR. J. P. NEEDELS, of Stanberry, Mo., wrote me a year ago that he thought his bees were being killed by the spraying of fruit trees. He now thinks that it was paralysis that caused the trouble. He also thinks that he can trace the malady to some queens that he bought.

QUEENS are injured by taking them from a full colony in the height of the laying season. The sudden checking of the laying is what does the mischief. At least, so concludes Mr. Doolittle, and he came to this conclusion after experimenting in the matter. The *American Bee Journal* contains quite a long article from him on this subject. He criticises the opposite views of Mrs. Atchley. If Mrs. A. has held opposite views she must have changed them, as will be seen by the perusal of the article of hers that appeared last month in the Extracted Department.

BEE ESCAPES and the motives that inspire the bees to pass through them are handled in a masterful manner by Mr. Dayton in this month's REVIEW. Seldom have I enjoyed reading an article as I did his—so graphic, philosophical and reasonable. It is all clear now why and how the bees get through the Porter escape in such a short time when Mr. R. C. Aikin had it all figured out that it would be a physical impossibility. They do not always go in single file, but "four abreast and two deep" at the rate of "500 per minute." The suggestion that the escape should be located at that part of the board where the bees will expect to find the entrance needs thinking about; there may be something in it.

BEE PARALYSIS cannot be cured in Texas by the use of salt; so writes L. B. Smith to the *American Bee Journal*. Changing queens was also a failure with him. Taking away the combs and brood and allowing the bees to build new combs cured them, but the trouble is that they do not "stay cured." He says that unless some remedy is discovered, bee-keeping will soon be a thing of the

past in that part of the country (Lometa), as two-thirds of the bees have died from that cause in the last three years.

MAKING A GOOD JOURNAL and getting a paying list of subscribers are two distinct accomplishments, as much so as the raising of a good crop of honey and the selling of it at a good price. Burton L. Sage's paper was bright and newsy, yet it failed from lack of support; and the publishers of the *Canadian Bee Journal* say that they are putting more money into their venture than it brings back. The "hard times" and the poor honey seasons have much to do with this state of affairs. But few bee-keepers can afford to have more than one or two bee journals, and, naturally, there is little inclination to lay aside the old-time friend and adviser for the new.

"ENTRANCE DIAGNOSIS" is something that Mr. C. W. Dapton wrote about quite charmingly some time ago in *Gleanings*. There is more in this than some of us think. A glance at the entrance of a hive will often tell many things to an experienced eye. Because of this there is an advantage in having all of the entrances face one way—they can all be seen at a glance. I remember the first year or two when my brother began working with me in the apiary. If absent a day or two, I would, from simply walking through the yard and glancing at the entrances, ask perhaps half a dozen questions; such, for instance, as "Doesn't that over at the end of the row need another case of sections?" and at first it was a puzzle to brother as to how such conclusions could be drawn without even opening a hive.

THE "STRIKE" WILL COMPEL THE EDITOR TO GIVE UP HIS PROPOSED VISIT TO BEE-KEEPERS.

"The best laid plans of men and mice aft gang alee."—BURNS.

The type was all up for the first "form," and the paper ordered for printing the July REVIEW when the strike came, but the paper didn't come for three long weeks. I had my plans all made to start on my travels among bee-keepers as soon as the July REVIEW was out, but now the REVIEW is so far behind, and the money saved to pay the expenses of the trip has from necessity been used to meet bills that came due, the wherewith to

pay them having been expected from the queen trade which was practically killed by the strike, that I think the interests of the REVIEW will be better served if I stay at home instead of borrowing money to go off on a trip when the paper is a month behind. Of course I do not abandon the hope of eventually making a trip among bee-keepers, but the present lesson has so clearly shown me the folly of telling what great things I expect to do in the future that I shall make no more promises, and if any have been led to subscribe for the REVIEW on account of promises that I have not kept, or cannot keep, they can have their money back if they wish it.

PROTECTION AND STIMULATIVE feeding did not prove profitable at the experimental apiary this spring. I am not greatly surprised. I remember remarking mentally several times that I feared Mr. Taylor's packing of bees this spring would not show much profit. I didn't have any bees packed. It is the first spring in a long time that I have not practiced it more or less. It came off warm unusually early, so early that I was suspicious and continued in that state for three weeks, and, finally, I took part of the bees out of the cellar. Then it turned cool, just cool enough so that the bees could not fly but not enough to injure any of the weaker colonies. I was very busy and kept neglecting the packing. In a short time it warmed up and the rest of the bees were taken out of the cellar, but none of them were packed. In a warm sunny spring I doubt the advisability of packing. When the outside temperature is higher than that inside packing would only be an obstacle to rapid breeding. But the trouble is that we do not always know how soon the bright balmy weather may change to snow and frost. Mr. Taylor says truly that more than one season is required to definitely decide.

WHAT DO YOU READ ?

Several times when I have been enjoying an article in some magazine or paper I have wondered how many of my subscribers were enjoying the same pleasure. Let me tell you what I read. First, of course, I read the bee journals; I read them as eagerly as I ever did—yes, more so. I read the daily papers and the leading magazines such as the *Century*, *Scribner's*, *Harper's*, *Cosmopolitan*,

Ladies' Home Journal, *Munsey's*, *Outing*, *McClure's*, *Cverland Monthly*, and the *Youth's Companion*. I have read the latter for years, and probably enjoy it as much as any paper I read. It is not simply a child's paper, but contains something that is of interest to everybody. I remember saying when I was a boy that if I were going to be an editor I should like to be editor of such a paper as the *Companion*. I said I should be proud to be editor of such a paper, and my mother said, "Well you might be." Then I glance through some of the leading agricultural journals such as the *Country Gentleman*, *American Agriculturist*, *Michigan Farmer*, etc. I also read a monthly journal called *Newspaperdom*, and one called the *Writer*, also *Printers' Ink*, and last but not least, that prince of papers for a printer, *The Inland Printer*. In all of this reading I am all the time on the lookout for some hint or kink that may be utilized in making the REVIEW more attractive typographically and intellectually.

EXTRACTED.

Smoke and how to use it.

It is not every one who knows how to properly use a smoker in the apiary. I think I use much less smoke than I did years ago. I frequently open hives now with no smoke at all, but it may be only fair to add that it is only such hives as I know the disposition of the occupants. Mr. Pringle in an article in the *Practical Bee-Keeper* has the following to say on the subject:—

"But, given a good smoker and a good smoke, I find that only a few know how to use the smoke. They may know how to use the smoker but not the smoke. The different colonies of bees, like differing and different pupils in school, require different treatment. A gentle puff is amply sufficient for some, a torrent of blasts for others. But begin gently with all and only give such doses as are required."

◆◆◆

Making Syrup Without Heat That Will Not Sour or Crystallize.

The time for feeding bees will soon be here. To be able to make a thick heavy syrup that will positively never crystallize is a most desirable accomplishment. Dr. J. T. Beall has told in *Gleanings* how this may be done; it is as follows:—

"How and when to feed are questions which I shall leave to those of larger and riper experience to answer, while I shall attempt to offer some suggestions upon that other but not less important phase of the question, *What shall we feed?*"

Sugar syrup seems to be the most available material for the purpose; but there are various objections to its use as ordinarily prepared. I am satisfied that the mode of preparation which I shall now attempt to describe (but for which I do not claim originality) will overcome many if not all of these objections.

Procure a five-gallon tin can having a honey-gate at the bottom. Punch three or four very small holes, about equal distance apart, one and a half inches from the top of the can. For convenience we will call this can the receiver. Now have another five-gallon can made so that it will fit into the top of the receiver about one inch. The bottom of this can (which we will call the "percolator") should be made in the shape of a funnel, with a slightly tapering nozzle one inch long and $\frac{3}{4}$ inch in diameter at the outlet. Into the nozzle of the funnel fit a cork having several vertical grooves 1-16 inch deep cut in its circumference. Now pack the funnel end of the percolator with a good quality of cotton previously saturated with water, and well squeezed out. A loose-fitting cover completes the percolator.

Fill the percolator about two-thirds full of granulated sugar, and then pour in cold water until the can is about full. Soft water is preferable. The first half-gallon of syrup which passes into the receiver should be returned to the percolator, as it will be too light. All that is necessary now is to keep pouring in sugar and cold water occasionally, and to draw off the syrup as it accumulates in the receiver. Always keep enough sugar in the percolator to cover the cotton to a depth of about two inches. It is not necessary to weigh the sugar nor measure the water. Just keep up the supply of material, and the apparatus, like the Kodak, 'does the rest.'

Technically this is a saturated solution of pure sugar. It is a clear, clean, transparent liquid, having a specific gravity of 1.556. It is perfectly staple in any climate, will never sour nor granulate. It is heavier than any stable syrup that can be made by heat, and it is never overdone nor underdone. The heaviest syrup that can be made by heat (the official simple syrup of the U. S. Pharmacopœia) has a specific gravity of 1.317, and is liable to ferment as well as to deposit crystals.

The slight yellow tinge is due to the fact that, as the syrup passes through the percolator, the ultramarine (which is used by sugar-refiners for substantially the same reason that the laundress uses indigo) is left behind, and will be found in the cotton packing.

Just how inimical this substance is to the bee economy I am not prepared to say; but I feel safe in asserting that, as Jake Smith would say, 'it don't do no pertickler good.' I am convinced, however, that the most del-

eterious substances found in sugar syrup, as usually made, are the result of faulty methods of manufacture.

This apparatus can be placed in any out-of-the-way corner, and requires very little attention after once 'getting the run of it.' Unlike the old method of making syrup on the kitchen stove, there are no fires to keep up, no dauby, sticky utensils for the wife to clean, no burned fingers, and no 'swear words.'

The cotton, which should be of the best quality, must be renewed occasionally; but one packing will be sufficient for at least half a barrel of syrup. Although this syrup comes drop by drop, the process goes on, with unvarying regularity, 24 hours every day; and a few minutes' attention twice or three times a day is all that is required. By having the sugar-barrel and water-supply convenient, and arranging a barrel or other suitable receptacle under the honey-gate, the labor is minimized to the last degree.

To any one who may be inclined to think this process too slow I have only to say, try it and prepare for a pleasant surprise. Lastly, this syrup is of such a consistency that it is immediately available for use by the bees, requiring no evaporation after being placed in the cells.

Ontario, Ohio, Feb 8.

[We have never made syrup with a percolator; but as the doctor seems to be perfectly familiar with the subject we have decided to give it a test. The trouble of using heat, boiling over, soiling stoves, etc., is enough to warrant every one giving the plan a trial.—ED.]

How to Make Swarms Cluster on a Bush.

Swarms often cluster in very inaccessible places and it would be convenient to know how to induce them to "uncluster" and then "re-cluster" in a more desirable location. In *Farm, Stock and Home*, Mr. B. Taylor tells how this may be accomplished. He says:—

"A bee-keeper writes that the swarms cluster on his young fruit trees, that he is greatly annoyed thereby, having to mutilate the young trees by cutting the branches to save the swarms, and asks for a remedy.

Our own apiary has always been surrounded with fruit and ornamental trees, and we have in years past been greatly distressed by having to cut and mutilate the trees and knock off fruit in saving the swarms. We now use swarm catchers and catch the bees as they issue from the hive. This not only saves the trees and fruit but saves a great deal of hard work in carrying heavy ladders and climbing trees. But without swarm catchers there is a better way than to let the swarm settle on the trees. We have mentioned this better way in previous years, but will carefully describe it again, as it is within the reach of every owner of a colony, and if followed will save much loss and trouble.

Cut a quantity of bushes two or three feet long (those with fine leaves and sprays are

best), have one a little longer than the rest, with a good strong hook to hang it up by, and around this central branch lay enough of the shorter branches to make a compact bunch as large as a small sheaf of grain. With strong cord tie them tightly together at the butts, leaving the hook out six inches to handle it by. When the bees swarm, light your smoker, and with the bunch of bushes and smoker in hand wait until the swarm has partly clustered—if all has clustered it will do no harm. Now hold the swarming bush close up against the bottom of the cluster and give it a gentle jar: if properly done a large lot of bees will be left on the bush. Hang this by the hook to a limb, or other convenient place, in plain sight near by. Now jar all the bees from where they had clustered and with the smoker keep them from settling there again; in a few moments they will all join the cluster on the bush, and you can then unhook and carry them to any place to be hived. Once on the bush the bees will remain several hours if hung up in a shady place.

I have found it the next best thing to the swarm catcher for preventing two or more swarms from clustering together. Take each swarm, as soon as it is on the bush, and hang it in the shade, far enough away so the next swarm will not find it, and all will be safe if hived in two or three hours. I have had six swarms hidden in this way at the same time. When many swarms were coming, by having several little wells dug in the ground, the size and depth of a kerosene barrel, with a stick laid across the top to hang the cluster by, they can be kept for any time desired, even over night, and be hived at convenience, by covering up darkly. This can be done with several cloths or by light boards, drawing a little fine earth over to keep out light. If I had no swarm catchers I should regard a half dozen of these little wells to hide and keep swarms in as indispensable. Of course to use them you must have a like amount of swarming bushes, so there may be one for each swarm. These bushes when not in use must be kept in a damp, shady place, and they will last for weeks."

water any way, and so will remain at the bottom. Put a generous piece of clean tin over the place so the clothes can not get soiled. In applying the stuff, heat the bottom first, then rub all round and over the leaky territory with a lump of the propolis. Our case was a group of small holes scattered over a space several inches in extent. And we are so shiftless at our house that we are going on from week to week leaning on this temporary expedient. Take heed lest you do so too.

Under the lead of Prof. Cook the bee-fruit matter seems to be coming out greatly in the bee's favor. What is to most of us a quite unexpected find cuts a considerable figure in the result. Very many varieties of fruit will not accept their own pollen at all, but must have pollen from some other tree of some other variety, else no fruit whatever. And those varieties that will accept their own pollen accept it with more or less reluctance. Foreign pollen brought by bees is always preferred—or, to put the thing in technical shape, *prepotent*. The California experiments confirm those of Michigan. Bees imprisoned under netting with the flowers were seen to work on them—a thing I should not have expected—and branches so treated set fruit well, while branches covered in the same way, but with no bees inside made a failure of it. Apples, however, were not tested. An anomaly turned up as to the apricots experimented on; they seem not to need bees or cross fertilization at all. The general look of things at the present moment is that the stronger and more acceptable the fertilization the better the fruit. May no ill-omened bird flutter down to upset that conclusion. See *Gleanings*, 448.

CANADIAN BEE JOURNAL.

A neat exterior with a dainty poem tacked on to it; an interior growing gradually better from month to month; an enterprise that has just nicely caught the half-tone and portrait breaking-out—what need hath the *Canadian* of any long characterization at this time and place? In the *Canadian* the captions of the articles, with authors names are inclosed in a square of border—and it hath a Parliament instead of a question box. But a Parliament with only two members, as in the June number, (one of them a "dead man" and the other a Yankee) rather discounts the famous Rump Parliament of the Puritans.

A Condensed View of Current Bee Writings.

E. E. HASTY.

USE for propolis, don't you know? A sufficient quantity of it melted into the bottom of an old leaky wash-dish, or other played out utensil, makes things lovely again—provided you occasionally set it out in the sun to heal up cracks that may ensue. And in the dire domestic extremity of a leak in the wash-boiler that will not be stopped, propolis is just a "ministering angel." You see it never really melts, and is heavier than

D. W. Heise found bees in elm hives damp at mid winter, while those in similar hives of pine were dry. 227. As more than a hundred hives are made of pine to each one of elm, this find is in line with the general practice.

In trying to get an article from Capt. Hetherington the *Canadian* got a long private letter which serves the turn quite as well as an article would—and thereby “scoops” its cotemporaries. The letter contains some striking sentences as below :

“Experimenting on a large scale in former years cost me more money than my business could furnish.”

Pretty strong argument for experiment stations. It is somewhat in the nature of a surprise to be assured that the greatest of eastern honey harvesters has even yet no settled system of honey taking, but still changes from year to year.

“I aim to change my queens one half each season.”

As most of us have backslidden into letting the bees take care of that matter (laziness hath many awfully easy ways) perhaps this line of the Captain's is the most timely thing he has sent us from his retirement.

“I am now making over 150,000 sections for my own use, and shall put full sized sheets in every section. Shall use Van Deusen flat-bottomed foundation 14 feet to the pound.” *Canadian*, 227.

Bug in the ear of those of us who don't use foundation at all, save the tiniest little bit for a starter.

But when Mr. H. says he has had all the conceit taken out of him, and never expects to have any more, our faith wavers and kicks a lofty bucket. A man without any conceit in him! Would not all the human race want to go and gaze, and his house resemble Washington with all the Coxey armies allowed to get there a-la-program?

Friend Elwood, while vigorously kicking the sleeping mad dog of sugar honey, gives us this remarkable fact, if fact it is—

“Likewise cane sugar and gum arabic have the common formula C₁₂ H₂₂ O₁₁.” *Canadian*, 231.

Assuredly we should at times “look a little out” for chemistry.

On page 227 Mrs. Atchley affirms her faith in her son Willie's way of queen rearing (shaving down cells and lifting the silken cell bottom with tweezers) and thinks her system a combined Doolittle-Alley-Atchley way. But she don't raise queens on a stick.

She dips the cell bases extra solid, and pokes them aslant right into the combs.

On page 224 Doolittle says that a drone rearing colony, if as many as three drone combs are used in it, will rarely furnish any surplus—all goes down the throats of “ye gentlemen.” Years ago this fact puzzled me a little, and made me think I had made a poor choice for a drone mother.

The June number is lavishly pictorial, and specially interesting on account of the portraits of the editor's family.

The Oxford Convention gives the five-banded bees a very black eye. (Page 247.) Yet on page 255 they find a defender in the person of friend Wilkins the Olla Podrida man. Same chap wants me to economize the alphabet, and call this department Hasty Pudding. Don't believe he cares anything about the economy—any more than my schoolmates did when they called me my full name and more too, Emerson Eat'n Hasty Pudd'n.

When a clipped queen and a little ball of bees is found on the ground in the apiary this is the way Doolittle manages the “kit-let” job of finding where she came from. (248.) First wait till the bees have nearly ceased flying at eve. Smoke a little. A poke or two with a straw—pick up—queen in cage—cage in pocket. Then a deluge of smoke, making them all fly at once; and as they cannot find their mother they will go home and fan in the entrance.

THE GENERAL ROUND - UP

Mrs. Atchley has 10 choice queens that have been 20 times caged when at the maximum of laying, and they seem none the worse for it. Pretty strong proof that a queen can cast off eggs without harm to body or mind. But this does not cover the case of a queen immediately shipped when heavy with eggs. *A. B. J.*, 492.

Canada's *Practical Bee-Keeper* has become a monthly “like other folks;” and since the change seems to be evolving in other respects—coming on quite hopefully—less of long and weighty foreign translations, and evident effort to get suitable correspondence near home.

Here's the bee-keeping donkey as drawn by J. P. H. Brown.

“Sometimes the consignee (of an almost exhausted queen) is not ready to introduce—lays it aside for a time, but every now and then gives the cage a violent shake to see if there is any life in it.” *A. B. J.*, 529.

Friend Brown drops the plastic candies for 3,000 miles or over, and uses solid candy and a two-chamber water tin.

The vote on 8 frame versus 10, for comb honey, as taken in *A. B. J.*, 591, turned out as follows: Total votes 26. For 8 frames, 12; For 10 frames or larger, 9; Took to the woods, 5. Rather a better showing for 10 frames than I should have supposed could have been made. The strength of the 8 frame theory lies in those poor locations where with 10 frames one don't get any surplus at all.

How to remove spots of beeswax from clothing almost promised to stand as an unsolved conundrum; but is answered by J. C. Knoll. *A. B. J.*, 619. Hot flat and tissue paper, moving a fresh surface of paper on with every pressure of the iron till nearly all the wax in sight has left the fabric and taken to the paper. Probably the blank margin of a newspaper would answer by giving each pressure a little more time.

B. Taylor scored a partial failure in wintering last winter (that matchless house apiary "a little better" but nothing first premium) yet he is full of enthusiasm. Some neglected box hives he bought in the fall came through booming; and he believes he can imitate the condition of a neglected box hive in October by "a little cheap, judicious feeding." *A. B. J.*, 656. Brudder Taylor mebbe yo gets dar bimeby; but dis darkey don't 'low you to fetch it de fuss time tryin.

Most ashamed to confess that I have not yet on trial Miss Wilson's style of veil. I bought the elastic cord and pin promptly enough; but I was awfully busy (toothache thrown in) and the kind lady will never appreciate what a globe-encircling task it is for a bungling man to cord clear around a veil. The method looks promising, and may sweep the field yet. Put in an elastic cord around the bottom of a veil, and of course in the wearing it will crawl up and prove unsatisfactory; but just hook a safety pin over the center front and pin it down so it can't crawl up. *Gleanings*, 465.

Alley puts in that the best way to wear a veil is to lay it down in some out-the-way place, and forget where it is. Then one can eat honey, wear glasses and pick his proboscis all he chooses—and that ain't all he may have to pick.

"It is a pretty well settled law that nectar, showy blossoms, and fragrance of bloom, are all indications of the necessity of cross-pollination, and are so many invitations to the nectar-loving

insects to come to the aid of the needy and waiting blossoms." Prof. Cook. *A. B. J.*, 662.

Mrs. Atchley is engaged in writing for *A. B. J.* a serial for beginners, which is likely when finished to add one to our standard works. The style is familiar, yet not too much so; and even being too familiar is not so bad as being too impersonal and stilted. Of course a critic must reserve judgment somewhat until later on, but judgment is likely to be favorable.

She tells the novice to use sticks in transferring, because strings, clasps, thorns, etc., are not so sure *every time*. Her dividing is, queen on the old stand, and sealed brood on the new—just as it should be. And her fall dividing of extracting colonies, the queenless halves supplied with cells reared for that purpose, is a distinctly southern style of rapid increase. Would take lots of sugar-feeding sometimes, I reckon, even down south; but enthusiasts in a hurry for more bees can stand that.

"There are many patent hives and clap-traps that work well with no bees in them." 556.

Look out for a newly transferred colony lest it *starve*—

"As transferring usually stimulates them to the highest pitch * * and they soon consume all the honey they have." 651.

Northern swarming time and harvest usually come near together; southern swarming time usually comes long before any large surplus. This gives great advantages for dividing in the south. As to the new colony in tutelage, she believes in cutting out all but the two best looking cells, and then watching out *very sharp* to destroy the second when the first emerges.

On page 374 in *Gleanings* W. G. Hewes, himself a Californian, stirs up the animals at a great rate by saying things about the California big yields—you can have a story just as big as you have a mind to go for out there. Some have wild methods of computing in the honey that run over the tank, or the honey that they *lost* by not extracting soon enough; while some labor with the mental befuddlement that says fourteen tons in place of four tons. In case friend Hewes is right it is very sad to think how much more our California brethren will have to wrench their consciences now before they can get us down to a peaceful grade of faith again. Getting mad about it, as some seem a little inclined to do, won't help us a particle. Say! get the legislature to lay a tax of five cents a ton on honey, and see if

that won't fetch them to Gunter. Or would the four ton man, cured of saying fourteen tons, say four pounds?

Friend Taylor is to be commended for his candor in not suppressing the record of that wintering experiment given on page 156 June REVIEW. Six colonies were arranged in the form of a vertical spout; and the bees very appropriately went up it. As he seems puzzled I'll try my hand at explanation. Bees in winter do not defend entrances much. This trouble is greatly increased when there is such an arrangement as intermingles the air and scent of different hives. For some reason the upper entrances seemed nicest to these bees; and nearly all that came out to fly went in above, until the lower hives were practically deserted, and the queens perished. Still the crowd of bees above felt disgruntled in their minds; and some fine day when no one was looking they all swarmed out, and left for parts unknown.

Must poke just a little fun at Ernest for his green dandelion pollen. *Gleanings*, 424. Dandelion pollen is a beautiful orange.

Dr. Miller hits it just right on those covers built down with burr-comb honey. Jerk them up and put them down again "quicker'n scat" Next day the honey will all be taken out dry, and they can be removed without any muss or daubing. *Gleanings*, 403.

Alack-a day! they have a glucose now so good (else so bad) that it cannot be detected by taste alone. Evidently we shall have to make our peace with the chemists, and get them to defend us, even if they do chuck the half of us into the penitentiary with the rogues. *Gleanings*, 470.

RICHARDS, Lucas Co., Ohio, June 27, '94.

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One 2-frame Nucleus in June,	2.75
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All nuclei contain untested queens. Send for circular and sample of my **5-Banded Beauties**.

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Apiary is now stocked entirely with young laying queens of this year's rearing. Some of them have been laying long enough so that they are tested. I will sell the tested ones at \$1.00 each, or with REVIEW one year for \$1.75. For \$2.00 the

Queen,

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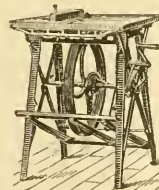
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Safe arrival and satisfaction guaranteed.

Reference: A. I. Root, Medina, Ohio, who
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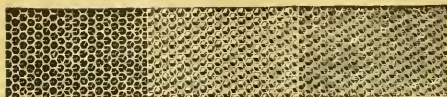
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GOLDEN • ITALIAN • QUEENS.

The best of untested, five-banded Italian queens at 75 cts each; three for \$2.00; 1/2 dozen, \$1.00. Untested queens from imported stock at the same price.

3-94-tf

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Please mention the Review.

Given Away,

Our new catalogue of Bees and Bee-Keepers' Supplies to any sending their address. It contains the latest prices on **HIVES, CRATES, SECTIONS, FOUNDATION,** and the new Stirrer **FEEDER;** one of the best feeders in the market—just the thing for spring feeding.

OLIVER HOOVER & CO.,

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BEE SUPPLIES SUCH AS HIVES SECTIONS, FOUNDATION, EXTRACTORS, AND EVERYTHING ELSE USED BY A BEE-KEEPER. ALSO CLOVER SEED, BUCKWHEAT, BEES AND QUEENS. LARGE WHOLESALE AND RETAIL CATALOG FREE. IMMENSE STOCK. ADDRESS **JOS. NYSEWANDER, Des Moines, Iowa.**

DADANT'S FOUNDATION

Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. **CHAS. DADANT & SON, Hamilton, Ills.**

4-94-12t

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W. R. STIRLING,

MANUFACTURER OF

The Model Bee-Hive,

Frames, Sections, Feeders, Smokers, Extractors, Honey Cans, Shipping Cases, Bee Veils, etc., also breeder of

Italian Queens.

4-94-4t Send for price list to

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BINGHAM PERFECT BEE SMOKER

Pat'd 1878, 1882, & 1892.

Cheapest & Best on Earth.

Send Card for Circular to
Bingham & Hetherington
ARBONIA, MICH.

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Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and 5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS,** Lavaca, Ark.

2-94-1f

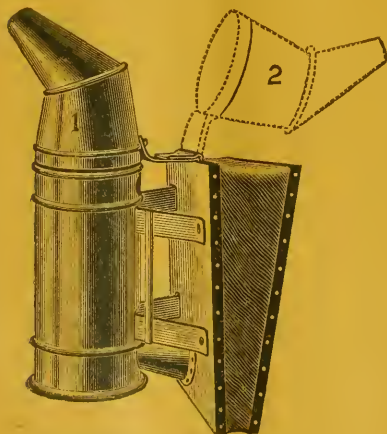
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HONEY JARS, Beautiful, Accurate and Cheap. The trade supplied. Bee Supplies; Root's goods at Root's prices and the best shipping point in the country. Write for prices.

WALTER S. POWDER,
1 84.12t Indianapolis, Ind.

Please mention the Review.



ALL BEE-KEEPERS Want a Good Bee Smoker.

The Higginsville Smoker is designed to supply this want at a reasonable price.

The Higginsville Smoker is a "daisy," has a 3 inch fire box, a hinged curved nozzle that will turn back out of the way while loading, and has a bar of folded tin running horizontally with the fire box to keep the hand from coming in contact with the hot fire box.

We claim the following points for this smoker: Cheapness, Excellence, Strong blast, Heavy volume of smoke and no burnt fingers.

Price, 60c. each; 6 for \$3.00; \$5.00 per doz. 20 cents extra by mail. Special prices to dealers.

If you will send us your name plainly written on a postal card we will mail you our catalogue of Bee-keepers' supplies, also a copy of the Progressive Bee Keeper, a journal devoted to Bees and Honey.

Address:

LEAHY M'F'G. CO., Higginsville, Mo.

AUG., 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

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I will send the REVIEW with—		
Gleanings.....	(\$1.00).....	\$1.75.
American Bee Journal.....	(1.00).....	1.75.
(Canadian Bee Journal.....)	(1.00).....	1.75.
American Bee Keeper.....	(.50).....	1.40.
Progressive Bee Keeper.....	(.50).....	1.30.
Bee Keepers' Guide.....	(.50).....	1.40.
Apiculturist.....	(.75).....	1.65.
Bee-Keepers' Enterprise.....	(.50).....	1.40.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

KANSAS CITY, Mo.—We quote as follows: No. 1 white, 15 to 16; No. 1 amber, 14 to 15; No. 1 dark, 9 to 12; white extracted, 6; amber, 5; dark, 4. Beeswax, 20 to 25.

July 9. CLEMONS-MASON CO.,
521 Walnut St. Kansas City Mo.

MINNEAPOLIS, Minn.—The demand for honey is very light and higher prices are not expected. It is probable that miscellaneous shipments will be sold by some commission men below our quotations which are as follows: Fancy white, 18; No. 1 white, 15 to 16; fancy amber, 14; No. 1 amber, 10; fancy dark, 8; white extracted, 6 to 7; amber, 5 to 5½; beeswax, unsalable.

July 9. J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Aug. 15.

CHICAGO, Ill.—Comb honey will be of active sale this fall and we advise early consignments of the best grades of comb. We expect fancy white to bring 16 cts. Extracted is selling at 5 to 6 cts. Correspondence solicited.

July 17. S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

CHICAGO, Ill.—The new crop of honey is coming forward and we have had some very nice lots that have sold at 15 and 16 cts.; extracted also selling at 5 to 7 cts., according to quality and kind. Beeswax, 25 cts.

Aug. 14. R. A. BURNETT & CO.,
163 So. Water St., Chicago, Ill.

BUFFALO, N. Y.—Small amount of honey on hand and trade is slow, mostly for off grades that bring from 7 to 10 cts. We quote as follows: Fancy white, 13 to 14; No. 1 white, 12 to 12½; fancy dark, 8 to 9; No. 1 dark, 7 to 8; beeswax, 25 to 30. cts.

June 5. BATTERSON & CO.,
167 & 169 Scott St., Buffalo, N. Y.

CHICAGO, Ill.—The market is dull and we look for no change for the better before the middle or last of August. We have disposed of a little new stock, but there is comparatively no inquiry. We predict good business and fair prices when the season does open.

July 31. J. A. LAMON,
43 So. Water St., Chicago, Ill.

NEW YORK, N. Y.—The market on extracted remains quiet. There is some demand for the new crop of comb but prices are not yet established. Beeswax is dull and slowly declining. We quote as follows: White extracted, 6 to 6½; amber, 5 to 5½; dark, 5 to 5½ cts. a gallon; beeswax, 27.

Aug. 15. HILDRETH BROS. & SEGELKEN,
28 & 30 West Broadway New York.

I AM keeping a lot of queens according to the plan described by Mrs. Atchley in the last REVIEW, and am well pleased with it. Unless orders are unusually large, it enables me to fill them by return mail. W. Z. HUTCHINSON,
Flint, Mich.

Texas Reared Golden Italian Queens

BRED FOR BUSINESS and BEAUTY. March, April and May, Untested, \$1.00; Tested, \$1.50. After, Untested, 75c.; Tested, \$1.00. Remit by P. O. Money Order, or Registered Letter. Price-List Free.
W. H. WHITE,
Deport, Lamar Co., Tex.

Please mention the Review.

— If you wish the best, low-priced —

TYPE - WRITER.

Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars or to correspond with any one thinking of buying such a machine.

FEEDING BACK

Honey to secure the completion of unfinished sections can be made very profitable if rightly managed during the hot weather of July and August. In "ADVANCED BEE CULTURE" may be found complete instructions regarding the selection and preparation of colonies, preparation of the feed, manipulation necessary to secure the rapid capping of the combs, time for removing the honey, and how to manage if a few sections in a case are not quite complete; in short; all of the "kinks" that have been learned from years of experience and the "feeding back" of tons of honey.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

Your

ATTENTION, PLEASE.

One untested queen in June,	\$1.00
One " " July to Sep., . . . . .	.75
Six " queens in June,	5.00
Six " " July to Sep.,	4.00
One 2-frame Nucleus in June,	2.75
One 4-frame " " " " " " " " " " " " " "	4.00

All nuclei contain untested queens. Send for circular and sample of my **5-Banded Beauties**.

J. F. MICHAEL,

1-94-9t

German, Darke Co. Ohio.

Please mention the Review.

Muth's HONEY EXTRACTOR PERFECTION Cold-Blast Smokers Square Glass Honey Jars, Etc.

For Circulars, apply to CHAS. F. MUTH & SON
Cor. Freeman & Central Aves., Cincinnati, O.
Send **10c.** for Practical Hints to Bee Keepers.

1-94-1f.

Please mention the Review.

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Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address
T. G. Newman, 147 So. Western Ave., Chicago.

Please Cut Out This whole Advt. Sign, and Mail.

Please send me the American Bee Journal each week for Three Months. At the end of that time I will remit \$1.00 for 1 year's subscription, or 25c. in case I decide to discontinue.

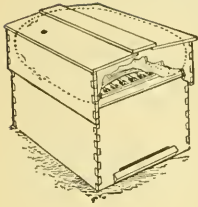
To the Publishers of **American Bee Journal**, 56 Fifth Avenue, CHICAGO, ILL.

Name _____

P. O. _____

State _____

THE



Root Dovetailed Chaff Hive.

IT IS NEAT, LIGHT, WELL DESIGNED,

—AND A—

PERFECT WINTERING HIVE.

The walls, both outer and inner, are made of clear $\frac{3}{8}$ -inch pine, and have two inches of space between them for packing. The corners are, of course, dovetailed for strength and lightness. The cover is seven inches deep, and telescopes clear over the water-table, making it impossible for water to seep in and wet the cushion. In summer this cover makes a perfect "umbrella shade-board." The furniture, including supers and covers for the regular single-walled Dovetailed Hive, also fits the hive. For a hive for **ALL PURPOSES** we know of nothing better. It weighs, when packed with chaff, only five pounds more than the same capacity in the single wall. As to **WINTERING**, we have tested this hive thoroughly, and know it to be a success. By the way, don't forget that we have a

Dovetailed Winter Case

Designed for use as a protection in wintering, for the regular single-walled Dovetailed Hive. It is made up of the same cover as shown above, and the same outside wall. Write for prices and particulars on both the winter case and Dovetailed Chaff Hive before you place your order.

A 52-page Catalog sent free.

A. I. ROOT, Medina, Ohio.

Special Offer.

In order to introduce our five-banded, golden, and three-banded, leather-colored bees in your locality, we will sell queens at the following prices: untested, 60 cts.; warranted, 75 cts.; tested, \$1.00; select, \$2.00; the very best breeding queen, \$6.00. We have two, large queen-rearing yards containing nearly 500 nuclei.

LEININGER BROS.,

3-94-1f Fort Jennings, Ohio.

Please mention the Review.

PATENT. WIRED, COMB FOUNDATION

HAS NO SAG IN BROOD FRAMES.

Thin, Flat - Bottom Foundation

HAS NO FISHBONE IN SURPLUS HONEY.

Being the cleanest, it is usually worked quicker than any fdn. made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),

3-90-1f Sprout Brook, Mont. Co., N.Y.

Please mention the Review.



75 Golden, 5-Banded Queens

All ready to mail, at 60 cts. each. Over 1,500 sold up to date and customers well pleased. Only one queen lost in shipping 8 94-1f

N. H. SMITH, Tilbury Center, Ont., Canada.

Please mention the Review.

QUIGLEY'S

QUEENS

Produce Big Yellow Bees that Winter Outdoors, Gather Lots of Honey, and are Gentle. Warranted Purely Mated, each \$1.00; six for \$5.00; 12 for \$8.00. They are Beauties! Safe arrival and satisfaction guaranteed. 3-94-1f

In ordering be sure and mention the REVIEW.
E. F. QUIGLEY, Unionville, Mo.

Please mention the Review.

MONEY RETURNED to all buying **PORTER BEE ESCAPES** not satisfied after testing them. Prominent bee-keepers everywhere use and highly recommend them as the best. No others received a World's Fair award. Testimonials, etc., free. Prices: Each, postpaid with directions, 20 cts.; per doz., \$2.25. Order from your dealer, or the mfrs., **R. & E. C. PORTER, LEWISTOWN, ILL.**

The Bee-Keepers' Review

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, AUG. 10. 1894. NO. 8

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

EXPERIMENTS IN PACKING, SPRING FEEDING,
ETC., ETC.



HEREWITH is presented a table in continuation and probably in conclusion for the season, of experiments instituted to determine if possible the advantages or disadvantages of stimulative feed-

ing and spring protection, showing results obtained up to the end of the clover and basswood season. It is hardly necessary to say that the table should be studied in connection with the one in the July number of the REVIEW. A correction is also to be made in that table in the case of number 6 of the unpacked one-story hives; its history should run: 5 29 5 + 28¾ instead of 4 - 25 4 + 25¼ as now.

The season has been exceedingly unpropitious for almost all kinds of experiments. White clover furnished very little pasturage for the bees; there was sufficient alsike clo-

ver in the neighborhood to yield a small amount of surplus, but it came in so slowly that the bees were disposed to store it in the brood combs rather than to draw out foundation in the surplus apartments. This state of things made it appear desirable to give a hive of combs for a greater or less time to a considerable number of the colonies under consideration in order to prevent the overloading of the brood chambers. The first column in the table, or at least the one following the one in which the age of the queen is given, indicates the colonies to which the hives of combs were given and the amount of honey stored in them. After the alsike came basswood from which the flow though light was the best of the season. The result is that this experiment is in some degree unsatisfactory in that it has not been attended by a good average season for honey production and yet in addition to the light it gives on the advantages and disadvantages of spring feeding and protection which appears satisfactory, it gives hints both in regard to the right methods to be pursued touching the solution of several important disputed matters as well as in regard to the real truth concerning them.

Especially I would call the attention of those who are in a state of doubt with regard to the most advantageous size of brood chambers to the figures in the table for the means of making a comparison between hives containing comb equal to that of ten L. frames and those containing only half as much. No one, I believe, claims the brood

Table continued showing results of experiments in packing colonies in spring, in feeding in spring, in advantages of different sized hives, etc. From June 10 to July 20.

No.	Age of Queen.	Gain in hive of combs added.	Gain in weight of hive given swarm.	Total weight of brood chamber.	Gain in weight of extracted honey and bees	Gain in comb honey	Total gain.	Average gain in brood chamber, omitting those which lost queen or bees in swarming.	Average gain in comb honey with same omissions.	Average total gain with same omissions.
TWO-STORY HEDDON HIVE PACKED AND FED.										
1	1 yr.			64-8	30-8		30-8			
2	2 "			75-12	27-12		27-12			
6	3 "			66	23-12	14-8	38-4			
7	1 "		5	65-8	27	15	42			
9	2 "			77-8	34-4	9-4	43-8			
					145-4	38-12	182	28.65	7.75	36.40
SAME NOT FED.										
3	2 "			69-4	31-4		31-4			
4	1 "			63-8	21-4		21-4			
5	1 "		22-12	66	37	17-4	51-4			
8	1 "			69	32-12		32-12			
					122-4	17-4	139-8	30.56	4.31	34.87
TWO-STORY HEDDON HIVE NOT PACKED. FED.										
** 2	2 "			81	28-4		28-4			
4	1 "	11-12	16-8	69	57	27-8	84-8			
7	1 "		8	66-8	13-12	32	45-12			
10	1 "		20-4	69-12	36	13-8	49-8			
*17	1 "		23	61-12	40		40			
Total exc'ng those losing queens or bees				106-12	73		179-12	35.58	24.33	59.92
Total				-	175	73	248			
SAME NOT FED.										
1	2 "		9-8	67-8	17-8	17-12	35-4			
3	2 "			70	15-12	17	32-12			
5	1 "	11-8		63-8	32-8	4-8	37			
6	2 "	21		64	40-8	4	44-8			
8	2 "	9		72	41		41			
*9	1 "	8	11	59	34		34			
11	2 "			71	20	27	47			
12	2 "	14	15-8	60-8	36	18-8	54-8			
13	1 "	9-8		74-4	39	1-8	40-8			
14	2 "	7	23	56-4	37-8	2	39-8			
15	2 "	13-12	17-8	60-12	38		38			
+16				75	35-12		35-12			
18	2 "			62-8	25	14-8	39-8			
19	2 "			59	36-12	2-4	39			
20	1 "	12-8								
Total exc'ng those losing queens or bees				415-4	109		524-4	31.94	8.38	40.32
Total				-	149-4	109	558-4			
ONE-STORY HEDDON HIVE PACKED AND FED.										
1	1 "			37-4	9-12	13	22-12			
2	1 "		17	42-4	31-4		31-4			
8	1 "			37	10	13	23			
9	1 "			41-12	16-8	6	22-8			
11	1 "			38-8	11-8	14	25-8			
Total				-	79	46	125	15.8	9.2	25

No.	Age of queen.	Gain in hive of combs added.	Gain in weight of hive given swarm.	Total weight of brood chamber.	Gain in weight of extracted honey and bees	Gain in comb honey.	Total gain.	Average gain in brood chamber, omitting those which lost queen or bees in swarming.	Average gain in comb honey with same omissions.	Average total gain with same omissions.
SAME NOT FED.										
3	2	"		36	14-4		14-4			
4	1	"		35-8	8-8	10	18-8			
15	1	"								
6	1	"	11	32-4	1-4	12-8	13-12			
7	1	"		36	4-8	26-12	31-4			
10	2	"		43	14-8		14-8			
12	2	"		40-8	14-4		14-4			
Total	-	-	-	-	57-4	49-4	103-8	9.54	8.21	17.75
ONE-STORY HEDDON HIVE NOT PACKED. FED.										
**3	2	"		26-8	2-8		2-8			
5	1	"		39-8	13-12	14	27-12			
9	1	"		84-12	34-8	3-8	38			
13	3	"		34-8	8-4	37-8	45-12			
16	2	"		36-8	12-4	6-4	18-8			
17	1	"		37	9-8	28-4	37-12			
Total less those losing queen or bees					78-4	89-8	167-12			
Total	-	-	-	-	80-12	89-8	170-4	15.65	17.90	33.55
SAME NOT FED.										
1	1	"	17	72	30-4	16-12	47			
2	1	"		72-8	34	25-12	59-12			
4	1	"	15-8	76	35		35			
6	2	"	18	71-12	35	7-4	42-4			
7	1	"		39-4	6-4	17	23-4			
8	1	"	21	69-12	24-4		24-4			
10	1	"	14	77-4	37		37			
11	1	"	11	59-12	23-8		23-8			
12	2	"	13-8	49	9		9			
14	1	"		74	26-12	21-4	48			
15	1	"		71-4	31-8	20-4	51-12			
18	2	"	19	54	11-4		11-4			
19	1	"		56-12	12-12	13-8	26-4			
20	2	"	13	55-4	19		19			
Total	-	-	-	-	335-8	121-12	457-4	23.96	8.69	32.66
Average of two-story colonies fed. 31.95 13.97 45.22										
" " " " not fed 31.61 7.42 39.04										
" " " " packed 39.50 6.22 35.72										
" " " " not packed 32.62 11.37 44. .										
" " one " " fed 15.72 13.55 29.27										
" " " " not fed 19.64 8.55 28.19										
" " " " packed 12.38 8.66 21.04										
" " " " not packed 21.77 11.11 32.89										
Average of six best two-story colonies 30.21 23.33 53.54										
" " one-story 19.25 26.62 45.87										
" " four best two-story colonies, no hive of comb added 22.06 23.50 45.56										
" " " " one 7.12 27.37 34.50										

* There was loss of bees by mingling in swarming.

** Checked by loss or failure of queen. † Treated for foul brood.

chamber should be as small as the latter, yet does not the profit of the latter compare tolerably well with that of those twice as large though these last contained in the spring all the stronger colonies and the smaller brood chambers all the weaker ones ?

Then again some intimations of the truth may be gleaned from the table touching the supposed advantages and disadvantages of swarms. Is there anything in the table upon which an opinion can be predicated that swarming is prejudicial ?

It is very frequently asserted that a large

brood chamber has a greater tendency to prevent the swarming fever than a small one. Is there any truth in the assertion and if so, just what is it? Does not the experiment tend to show that small brood chambers prevent the swarming fever? It will be noticed that the column in the table giving the increase in weight of the hives into which swarms were put also indicates the colonies which cast swarms and from that it appears that of the large hives eleven cast swarms and of the small ones but four.

The table itself scarcely needs any further explanation. Following the table is a summary giving a comparison of the average of those fed with those not fed, and of those packed with those not packed, in each kind of hive, and also a comparison of the results in the case of the best of the large hives with that of the best of the small ones. This single experiment gives those which were given stimulative feeding some advantage over those not so fed, while those not packed give decidedly better results than those which were packed.

Lapeer, Mich.

July 25, 1894.



The Cause of Honey Candying Not Fully Understood.

R. M'KNIGHT.



IN a recent number of the *American Bee Journal* the following questions were propounded to the experts who answer questions through the columns of that journal: 1st, Will all good pure honey granulate in cold weather? 2nd, If not, why not, and how may it be prevented? The answers are interesting, inasmuch as they clearly show that the cause of crystallization is a mystery to all of them; well, indeed, it may be, for I believe the man has not yet been born who has got to the bottom of this mystery.

Professor Tyndal delivered a lecture in Manchester some years ago on "Crystals and molecular force" in which he summer-

ized all that is known of the cause of crystallization. After describing the varied forms of crystals, their planes of cleavage as they manifest themselves in different substances, and many other interesting things in connection with his subject, he says, "Looking at these beautiful edifices, and their internal structure, the pondering mind has forced upon it the questions, How have these crystals been built up? What is the origin of this crystalline architecture?" His reply to these questions is, "Without crossing the boundary of experience we can make no attempt to answer these questions." If the most profoundly scientific minds of this and former generations failed to fathom the depths of this mystery, how can an ordinary bee-keeper be expected to explain it?

The theory of scientists as stated by the Professor is "That polar force may be resident in the molecules of matter and by the play of this force structural arrangement is possible. The atoms and molecules of which crystals are built are endowed with definite poles, whence issue attraction and repulsion for other poles. In virtue of these attractions and repulsions some poles are drawn together, some retreat from each other; atom is thus added to atom, and molecule to molecule—not boisterously or fortuitously but silently and sympathetically and in accordance with laws more rigid than those which guide a human builder when he places his bricks and stones together. From this play of invisible particles we see finally growing up before our eyes these exquisite structures to which we give the name of crystals." Such is the theory of crystallization. While the *cause* is still within the realm of speculation, the result is well known. In many cases the means by which the result may be brought about is also understood. It is known to the salt manufacturer. It is known to the sugar refiner, as well as to the bumpkin who boils sap in the maple grove. It is understood by the thrifty maiden who converts a naked wire framework into a thing of beauty, by coating the unsightly skeleton with alum crystals; and to the confectioner who strings his "rock-candy" on slender threads. While we are ignorant of the *cause* of crystallization, I say we know the means by which it may be effected in many substances, and we are also acquainted with the agent to be employed in taking down those crystalline edifices—in

reducing to the freedom of liquidity molecules which have been previously locked in one another's embrace, and knowing these things, as practical bee keepers, we know about all we need concern ourselves about on the subject.

Whilst the molecular force, to which Professor Tyndal refers is present and active in many substances it is either absent or latent in others. It is both present and active in cane and grape sugar, of which the greater part of honey consists, hence we have candied or crystallized honey. It is either absent or latent in fruit sugar, which is also a constituent of honey. As this cannot be crystallized it floats on top of the candied mass, in a glycerine-like substance, generally in small, but sometimes in considerable quantities.

OWEN SOUND, Ont.

July 28, 1894.



Notes From Foreign Journals.

KATHRINE M. INGLIS.

HERE are few of us who have not at some time had our sympathy awakened for Bulgaria by the political position of that country; but from an article published in the *Deutsche Illustrierte Bienenzeitung* for April, it would seem that she has a special claim upon bee-keepers for sympathy. The writer, Herr Stoiko Demitrieff, represents a sad state of affairs. Bees are to be found indeed in almost every village, but no care is taken to keep them to advantage. The usual hive is formed of roots woven together, and plastered inside and out with cowdung. It has a diameter at the bottom of 45 centimeters, and running up to a point is from 50 to 55 centimeters high. Sometimes the proportions are even smaller. The hive is generally set on the damp ground, and the whole under margin forms the entrance. The bees find their way out on all sides and the vermin as easily find their way in.

Little work is made of caring for the bees. Except for hiving the swarms nothing is done for them. In September peddlers, for the most part Jews, come around and buy the bees of the farmers to "take up." Twenty-five to forty per cent. of the colonies lose their lives in this way. The dealer extracts the honey by means of warm water and sells it in the cities.

Few bee keepers make any preparation for wintering their bees, and those who do simply raise the earth around the hives from twenty to thirty cm., then cover the whole with manure from the cow stalls. In spring there is great rejoicing if even a small part of the colonies survive. When there is no protection, which is generally the case, even the weather hardened bees of Bulgaria cannot survive the cold North-Bulgarian winters.

One is glad to record a brighter side. The bee pasture in Bulgaria is excellent, and continues without break from May till the frosts. The present king in his care for his people has turned his attention to bee-keeping. Premiums are offered to all bee-keepers owning ten or more Dzierzon or one hundred or more old style hives with fixed combs. To students in the State Institute hives and furnishings are given gratis. There is need, and hope, of a Bulgarian bee literature, particularly a text-book and a journal. Then the way is opening for a school of bee-keeping and a bee-keepers' society, so that dark as the present may be the out-look for the future is brighter and more hopeful.

A pleasant side-light is thrown on the character of Frederick the Great in an extract from Herr Hileher's new book, *History of Bee-Keeping in The Province*, published in the *Deutsche Bienenzeitung* for March. We find the following quotations the first from an ordinance published by Frederick in May 1771.

"In the electoral province there are 900 villages, and if each village in time produces ten pounds of silk, then we will need 9,000 pounds less of foreign silk, and will keep the price of it in our own country. Bee-keeping is also a useful matter. If each farmer in the districts where it is practicable, possessed a few hives, he would earn something from them, and in time the profits from the silk-worm culture and the bees would reach the amount of his taxes, and then the grain and whatever he earns now would remain clear profit to him."

In a decree published first in June 1775, he says:

"If anyone offers for sale any injurious poisonous substance mixed with honey, by means of which, not only is the Royal wish in regard to the protection of the most useful bee trade frustrated, but injury is also inflicted on others, six years' imprisonment

with corporal punishment shall be the penalty; moreover, if the health of anyone is injured by this substance the responsible person will be prosecuted as a criminal."

In answer to a question asked by a subscriber, "What is the relative proportion of the nutritive qualities of a kilogram of honey and a kilogram of beef?" *L'Apiculteur* for July, replies that the question cannot be answered categorically on account of the different roles played by these two foods in alimentation. The substances necessary to sustain life are water, albumenoids, hydrocarbonites, fats and a very small proportion of mineral substance.

The following table shows the relative values of meat and honey:

	Water.	Alb.	Hyd.	Fats.	Salts.
Meat	730	175	40	11	—
Honey	220	—	770.780	—	—

Meat and honey then supplement each other, the one furnishing the albumenoids, the other the hydrocarbonites and it must be added in favor of honey that it is so easily assimilated not requiring the first process of digestion through which other foods have to pass.

In one of the Swiss journals we notice that a chocolate manufactory in Berne has been very successful in using honey instead of sugar in the preparation of the chocolate.

LAPEER, Mich.

July 23, 1894.



A Novel Way of Holding a Queen While Clipping Her Wings.

F. J. MILLER.

FRIEND HUTCHINSON:—The article on queen clipping in June REVIEW caused me to smile so much (of course I ought not to as it originally came from Frank Benton) I thought I must ask you to try the simple plan I have adopted. I use the Heddon frame and, it being long and narrow, I hold it until the queen is gently led or directed by the front finger to do so if she will not stay on the center of comb, then when she is rather nearer one end I gently rest one end of the comb on the ground near enough to the hive so that the upper end of the frame will rest against it at a convenient angle to work, meanwhile keeping the eye on the queen. If she attempts moving away from the upper end of the comb I use the front finger of right hand again by placing it half an inch or so in advance of her thus causing her to turn and move gently in an-

other direction, by this time my left hand is free from placing the frame in position and assumes the work of keeping the queen in the allotted space of about four inches square, while the right hand grasps the scissors, which are very small, and with the finger as before indicated I turn the queen's course up or toward my left hand as I am stooped and facing the comb. Now as she is moving in the direction I want her I place the left thumb and fore finger down on the comb just in advance of the queen, thumb and finger nearly closed at first joint but spread as far as possible at the points, at the same time I guide her with the points of scissors from turning around, and by this means cause her to run between the thumb and finger. Or I place the thumb and finger over her head and shoulders as the case may be, gently pressing her to the comb, when I consider her in the best possible position to clip.

I have written this out in detail that you might more quickly understand and be led to try the plan. To clip is only the work of a moment, and the queen is not frightened or injured and is left right where we found her. I clipped over fifty queens in my yard last spring without a mishap.

LONDON, Canada.

June 28, 1894.



How to Burn Brimstone for Fumigating Purposes.

J. VAN DEUSEN.

NOTICE in the *American Bee-Keeper* (July) an article in regard to fumigating combs, evidently given by Doolittle to *Gleanings*. Having burnt barrels of roll brimstone in bleaching yarn, I will give my method—which if you choose to insert it is at your disposal.

Take a clean iron kettle, free from ashes and coals, get the butt end of an old sleigh shoe as long as will lay flat in the kettle or what is better an iron ring three inches inside diameter made from one inch iron. Heat it till you can see it is red in the dark. This can be handled with a stove poker. Put the roll of brimstone in the kettle and put the iron on it, and if not too hot it will burn slowly, holding a fume a long time. If the iron is too hot it burns quicker and does not hold the fume as long or as safely. Set the kettle up on bricks to make it safe from the floor.

SPROUT BROOK, N. Y.

July 23, 1894.

Bees Can Escape Pretty Lively When Going
One at a Time,—Poor Seasons To Be
Expected.

B. TAYLOR.



EDITOR REVIEW :
I have been studying that article of Bro. C. W. Day'on's on bee escapes in July REVIEW. I regard friend Dayton as one of the most philosophical and interesting of theoretical as well as practical writers on api-

arian subjects, but I cannot agree with him on the need of a large outlet to escapes, and I have reason for believing that his idea of the bees crowding through a Porter escape "four abreast and two deep" is purely imaginary. My reason for so believing is that after many year's trial of an escape in which the passage is so small that only one bee at a time can get through, I find it will empty a super of many or few bees as quickly as an escape of any size or shape.

I have just finished taking off my comb honey crop for 1894, and it reminds me of an old lady who, when told that her harvest of wheat was not worth cutting, relieved her feelings by exclaiming: "Well, thank God the neighbors are no better off." I have no need of expressing myself that way, for while the bee-keepers here have as a rule made a complete failure in getting a crop of any kind of honey, the Forestville apiary is able to report a small crop (fifty pounds per colony spring count) of nice white honey. The drouth spoiled every thing except basswood, which yielded honey for two weeks, and in this short time some of the colonies stored and sealed three, 24-section supers of No. 1 honey. Finished combs did it; without these I should have had no finished honey worth mentioning. This honey we have just removed from the hives, using four Porter, and about 25 handy escapes. The Porter does its work perfectly, and so does the little handy escape which is so small that only one bee can get into it at a time. We would put 20 or 25 escapes on as many hives in the forenoon of one day and the next morning go and take the fifty or more su-

pers away without the bees ever seeming to know they were robbed. What strange thoughts comes to our mind when we remember that there are old leading bee-keepers who yet decry the value of escapes.

What a strange thing is man and his prejudices. I am ready to admit that after having spent thirty years trying to improve old things and make *better* new ones, that in the whole I have made but little advance, as I am compelled to accept the hive that I invented thirty years ago as better in many ways for *practical use* than any thing of later date. But there are several new things that are of great value, and of these the escape will hold its own for all time.

And now, brother inventors, I give ourselves the credit of being the most indispensable to civilization of all classes of men. Just reflect what the world would be with the inventor and his work left out. No houses to live in, no clothes to wear, no books or papers to read. Just stop and think the subject up for yourselves and decide whether the inventor, who has laid awake while others slept, should not be honored; and yet, let inventors be modest, for no one person has added little more than a *fraction* to the great work of improvement. But I believe the bee escape to be now practically perfect. To put them on one day and take off the cleaned supers the next morning, is what I regard as perfection and any thing that would work in shorter time would, in my opinion, be detrimental to the best results: for we need, not only to get the bees out of the supers, but to get them out in such a way as to leave the colony *unaware of its loss* and then there will be no cross, combative feeling stirred up in the bees. Either the Porter or handy escape I now know will do this work to perfection. Mr. Dayton is entirely right when he says that any escape on the perforated tin or wire cloth plan is *misleading to the bees* and wrong, to which I say, from *experience*, amen. The *best* escape is one in which the bees have no *possible hope* of getting to the brood nest except through the escape. Now, Mr. Editor, I do not want this rambling article to be construed to be in any way a hostile criticism of Bro. Dayton, for I believe I could talk for a week with him with an interest and satisfaction that would be impossible with most men. Mr. Dayton is not only a thinker but his thoughts at once go in search of the mysteries that conceal utility. I have read his philosoph-

ical article on the best form of hives for brood nests with supreme satisfaction. The same line of reasoning, coupled with experience led me to adopt the hives I have used so long. Long life to Bro. Dayton.

[Accompanying the foregoing was a private letter from which I make the following extract. —ED.]

DEAR FRIEND H.:—How sorry I am to learn you cannot come to visit us, but you no doubt act wisely. These are uncertain times, and our first duty is to make home and family safe and happy. I have no one necessarily dependent on me, yet I feel that at this time I can be happier by staying near home. The bee business has received a black eye here this year. We have had off-years now since 1889. I have suspected for some time that our old time certainty of a honey crop was gone to stay. The cultivation of a new country invites drouth. The rooting out of wild flowers brings in white clover, which I at one time believed would more than balance the loss of wild flowers, but I now know I was mistaken. Clover is so killed by drouth this year that it will be no good next season. I am not discouraged, as I have long believed that I could secure a living crop of honey even in poor seasons. I have been preparing to act, and have made my intention good this year.

FORESTVILLE, MISS. Aug. 10, 1894.



What are the Benefits of Affiliation, and How Can the North American be Made More Useful?

E. T. ABBOTT.

THE articles of incorporation of the North American Bee-Keepers' Association (which it would not be a bad idea for all the bee papers to publish in full) adopted at Keokuk, say:

"This Association shall consist of its officers, life members, delegates from affiliated local associations, and ex-Presidents."

They then set forth the conditions on which bee-keepers may become life and annual members, and say that "delegates from affiliated local associations shall be admitted free." It is further stated that any "State, District, Territory, or Province in North America may become affiliated upon the annual payment of \$5.00, which shall be due

on the first day of January in each year, in advance."

I would like to learn now how many there are of these "affiliated" associations at the present time. I see a list of eight is given in the report of the meeting at Keokuk, but I find nothing in the last Annual Report to indicate that there were any "affiliated" associations at that time. If not, why not?

Then again, what benefit is to be derived from becoming "affiliated?"

These are merely questions thrown out to provoke an expression of opinion, if possible, on the part of our leading bee-keepers.

It is a truth which no one can gainsay, that it is human nature not to remain "affiliated" very long when no benefit of any kind is to be derived from the affiliation. I can see how every individual who attends a meeting of the North American can be greatly benefitted, but I confess I do not see where the benefit is to accrue to those who are only "affiliated," and never attend any of the meetings. It seems to me that it ought to be possible to identify the interest of all local societies more closely than they are at present with that of the National. I do not know just how this can be done, but I want to suggest a plan by which I think it could be brought about at our next meeting, in October. I should like very much to see this the largest meeting that was ever held in the interest of apiculture on this continent.

This can be done with very little effort, if we all set about it at once in the right way. I would suggest, first, that every county in the United States, where there is a sufficient number of bee-keepers, organize at once a local society. Let each member pay in a fee of fifty cents, and then proceed to elect a delegate to the North American, and equip him with money enough to pay his expenses, and \$1.00 for the annual membership fee. Discuss thoroughly what you would like to have him present to the North American, and send him out instructed to vote every time for the thing that comes the nearest representing what the local society desires. As part pay for the benefit this delegate is to derive personally from attending the North American, he should be required to write up fully the entire trip and the doings of the North American, and present this to the next meeting of the local society. Our Canadian friends should do the same in every Province in Canada. In this way we could secure a very large attendance, and create

sufficient enthusiasm to put the North American in the way to be a power in the land. What say you? What County or Province will be the first to respond to this proposition?

I am making local arrangements for a big crowd, and a good time generally. The Commercial Club, of this city, has come to the front, and tendered me the use of the rooms in which to hold our meetings, and they are doing all they can to help secure reduced rates on the railroads. Just as soon as the matter of rates is settled, it will be published, but I trust no one will wait for this before making up his or her mind to come. The Commercial Club has one of the finest rooms in the city, centrally located, and near to good hotels which have made me liberal rates for our meeting.

We have been promised essays from some of the leading bee-keepers of the world. Mr. Benton is working hard to prepare a good programme—one that will be both entertaining and profitable. Dr. Miller and a host of others who are a whole convention in themselves, will be here, and the meeting cannot fail to be beneficial to all who may attend. If you have but one colony, come and learn how to care for more.

Friend Stilson has struck the right key in the last *Nebraska Bee-Keeper*. He says: "Let's make up a carload or more and start from Lincoln."

That's the way to talk; come on with your carloads, and this city of the "wild and woolly West" will try to do her part.

I have received a number of letters and cards from those who expect to be here, but still there is room for more. Let them come and come fast! Every one counts, and helps to swell the swarm of bee-keepers that will be buzzing in the air in our fair city on October 16th, 17th and 18th.

We will furnish the hive if the people will only "swarm."

ST. JOSEPH, MO.

Aug. 10, 1894.

[The efforts of President Abbott to increase the permanent membership and the usefulness of the Society are commendable. He may well inquire what are the advantages resulting from affiliation. The principal advantage is that the affiliated Society receives a silver medal to be given to some one of its members making the most creditable show of honey at some of its meetings. The large number of Societies that affiliated

after the Keokuk meeting was due, I think, to the efforts of Mr. Dadant, the newly elected Secretary. When I was Secretary two years ago, only five Societies sent in their dues.

Over in Canada the Ontario Bee-Keepers' Association receives from the government a grant of \$500, and each affiliated Society receives a portion of this grant. Here is a solid, substantial benefit from affiliation. The money thus received is used in buying literature, etc., for the members, in prizes at honey shows, in short, in any way that each Society sees fit. The Illinois State Society once received a grant of \$500 to use in printing and circulating a report of its proceedings. This enabled the Society to get up some very handsome reports, but I honestly believe that the money might have been put to some better use so far as actual benefits to the members of the society were concerned. Michigan prints without charge the report of its State Dairymen's Convention, and I presume that it, or any State, would print the report of its State Bee-Keepers' Convention if asked to do so. I do not know that the North American Bee-Keepers' Association could secure a grant or appropriation from the general government, or from the agricultural department. If this could be done there would be no trouble in securing plenty of affiliation from other Societies, and in building up a strong Society that would be something more than a grand visiting party once a year, first in this part of the country and then that.—Ed.]



Swarm Catchers Catch it Again.—Mr. Dibern Replies.

C. H. DIBBERN.

WHAT'S a good article of Mr. B. Taylor on page 188 of the REVIEW; but I did not know that he was a comic writer, as well as bee-keeper. In regard to the swarm catchers, of which he tries to make so much, I will say that all I stated in my former article is strictly true, and I did not state all the faults of the catchers either. I made and used them long before I ever saw them mentioned in the bee papers, and they were original with me, though I make no claim to having invented them.

Mr. Taylor's statement that he hived 25 swarms with them in three hours, and 95 in

five days, is certainly remarkable. Of course, if Mr. T told us he hived his swarms at the rate of one per minute, I would believe him, as he is a bee-keeper, and, like "George with his little hatchet" can not depart from the truth, but the way he must have hopped, skipped, and jumped, would no doubt, lay any of my former performances, in this line, in the shade. No wonder he has been obliged to reduce his colonies to less than 100 on account of physical disability. Working at such a rate, would soon "lay out" a Goliath! Mr. T. thinks that I must be very awkward, which may be true; but I am not awkward, or fool enough, to go running up and down the apiary, in the hot sun, with swarm catchers. But Mr. T. finds many other uses for them besides hiving bees. Now that's something I had not thought of—perhaps they would make good chicken coops! As to controlling swarms that are trying to desert their hives, it will work all right, if you are right there, catcher in hand, to "clap it on to them," the minute the first few circling bees come swarming out; but it is a good deal like watching a pot commence to boil; the moment your back is turned, or you go to dinner, the bees will be in the air, and you can then watch them as they sail "over the hills and far away." No sir, for that purpose a queen cage or drone trap is worth a dozen catchers.

Talk about the "citizens of Milan" enjoying a circus at my apiary! Why, the way Mr. Taylor says he "gets around" I would not be "in it" at all! With his "house apiaries," merry-go-round, non-swarmer, convenient holes about his apiary "as big as a barrel" to fall into, I suppose when he performs the disappearance act, my performances would not even pass for a side show. If Mr. Taylor will let me know when his circus will be in full blast, I think I could get up an excursion, of the citizens of Milan, to go to Forestville to see the show.

But Mr. Taylor himself seems to be abandoning the swarm catcher, as he says at the close of his article, that he now usually allows the first swarm in the morning to settle on a convenient bush he has. That is well: and I think he would find it much easier if he would allow all succeeding swarms to do the same, instead of running around the apiary, in the hot sun, with swarm catchers. What we want is less work for the bee-keeper, not *more*, and we want that work more certain, to secure the best results.

When bees swarm, their efforts are interfered with by anything like a catcher, and they will keep up a great fuss for some fifteen minutes in their efforts to get out. During this time many bees will go back to the old hive, and frequently all return, and they will have to try it over again. But it often happens that part of the swarm had got out before we saw them, and should the bees in the catcher go back to their hive, we can never know just where the queen is should much swarming be going on. With the drone trap or self-hiver, the principles of which are alike, the case is far different. The queens are always kept separate and the bees swarm out naturally. When they miss their queen they return and are hived whether we are there or not. This of course refers to hivers, not mere traps. By the use of self-hivers we can do much of the work in the winter, and when swarming commences, we can do the work mornings and evenings, and little more than seeing what is going on need be done in the heat of the day while the swarming is going on.

No doubt as Mr. Taylor grows up he will begin to see the error of his ways and throw away his obsolete swarm catchers, and sing the praises of the self-hiver. In about ten years, we may expect to see long articles from him, lauding the hiver, and how he himself studied them up, and "invented" them.

MILAN, Ills.

Aug. 8, 1894.



The Term "Hybrid."

JOHN PHIN.

IN the REVIEW for June Mr. Hasty advocates the retention of the term "hybrid" claiming that there is no other word that can be used in this connection. To the word "mongrel" he very properly objects, although the reason given appears to me to be anything but sound.

The correct term has been in use many years (at least a century and a half) in the case of other animals and was applied by Langstroth, in the 3rd edition of his work, to the progeny of the Italian and the black bee.

The word is *cross*.

A hybrid is the progeny of different species and no entomologist will claim that the Italian bee and the black bee are different species.

A queen which has mated with a drone of another race is a "cross-mated" queen. To call her a "hybrid" is worse than an absurdity.

Quality, etc., has nothing to do with the matter. We have seen mongrel dogs that were amongst the best dogs existing, but they were mongrels, nevertheless. If a bee is the descendant of a mixed ancestry—Italian, Carniolan, black, etc., it is a mongrel, no matter how good it may be.

A cross necessarily implies the progeny of two races and may be first, second, third, etc. Any standard work on breeding will give full information on the point.

As applied to bees the whole subject was carefully worked out by me and published ten years ago in my little "Dictionary of Apiculture."

CEDAR BRAE, N. J.

July 24, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

TERMS:—\$1.00 a year in advance. Two copies \$1.90; three for \$2.70; five for \$4.00; ten or more, 70 cents each. If it is desired to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing, otherwise it will be continued

FLINT, MICHIGAN. AUG. 10, 1894.

EIGHTEEN NEWSPAPERS and periodicals are published in Flint which is a town of only 10,000 inhabitants.

"HYBRID" as applied to cross-bred bees is, of course, incorrect, but the word has been misused in this way so long that it is doubtful if a reform can be brought about.

A TEN-PENNY Wire Nail is recommended by *Gleanings* for prying loose frames. It can be carried in the pencil pocket and will answer very well unless the frames are stuck in "awful" tight.

THE APICULTURIST for July did not contain so many pages as usual, the editor considering "a few pages well-filled with valuable information more satisfactory than forty pages of trashy stuff." I think that Bro. Alley's views and management in this instance are really excellent.

SIX QUEENS were sent me about two weeks ago with no mark whatever on the cages to indicate who sent them. The cages looked like home-made ones—sawed out with a foot power saw. Who sent them?

TEN POUNDS per colony is the extent of my honey crop this year. White clover is my only source for surplus and it was pretty nearly a failure. Others in this vicinity who were near basswood secured fair crops.

DEAD BROOD has been found so frequently and in such quantities in the apiary at the "Home of the Honey Bees," in Medina, Ohio, that no more bees or queens will be sent from that apiary this year. It is not expected that foul brood will develop from the dead brood, but it is thought best to err on the safe side.

BEE ESCAPES are a great comfort. I realize this every season when I have honey to take off after the harvest is passed. The escapes may be put on at evening and the next morning the cases free from bees may be carried into the honey house; and the beauty of it is, the bees are not made cross and irritable for several days.

CANDY of the right kind for provisioning queen cages is the main thing in shipping queens successfully. According to *Gleanings* we may yet have to return to the use of granulated sugar for making candy in order to secure uniform results. It should be pounded as fine as possible and then made into a candy with extracted honey.

IN HANDLING COMBS after the first of August, see that they are replaced in the same order as taken out. So says the *Progressive*, and gives as a reason that a colony is often damaged by having the position of the combs changed when preparations have been begun for winter. This would probably make more difference if the bees are to be wintered out of doors.

FULL CREDIT is the thing to give when copying an article, or even reproducing an idea, that has appeared in another journal. I have more respect for the man that has the audacity and effrontery to steal an article right out and out and palm it off as his own, than for one who will slyly label his quotations: "an exchange," "a western journal," "an American journal," and so forth, thus

avoiding giving credit to a rival journal. If an article or idea isn't worth giving full credit for, it isn't worth copying.

THE AMERICAN BEE-KEEPER thinks that when a "bee-keeper pays 50 cts or \$1.00 for a bee paper, he wants that paper to give him all of the information possible concerning bees. Anyone can buy all the medical, agricultural and religious literature they want at much less elsewhere." I agree with this, but it seems that there is a difference of opinions, as some of the readers of some of the bee journals seem greatly pleased at the introduction of these foreign departments.

THE BEE-KEEPERS' QUARTERLY, just as I expected would be the case, has improved with its second issue. I doubt not that as far as solid, practical, useful information is concerned the *Quarterly* will be the equal of the other journals. Its editor writes from a long, broad, and successful experience, and there is little danger of his leading his readers astray. He is outdoing all of the journals in the production of those bright little editorials of from two to a dozen lines that say so much in a few words and are so readable. Bro. Heddon certainly has in him the making of a valuable bee journal.

HONEY BOARDS, of the slat variety, may be temporarily made into escape boards by covering them with a sheet of thick paper. It will be necessary to remove one of the slats in order to put in the escape, or else a hole will have to be cut, and afterwards covered with a piece of tin. If there is much use for escapes it is better to have regular boards for that purpose, as the bees will eventually gnaw holes through the paper. I used this year about a dozen honey boards covered with paper, but about the third day the bees began to get through them—but my honey was just about off by that time.

CLEANING STICKY FINGERS.

Mr. Allen Pringle, in the *Practical Bee-Keeper* objects to the licking of the fingers when there is honey on them. He says; "I want to eat my honey at meal time, and I want neither to eat food nor lick food between meals." I think Mr. Pringle is right in this respect. I consider this "eating between meals" the greatest objection to licking the honey off the fingers. Mr. Pringle's

plan is to carry a wet cloth in his tool basket. But I haven't a tool basket or box and don't want one. I want nothing to lug around with me except the smoker, and I wouldn't carry that if it could possibly be avoided. If I were going to carry around a wet cloth I think I should tie it fast to one of my suspenders.

ERNEST ROOT drove his bicycle into our yard one evening last week and we talked bees and photography during most of the waking hours until the next day at ten o'clock when he left to visit Mr. R. L. Taylor. He will go West, probably as far as Wisconsin, visiting bee-keepers on his way. An account of the trip will probably appear in *Gleanings*. I saw him a few moments in the afternoon when he had returned from Lapeer and was waiting for the train that was to bear him northward. He said that "dead brood," similar to that to be found in their apiary, was found in Mr. Taylor's apiary. He also saw a case of foul brood in the Taylor apiary, and there was a decided difference between it and the "dead brood." I have yet to see any "dead brood" in my apiary.

QUEENS in large numbers are now being kept in the REVIEW apiary by means of the Atchley plan. An old style Heddon super is divided into eight compartments, three unfinished sections and a caged queen placed in each compartment, and the super placed over a queenless colony. The bees rush up and cluster around the queen and between the sections. Just at dusk the super is placed upon a bottom board having a raised rim around the outside, also strips across the center to correspond with the divisions in the case, and carried to a new stand in some shady, secluded spot. Each little compartment is furnished with an entrance cut through the rim around the outside of the bottom board. A piece of queen excluding metal, with a single opening, is placed in each entrance. Each little hive is furnished with a separate cover, and over all is laid a flat board cover. The next day at dusk the queens are released. I have yet to have a queen killed in one of these little clusters. Robbers give no trouble whatever. It isn't that they do not find the hives as I often see them "snooping" around them, but they seem to hesitate about crawling through the perforated metal when there

is any opposition back of it. This plan keeps the queens in the best possible condition for shipment, and enables me to keep a stock of queens on hand all ready for immediate shipment.

AMERICAN BEE JOURNAL TOO LOW IN PRICE.

Bro. York of the *American Bee Journal* says that one of his subscribers complained because better paper is not used in printing the *Bee Journal*. Very properly it is explained that at the present price, and the "slow pay" of some of the subscribers, better paper cannot be afforded. Let the price of a journal be what it may, there will always be delinquent subscribers unless the "pay in advance" rule is strictly enforced, and this greatly reduces the list as I know by a costly experience. The simple fact in the case is that the price of the *American Bee Journal* is too low. Class journals can never be published at such low rates as in the case of general newspapers and magazines, as they can never secure so large lists of subscribers. Most of our bee journals are run in connection with a supply trade, and this enables their proprietors to furnish the journals at prices which allow of very small profits unless the list is large. Bro. York, why don't you raise the price of your paper or else add a supply trade? Perhaps some will think that this is none of my business. Perhaps it isn't; but Bro. York has worked hard, and is yet working hard, and while he is making a good journal, much better than some of us thought he would, only an editor knows how *much* better he could make it if he only had plenty of money to spend upon it. If one-half were added to the price, I will warrant that twice the value would be returned to the subscriber in the way of better paper, more illustrations and an increase in valuable correspondence, etc.

THE BALDRIDGE METHOD OF TREATING FOUL BROOD A SUCCESS.

I have a bee-keeping friend who has treated several colonies for foul brood this season, using the Baldridge treatment. He will allow me to publish his experience but not his name. However, I can vouch for his reliability. Last fall he found that he had fifteen colonies affected with the disease. Some of them were quite bad, others were slightly affected. He made no attempt to treat them, simply marked the hives and wintered all of

his bees in the cellar. In the spring about half of the diseased colonies were dead and most of those alive were weak in numbers. They were placed near together in a secluded part of the yard and finally all united into one colony. An examination of the supposed healthy colonies revealed three more diseased ones—two quite badly and one only showing an occasional dead larva.

As soon as the flow from white clover began one of the colonies was treated by shaking the bees into a new hive containing frames with starters only. There was no cutting out of the combs built during the first four days, *a la McEvoy*, but there has been no sign since of the disease. The other three colonies were treated by the Baldridge plan as published in the REVIEW, and it is now near the middle of August with no trace of the disease showing.

My friend says that the cones do not do their work absolutely perfect. To a certain extent, the returning bees congregate upon the outside of the cone, drawn there perhaps by the odor from the hive and the presence of bees inside. The cone will sometimes become quite thickly covered with bees, and finally some of them will find the entrance at the end, and call the others in. Things did not work to his entire satisfaction with two of the hives until he put a Porter bee escape on the outer end of each cone, then everything was lovely, as not a bee could re-enter the hives. In the other case the cone alone seemed to work all right, but the robbers eventually discovered the entrance to the cone, and, fortunately, he discovered the robbers soon after they made their discovery. The hives were left about a month after the cones were put in place, when two hives contained about half a teacupful each of bees and the other hive not a single bee.

The advantages of this plan are that all of the brood is saved while the disagreeable task of shaking off the bees is avoided, and there is no danger of a bee loaded with foul-broody honey getting into a healthy colony.

It seems that when a bee leaves its hive of its own accord it goes with an empty honey sac and free from the seeds of disease; if, at this moment, or in this condition, it can be transferred to a hive that is free from disease, and be induced to accept the new hive as home, that bee is no longer a source of contagion. This is exactly what the Baldridge plan does—truly the bee escape principle is not without its value to bee-keepers.

My friend also tried the plan of disinfecting hives by painting the insides of them with kerosene oil and burning it off. Such hives have been in use in his yard the entire season without a single case of foul brood developing as the result.

If any one else has tried this plan the past season, I shall be glad to get a report of the results.

EXTRACTED.

One Way to Unite Bees.

Uniting bees will soon be the order of the day, and here is a real cute way to get them to unite themselves. It is from the pen of Dr. Miller and published in *Gleanings*.

"For years I have had colonies unite, generally when I didn't want them to, by being in the same hive with a hole or crack under the division-board. Working on the same principle, here's the way I have united lately: Having the colonies to be united in two separate hives, I set one hive on top of the other, with a piece of heavy wrapping-paper between, the paper having about its center a hole large enough for a bee to go through. That's all. Just put one hive on the other, paper between. In a few days the paper is gnawed away, and the bees all one family. It may fail sometimes, but not thus far with me."

Early Work in Supers.

"Whenever we have read an article headed, 'how to get bees to work in supers,' or 'how to encourage bees to commence early in supers,' or 'how to get the bees to work in the sections,' we have always been compelled to smile. It seems like a waste of space to give room to an article headed thus, in one of our bee journals. There is no way to get bees to gather honey and place it in surplus boxes, when there is no honey in the flowers or the temperature is so low they cannot leave the hive. When, however, the converse, is true, any well bred colony, in a hive of proper construction will be as sure to begin work in the supers, as soon as such a beginning is possible, as the sun is sure to rise in the morning. It is well for every bee-keeper to take some pains in breeding his bees, weeding out the sluggards or 'mules,' as some call them, and breeding in such strains as have an instinct to hustle. If in addition the hives and supers are properly constructed and adjusted, there is nothing more to be done and the apiarist will receive all the surplus nature has in store for him."—*Heddon's Quarterly*.

[It is seldom that I have the pleasure of disagreeing with Bro. Heddon, but in this instance I must take an exception to one or two points. I agree that when no honey is

coming in or the temperature is so low that the bees cannot leave the hives, that no amount of encouragement will lead to work in the supers, but I do know that the flow of honey may be of such a character that colonies furnished with sections containing drawn combs will fill and seal those combs, and perhaps make a slight start in a set of sections filled with foundation, while colonies not given this encouragement to begin work in the supers, simply given a set of sections filled with foundation, have not stored a pound of surplus. Even in ordinary years, the giving of a super supplied with drawn combs will start work in the sections much sooner than when foundation alone is given. As a rule, the sections of drawn comb will be filled and sealed over and work commenced in a second case of sections filled with foundation placed under the first case, just about the time that a colony given sections filled with foundation is just beginning work in its first case. The "inducement" of empty combs leads to earlier work in the sections. This has been my experience, and I have read of similar experiences.—ED.]

Subduing Bees.

I fear that many bee-keepers open the hive first before they even give the bees a smell of smoke. If smoke is to be used, its reception should be the first intimation the bees receive that manipulation is about to commence. Especially is this true at those times of the year when no honey is coming in and the bees are inclined to be irritable. Here are Bro. Heddon's views on this subject, as they appear in his *Quarterly*.

"We believe that most of our readers understand the principle of subduing bees, (a few may not) thoroughly, but it certainly can do no harm to 'stir up your pure minds by way of remembrance.' Smoke followed by a jar, works nicely, but this same admixture, when it is a jar and then smoke, produces very bad results. We believe it is safe to declare that carefully avoiding any jar of the hive before applying the smoke, is the text to the subject of subduing our colonies for handling. The removing of the shade-board and prying up the cover, may be done quickly, but it must be done catlike without the least jar, when the smoke may be applied under the cover, and then quick and rough handling is perfectly admissible. It is usually well to smoke the guards upon the first approach to the hive, especially in times when the bees are a little more irritable. After a colony is once irritated by a jar before smoking, no amount of smoke so completely subdues them."

The Prevention of Swarming.

If there could be discovered some way to prevent swarming, or, to be more exact, the desire to swarm, it would be one of the most advantageous accomplishments that could possibly be placed in the hands of bee-keepers. Even so conservative a man as James Heddon believes that swarming is simply a habit brought about by environments, and that this habit may be bred out by a change in environments and by selection in breeding. Here is what he has to say on this important subject in the last issue of his *Quarterly*.

"To those who would make money in our business there is probably no problem connected with it of more importance than that of swarming. How simple a matter it would be for us to place 10, 20, 40 or 100 colonies or more, in a place, giving plenty of surplus room to each and driving around with our big spring honey wagon two or three times during the season and taking off loads of surplus honey. But alas! bees have an instinct directly contrary to the above profitable proceeding, for just about as the colonies become so strong that they can do good work, out comes almost the entire working force and away they go if we are not there to look after them and you are aware reader that to be constantly on hand, either in person or by proxy, is very expensive.

For the past number of years we have been experimenting in the line of accomplishing our ideal with regard to the above subject. We have never had faith in any machinery or manufacture for the prevention of swarming, so called. However, that is a misnomer, for the various rattle-traps that cost money to build, time to manipulate and hindrance to the bees, are not non-swarmers, correctly speaking, but rather are intended to take care of the swarms that issue. They do not do it and even if they did the colony which develops the swarming mania and then by some contrivance is foiled in the attempt to divide, never does the good work of one in which the swarming tendency has been prevented. The traps designed to catch the swarms and hold them until the apiarist arrives do not fulfill the requirements above referred to and the self hives are costly, cumbersome and ineffective.

We have experimented in the line of breeding out the swarming tendency, a theory which is by no means new but which has never before been followed diligently and in harmony with our ideas of correct principle, that we know of. We will pause to tell you the theory upon which we base our belief and work. As usual we must begin with evolution, the true theory of all development. Bees do not swarm because some one or something intended it as the means of maintenance of species, but from other causes, and the species happens to survive because of this swarming impulse. To find the origin of this impulse we go back over

a period of thousands of generations of the bee in her native state with nature. As we have her in America she is neither in that condition nor country nor is she dependent upon swarming for her survival. In a state of nature it happened that the domicile of a colony of bees was so limited in its capacity that their instinct to store up riches and reproduce their individual numbers could not both be accommodated, and this environment became the author of disaffection, and dissatisfaction, ending in a quarrel, finally ending in swarming. This is the way it happened and if it had not happened in that way the species would now be extinct as many others are. The above named conditions fitted our race of honey bees to survive, and for that reason we are bee-keepers. Now when the apiarist first takes charge of colonies of bees and manipulates them in such a way as to remove all the above enumerated causes of swarming, they still swarm, and then the question comes, from what cause do they do it? If the answer be properly understood it can be given in the one word, *habit*. Now according to the above theory all that would be necessary to do would be to keep constantly removed each and every one of the original causes of swarming, breeding queens from such colonies as first lose the swarming instinct until finally they forget the habit when every cause is removed, and we fail to find effect without cause. Now some of you will say, 'this all reasons out well and I think I have heard something about it before but I am not aware that anyone is succeeding in practice.' Let us say to our readers that if we were not succeeding in practice this article would never been written. We have made it the leader of this issue because in our practice we have verified the truth of our theory. We are now reminded of what has been written about our mechanical inventions, 'Verily there is nothing new under the sun,' and yet verily there are enough new combinations and applications of old dreams, imaginations, and guesses, to change, as with a magic wand, the useless to the useful. We will now attempt to describe our method and give you the result.

The first thing is to see to it that the queen always has plenty of room in which to exercise the full scope of her fecundity. While of much advantage for other reasons, we believe it to be favorable to breeding out the swarming impulse to prevent the rearing of drones, and this we do almost to perfection, by keeping only worker comb in the hive. However, the dozen hives in which we purposely rear many drones, do not swarm. Next make the home of the bees as pleasant as possible if you wish to keep them at home. In this regard our bees do not differ from our boys and girls. Keep the hives thoroughly shaded and give every colony plenty of room in which to store surplus honey as well as in which the queen may breed. These are all the requirements needed, but it must be understood that the work must be persisted in for a number of years. We first remove the original causes, continuing in which we remove the habit or instinctive memory of swarming. Colonies bred up to

this condition do much more work than those that take on the swarming impulse.

This is the way we have treated our colonies in two apiaries for the past six or eight years and every year we have had less and less swarms until last year we had less than one in ten and this year not a swarm nor any signs of swarming and our colonies having wintered well are booming strong; but mind you every one has plenty of room for the greatest possible efforts of both queen and workers, with the exception of five or six with which we are experimenting to see how much pressure our bees will bear and not swarm, since the swarming instinct has been bred out of them, at least to a degree giving the results above stated. Some of you may be asking just what is our method of working our bees with which we can quickly and practically give the room needed as mentioned above. As this article is already long enough, and this season advanced beyond the use of the method for this year, we will make it the subject of our leader in our October issue under the head of our New Hive and how to use it. We do not wish to be understood at this time that our non-swarming method is confined to the New Hive for it is not, but as you will see in our forthcoming article, like most hive-manipulation, the New Hive is much better adapted to it.

We most sincerely believe that we have now reached that point that we can establish any number of out apiaries without any reference whatever to the disastrous habit of swarming. LATER.—Since the above was written, our swarming season has passed and while bees all about us have swarmed as usual, we have had but one swarm from one of the five or six colonies mentioned above."

We often hear and read about a room in some loft or chamber in which a swarm of bees has been placed and where it has lived and prospered for years without swarming. When the owner wanted honey he simply cut off some of the outer combs. Would it be possible and profitable to so arrange matters that the honey that is put into these outer combs would be stored in marketable combs—in sections? We could give up many advantages in exchange for this one of no swarming. I think we could afford to give one-half the yield per colony that we now secure, in exchange for the privilege of leaving the bees unwatched the year round.

A Condensed View of Current Bee Writings.

E. E. HASTY.

YEARS ago I used to furnish water for my bees, and spent much thought on the best methods of doing it. When I found that by far the larger half of them would

persistently go to the natural drinking places they had chosen themselves I struggled for awhile to win them back to the fountain which I had provided. After a bit the suspicion that perhaps they knew their own wants best, and that perchance I was essaying the impossible, dawned upon me, and I quit. When there are, within a quarter of a mile, spots where cattle go to drink at a brook, and tincture things with their excreta, or even if without the cattle there are convenient spots where water slowly oozes over the ground, most likely furnishing water to bees is a waste of time and thought. Many apiaries however are not so circumstanced, but are remote from water, leastwise remote from desirable water, and the bees consequently are ready to meet their keeper half way in the water business. How then is the best way to water our multitudinous stock? It looks to me as if Dr. Miller's last straw in *Gleanings*, 572, might break the camel's back of this problem, and prove a finality. A crock of slightly salted water, a big piece of coarse cloth thrown over it; then a big chunk of just the right kind of rotten wood, somewhat longer than the crock is deep. Crowd the wood (and cloth in front of it of course) down into the crock; and let the bees stand on the wood and take the water as it soaks up. The cloth is to minimize the chance of drowning I suppose. It will readily be seen that there is no waste of water, and no possibility of the flow stopping. Also the bees' notion for water in the act of percolating through something is satisfied. Also the way is open for salting or medicating the water to any desired extent.

Mrs. Atchley furnishes, not a finality, but what approximates to a bran new idea—and it is seldom safe to prophesy how much may grow out of a new idea. A wagon load of bees, without any hives or combs—all turned in higglety pigglety into a covered wagon of wire cloth, did not kill a single queen in a 60 mile journey! Let us take in the fact first. Then it will be in order to find out whether the result is an exceptional one, or one to be depended on. Then if we can proceed further to find out the whys and wherefores, perhaps a lot of things in our practice may be modified with profit. I guess the reasons are: first, a loss of the *esprit de corps* by finding nearly every bee approached a stranger; next, a consciousness of being prisoners, and a feeling of homelessness, and of having nothing in the world to fight for

—the whole resulting in a sort of quiet timidity, and desire to be at quits with every one that is willing to be at quits. Granting this to be correct, all similarly mixed masses are likely to spare the queens and each other. Can such a mass of bees and queens be wintered? Can they be taken across the ocean on a long voyage? This matter is on page 684 *A. B. J.* That none of those queens found and fought each other is perhaps the most remarkable thing in the whole. It seems to show that the belligerence of queens has been exaggerated. And Mrs. Atchley's previously discovered way of moving bees with hives and combs (in a screen wagon with hive roofs off) is without much doubt a very valuable one.

THE REVIEW.

My last literary work has been collecting a lot of popular proverbs, and versifying some of them. And just as the woman who takes snuff innocently sprinkles some in her biscuit, who knows but proverbs and things may get sprinkled over the REVIEW this time? All recent readers of the REVIEW have of course felt the prominence of its two Taylors—and the proverbialist hath said, nine of them make a man—

To have this journal manned indeed
Only seven Taylors more we need.

And thinking how the promised illustrated visits are a little slow in getting around we recur to the adage:

"When good cheer is lacking
False friends will be packing."

And therefore let us have a little patience with each other in these hard, confused, vexatious times. Who wants the odium of being a *false* friend to a worthy and struggling cause—journal—man? I presume our editor often lies awake trying to make the impossible part with its first two letters when we are snoring. It should occur to us that—

"E'en the mighty Don Fernando
Can't do more than mortal can do."

Don't you mind that this summer nearly every journal (if not in one way then in another) gives us the suspicion that it is being "poorly set up with?"

"The mill will never grind
With the water that is past."

We all know that; but it also occurs to me on the subject that—

Rather slowly drops the meal
When the flume yields naught but hope,
And the water that will wheel
And come booming down the slope
Like fun
1901.

Of course the REVIEW's most important late advance is the new department of Miss Inglis. Too soon to give final judgment on her work; but she is evidently a Spartan, by the way she wades through the parthenogenesis quarrel,

Who was the father of Zebedee's childer?
(A query that once was supposed to bewilder)
Is naught to the bone
"Who fathers the drone?"
"His mother's a daddy" one Dutchman replies;
And the other big Dutchmen they gouge for his eyes.

Except a few on the fence; and they, just to be sensible, explain that his mother is a demi—mammy—daddy. Glad Miss Inglis is not going to try to wear white kid gloves when she makes souse for us.

And puts in the ear, and the tail, and the heel,
And the cheek, and the snout, and the grunt, and the squeal.

Certainly Mr. Hutchinson has got the work of making an ideal journal well mapped out—To be itself a journal, to collect the cream of all other American journals, and to give a comprehensive view of what foreign journals are at, to please the eye with illustrations, to satisfy the mind with practical information and help, and all without inflating the amount of reading matter beyond what a busy man can find time to read—

A short boy dreams a lovely dream,
Tobacco plugs like saw-logs seem;
He opened his willing jaw,
And "bit off more than he could chew."

Whether the resolute gentleman in question succeeds in chewing all he has bit off or not, rest assured that he will chew at it—"you hear me shouting!" It's the intention to have the REVIEW more valuable than any other bee paper on the globe to the man whose spare time (or cash) limits him to one paper.

THE GENERAL ROUND - UP

"What will happen next, I should like to know?" as the pollywog said when his tail dropped off. Why the next thing to happen is for the *American Bee Journal* (with the excelsior banner of, Exclusively to Bee Culture, still flying at its mast head) to open a medical department, to teach us all about felons, snake bites, and appendicitis, and "all sich." How green with envy A. I. Root must have turned when he saw it! and how speechless with astonishment the subscribers! But then, who cares? The matter in the department is really good, and pleasantly told. 'Spects it will find fully as many

readers as the bee articles do. Dr. Peiro, of Chicago, is the department conductor.

Not to be outdone the *Progressive* replies to A. B. J.'s medical department with a legal department, and proceeds to tell those of us who "want to know, you know" how to legally "mind our p's and q's." The lawyer is Wm. C. Sprague, and his work opens out fairly.

And for another pollywog experience, behold Mrs. Hollenbeck turns up in possession of Will Ward Mitchell's shoes, as poet of the *Progressive*. Seems to fill them quite fairly, besides knowing bees, which the former owner of the shoes presumably did not. Here is a specimen of her work.

"The bees hanging out on the trees in great clusters
Are swarming (with sections just fairly begun;) Or loafing around like the commonweal army,
And holding conventions on hive fronts for fun."

The next citation deals with the case where several young queens are out, and yet the bees do not want to swarm.

"The queens sometimes fight it out; but most frequently the bees select the queen they want, and begin to abuse the others by biting and pulling at them until they run out of the hive." G. L. Tinker. A. B. J., 753.

This is in line with my own observations, and I think it is correct. Or perhaps the superfluous ones are held in the cells until the decision to attack them is made, when they are let out and immediately worried. The biting and pulling would naturally prevent royal combats. I have found a considerable number of young queens at one time crawled away about a hive, evidently having escaped from popular wrath.

John M'Arthur, of Toronto, joins his testimony to the few who have found sweet clover to yield an actual surplus. A. B. J., 654.

"See that water on the sealed brood there? That is to keep it cool. But the bees sometimes fail to keep the temperature down with water; and then we have some scalded brood." Mrs. Atchley. A. B. J., 15.

Seems to me this is the first time I have ever seen the idea in print that bees in hot climates carry water to keep down heat, placing it around in little droplets. An important item to keep in mind, if correct. At any rate Mrs. Atchley herself makes large use of the water-sprinkling tactics.

"I fail to see any good reason why some of our best apiarists are recommending the supercedure of all queens the second year." Doolittle in A. B. J., 17.

Taking this in connection with what was quoted from Capt. Hetherington last month we have a good case of "the bane and the

anti-goat." Mr. Doolittle is strongly impressed with the idea that folks are just theorizing (as they so very often do) and that they don't theorize correctly. The theory in this case is that no ordinary queen will lay much over 200,000 eggs in a lifetime. That excessive laying shortens the life of queens, seems to be well founded in experience; but I think Mr. D. is entirely right in attacking boldly the 200,000 limit. He gives a case where a queen in her *third year* (not the whole of the year either) laid over 250,000 eggs. Probably the theory and practice in regard to the laying of poultry reflects upon the bees, and helps produce the Hetherington view. Hardly safe to reason from birds to insects much—and even in regard to hens, I remember we had on our place once a hen whose great age, and great number of eggs laid rather "knocked silly" the theory about the limit to the number of ovaules in the hen's ovary. The explanation evidently was, in her case, that she had to hoe her way in life with a great deal more of muscular effort than most hens put forth—had one leg cut off by a mowing machine while she was yet a young biddy. Now don't you'uns go to cutting the hens' legs off to make them lay. Better chase them around with a stick, or put them on a patent tread mill.

At Beville, Texas, it seems, a new species of flea and a new political party accidentally arrived about the same time. With that Yankee alertness (beg pardon, Southern alertness) which is characteristic of American people everywhere, the "hunkers" scored a point on the new party; and the midnight disturber of their peace is the "third party flea" henceforth. A. B. J., 78.

The *American Bee Journal* doctor says, mix castor oil and honey equal parts and the horrible adulteration can hardly be detected. A million thanks from the little folks Dr. if that proves "honest Injun;" but they are used to professional assertions that disgusting dopes taste good. If this is only "another crow of the same nest" they ought to be allowed to pull your hair. A. B. J., 76.

Mrs. Atchley has not found Eden (more like the place where Eden's serpent ought to have been.) What with superlative ants, and third party fleas, and winter ice, and now and then a hot blast that runs up the thermometer to 114 Fah. in spite of spraying water in doors and out, and kill off all weak colonies of bees—well, some of us will consent to live up north a spell longer yet.

Rambler thinks Californians used clamped gangs of dipping boards before the English did. *Gleanings*, 544. Our country saved again.

"A frame properly filled with comb, without any wires in it, is as good for all practical purposes, including shipping bees across the continent: as is the one having wire in it." Doolittle in *Gleanings*, 547.

A good thing to remember, and save the dimes. Only I suppose it must be admitted that very recently built combs are safer against breakage if wired.

One of Mr. Doolittle's valuable and somewhat new wrinkles is to make the shade boards shed water by the use of tin; then if the roof proper is not absolutely invulnerable (most roofs are not) then there are two defences against the wet. *Gleanings*, 509.

It would seem that in some localities eggs are frequently found in supers from which the queen is excluded. In *Gleanings*, 507. Willie Atchley thinks this is always the work of fertile workers. There is a fine chance for the bee-man to get fooled when the bees attempt to raise a queen from such eggs, as they sometimes do.

"I have seen eggs so evenly deposited by laying workers that their work could not be detected till the larvæ were sealed."

Also Willie's notes (I think he is the first to publish this) that the young drone, when the old maids are trying to make a woman of him, sometimes crawls away from the royal jelly, and they humor him by lengthening the cell until it is ridiculously long.

The German Gravenhorst notices that when hungry bees are carried by wagon into a full harvest of buckwheat honey an overdose of it kills them in great numbers. *Gleanings*, 494. Another proof of the somewhat evident fact that fresh buckwheat honey is slightly poisonous—in fact a trace of poison seems to attach to all parts of the buckwheat plant. Little pigs that sleep in damp buckwheat straw are killed by it, it is said. And little boys that eat the cakes every morning for too long a time get the scratches.

Dr. Murdock, of Florida, thinks he has had success in feeding royal jelly to young drones (without killing them, as such diet usually does) and this he considers the key note in breeding the extra-large bees for which he is becoming famous. *Gleanings*, 500. With time and patience we shall see what we shall see.

RICHARDS, Lucas Co., Ohio, July 28, '94.



FREE: My new price list of pure Italian bees and queens, and white and brown ferrets. 3-94-12t

N. A. KNAPP, Rochester, Ohio.

ON HAND NOW.

THE MOST COMPLETE STOCK OF BEE HIVES, SECTIONS AND SUPPLIES IN THE NORTHWEST.

W. H. PUTNAM,

1 94-12t.

RIVER FALLS, WIS.

The Practical Bee- Keeper

Possesses brightness, reliability, honesty, purity of tone, circulation, and the confidence of its readers. In addition it is PRACTICAL from cover to cover. Published monthly, 50 cents per annum. Sample copy on application. THE PRACTICAL for one year and one genuine Five-Banded Golden Italian Queen for \$1.00.

THE PRACTICAL BEE-KEEPER,

Tillbury Center, Ontario, Can.

If You Wish Neat, Artistic

PRINTING,

Have it Done at the Review.

GOLDEN ITALIAN QUEENS

Now ready for \$1.00 each. Do not order your supplies until you see our circular for 1894. For the price, we have the best spraying outfit made. Send \$1.50 and get one. Wm. H. BRIGHT, 1-94-12t Mazeppa, Minn.

Please mention the Review.

By Return Mail. FINE ITALIAN QUEENS. Bred for Business, Beauty and Gentleness. Untested in June, \$1 00; July to October 75c each; 6 for \$4.25. Safe arrival and satisfaction guaranteed. Send for free circular to

Theo. Bender,

6.94 tt

Canton, Ohio

—If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.



QUEENS,

Either golden or leather colored; as good as any and better than many. Try one queen and be convinced. Satisfaction is guaranteed. Warranted queen, \$1 00; tested, \$1.50; selected, \$2.50. Queens ready to ship June 1st. JOS. ERWAY,
5-94-4t Havana, N. Y.

Bee-Keepers: Send us your P. O. address and we will send you free a sample of

A NEW WRAPPER

that takes the place of glass on honey sections. It is attractive and light-looking, and consumers do not think about paying for the weight as they do with glass.

The cost is only about five cents pound, and pays you double and triple cost in weight when you sell your honey. The greatest protection in shipping honey, as it is so constructed that it keeps the sections from sticking fast to the bottom of the case, and from honey leaking as it commonly does.

H. R. WRIGHT, ALBANY, NEW Y RK.

Oil Cooking-Stove for Sale.

Last summer we changed about the internal arrangements of our house, and the wood-stove is now in a room by itself, hence we shall not be annoyed by its heat and will so seldom use our oil-stove that we have decided to offer the latter for sale. It is of the Monitor make, the best of any with which I am acquainted, is perfectly safe, much more so than an ordinary lamp, which cannot be said of the use of gasoline. The reservoir is back away from the burners, of which there are four, and the same number of griddles. Anything that can be done with an ordinary gasoline stove can be done with this one, while at the same time there is perfect safety. The whole outfit, including an oven, cost \$22.00, but it will be sold for only \$10.00, and it is practically as good as new. Descriptive circulars will be sent upon application, or any inquiries cheerfully answered, W. Z. HUTCHINSON,
Flint, Mich.

Out on the Prairie,

Away from other varieties of bees, I rear Italian queens that cannot be excelled for Beauty, Gentleness, and Business Qualities; and I offer them for April delivery at the following prices:—

One Untested Queen, 65 cents; three for \$1.75; six for \$3.25. Tested, \$1.25; select, tested breeder, yellow to the tip, \$1.50. Virgins 25 cts. each. 3-94-1f

G. E. DAWSON, Carlisle, Ark.

Names of Bee-Keepers. TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States) and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00. W. Z. HUTCHINSON, Flint, Mich.

IF YOU WANT THE

BEE BOOK

That covers the whole apicultural field more completely than any other published, send \$1.00 to Prof. A. J. Cook, Claremont, California for his

Bee-Keepers' Guide.

Liberal Discounts to the Trade.

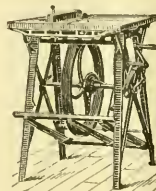
I have several hundred

QUEEN CAGES

of different styles and sizes, made by C. W. Costellow, and I should be pleased to send samples and prices to any intending to buy cages.

W. Z. HUTCHINSON, Flint, Mich.

Barnes' Foot and Hand Power Machinery.



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

3-94-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills

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BEE - KEEPERS, Send for free catalogue of 70 pages, describing
Everything Used in the Apiary.
Best Goods at Lowest Prices. Delivered to your railroad at
 either Chicago, St. Louis, Mo.,
 Atchinson, Kan., St. Paul, Minn., Des Moines, Dubuque, and Cedar Rapids, Iowa, and other
 places.
E. KRETCHMER, Red Oak, Iowa.

4-94-tf

DAUGHTERS of one of Doolittle's best,
 5-banded breeders mated to selected
 drones from Jennie Atchley's 5-banded
 strain, untested, 60 cts; tested, 90 cts.;
 extra yellow. \$1.25.

5-94-tf L. H. ROBEY, Worthington, W. Va.

GOLDEN ITALIAN QUEENS,

Reared by the Doolittle method, at 75 cents each
 for untested queens. Breeding queens, the very
 best. \$4.00 each. Nuclei, \$1.00 per frame. Full
 colonies of Italians, \$6.00 each. Safe arrival and
 satisfaction guaranteed or money refunded.
 Send for price list. **F. A. CROWELL,**
 3-94-tf Granger, Fill. Co., Minn.
 (Money Order Office, Cresco, Iowa)

My

Apiary is now stocked entirely with
 young laying queens of this year's
 rearing. Some of them have been lay-
 ing long enough so that they are tested.
 I will sell the tested ones at \$1.00 each,
 or with REVIEW one year for \$1.75.
 For \$2.00 the

Queen,

the REVIEW and the book "Advanced
 Bee Culture" will be sent. I am yet
 receiving weekly shipments of young
 laying queens from the best breeders
 in the South. These untested queens
 I will sell at

75 cts.

each, or with the REVIEW one year for
 \$1.50. For \$1.75 I will send the RE-
 VIEW a year, one untested queen, and
 the book "Advanced Bee Culture."

W. Z. HUTCHINSON, Flint, Mich.

If You Want Bees

That will just "roll" in the honey, try
MOORE'S STRAIN OF ITALIANS, the result
 of fifteen year's careful breeding.

Dr. H. B. Lung, Lexington, Ky. says: "I have
 had the pleasure of seeing many FINE STRAINS
 of bees, yet I have NEVER seen such industri-
 ous, energetic bees—a grand triumph in breed-
 ing. I must extend my admiration for your
 success as a bee propagator."

Warranted queens, 80 cts each; three for \$2.00.
 Safe arrival and satisfaction guaranteed.

Reference: A. I. Root, Medina, Ohio, who
 has purchased of me 666 queens.

J. P. MOORE,
 6.94-tf Morgan, Pendleton Co., Ky.

Please mention the Review.

KNOCK DOWN!

Yes, I have a large stock of D. T. Hives,
 Supers, Frames, Sections, etc., all in the "knock
 down," and ready to ship at a moment's notice.
 Write at once for large catalogue and price
 list of everything needed in the apiary.

E. L. KINCAID,
 3-94-tf Walker, Vernon Co., Mo.

UNTESTED ITALIAN QUEENS,

From the best of imported, and golden stock,
 60 cts. each; \$6.00 per doz. Warranted queens,
 80 cts. each. Tested queens, \$1.00 each. Safe
 arrival and satisfaction guaranteed.

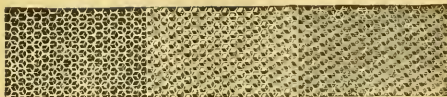
J. W. K. SHAW & CO.,
 4.94-tf Loreauville, La.

Our New Style Frame

Gives better satisfaction than anything we have
 gotten out for several seasons. Our THIN
 WALLED HIVE is the BEST and CHEAPEST
 on the market. With our OUTSIDE WINTER
 CASE it makes the best OUT DOOR WINTER
 HIVE, and the cheapest. We are the ORIGINAL
 makers of POLISHED SECTIONS, and our
 goods are acknowledged to be the best, and
 cheap as any.

Illustrated Catalogue and copy of the AMER-
 ICAN BEE KEEPER free on application.

THE W. T. FALGONER M'FG. CO.,
Jamestown, N. Y.



Hunt's Foundation

Was awarded World's Fair medal. Dealers and others, write for samples and prices. The finest polished Sections and Dovetailed Hives in any quantity. Large, Illustrated Price List of everything needed in the apiary sent free; it also contains a large amount of information. Address **M. H. HUNT**, Bell Branch, Mich. 4-94-4t

Headless Queens.

I only mean that in my yard all queens become "headless" unless their bees prove to be gentle, beautiful and great honey gatherers. I have both the three and five-banded varieties, bred in separate yards, twelve miles apart. Warranted queens only 60 cts. each; tested, 90 cts. Strong, two-frame nuclei, \$1.90 each. Three-frame, \$2.35; four-frame, \$2.80. Safe arrival guaranteed.

1-94-12t. J. H. GOOD, Nappanee, Ind.

HARDY

Business Queens.

Bee-keepers of the North, we can furnish you NOW with hardy bred queens of either the 5 banded golden Italians, or gray Carniolans. Our prices are very reasonable. Send for them before placing your orders. Satisfaction guaranteed. A complete description and price list free. 6-94 tf

F. A. LOCKHART & CO., LAKE GEORGE, N. Y.

Please mention the Review

GOLDEN QUEENS from TEXAS.

MY BEES cannot be surpassed for BUSINESS, BEAUTY AND GENTLENESS. Safe arrival and satisfaction guaranteed.

Untested Queens—March, April and May—\$1.00 each. 150 Fine Tested Queens for early orders, \$1.50 each. Order early. Send for Price-List.

4-94-6t

J. D. GIVENS,
Box 3, LISBON, TEX.

Please mention the Review

ITALIAN QUEENS AND SUPPLIES FOR 1894.

Before you purchase; look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf.

Augusta, Georgia.

BEE-KEEPERS'

SUPPLY HOUSE

J. H. M. COOK, 78 Barclay St., N. Y. City.

(SUCCESSOR TO A. J. KING.)

4-93-tf

Send for illustrated Catalogue

HUSTLERS!

Read what one of the largest bee-keepers of this country says. "The queens (two doz.) came promptly. They are an extra fine lot. The bees are finely marked, gentle, and HUSTLERS when it comes to honey. I have no trouble in picking them out now from over 600 colonies." W. L. COGGSHALL, West Groton, N. Y., October 17, 18 3.

Prices for queens bred for business from the above strain, 5-BANDED, are in May, \$1.00; after May, 75 cents; 1/2 dozen in May or June, \$4.00; doz. \$7.50; July and later, six for \$3.50; doz. \$6.50. Single queens WARRANTED purely mated. I Guarantee all queens to arrive safely and to be GOOD RELIABLE queens. Send for free circular. Draw M. O. on, and address

J. B. CASE, Port Orange,

11-93-tf

Vol. Co., Florida.



THE IDEAL BEE FOUND AT LAST!

A Superior Strain of Golden Italians

The result of thirteen years' careful breeding and selection. They are gentle, industrious, good comb builders, enter the sections readily, cap their honey the whitest, are not inclined to swarm, and are second to none in beauty; a strain of bees that,

by practical test, has excelled all competitors in storing honey. Price of young queens, warranted purely mated, in April and May, \$1.25 each; six for \$6.00. In June, \$1.00 each; six for \$5.00. From July to Nov., \$1.00 each or six for \$4.50. The price of tested queens, bees by the pound, nuclei and full colonies, given upon application. Safe arrival and satisfaction guaranteed or money refunded.

SECTIONS, \$2.00 per 1,000. Lovetailed Hives at bottom prices. For full particulars, send for descriptive catalogue. 1-94-tf

C. D. DUVAL, Spencerville, Mont. Co., Maryland.



If you are not using the

New Heddon Hive

It may seem incredible that it would enable you to obtain the same results with considerable less labor and much more comfort than with other styles of hives, but a fair and impartial consideration of the reasons, as set forth in my circular, will show that this statement is not overdrawn, and the circular is yours for the asking. 11-93-tf

A. E. HOSHAL, Beamsville, Ont.
Please mention the Review.

ARCTIC ITALIAN QUEENS;

Extremely hardy; fine color and their workers very energetic. I call them arctic, as I am located the farthest north of any queen breeder in the U. S. Fourteen years experience in queen rearing. Untested queens, \$1.00; tested, \$1.50.

W. H. NORTON, Skowhegan, Me.

Please mention the Review.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

WRITE US

Before ordering your sections and we will give you **BOTTOM PRICES** on the

"BOSS" ONE-PIECE SECTION,



Also D. T. HIVES, SHIPPING CRATES and other Supplies.

We have everything in tip-top order, and can fill orders on short notice. Let us hear from you for prices.

J. FORNCROOK & CO.,

Jan. 1st, 1894. Watertown, Wis.

Home-Made, FOOT-POWER BUZZ-SAW.

I have for sale a home-made, foot-power buzz-saw made by my brother. The frame work and table are well and substantially made, the main shaft and band wheel are of iron, and the mandrel one of Root's \$3.50 mandrels, with a seven inch saw. Although the machine has been used a year or two it is in perfect order, and is probably as desirable in all respects as any foot-power saw made. It is offered for \$18.00.
W. Z. HUTCHINSON, Flint, Mich.

TELL YOUR READERS

To order queens of J. N. COLWICK, Norse, Texas, where they can get a nice tested **ITALIAN QUEEN** (reared in 1893) for \$1.25. Untested queens in April or May at \$1.00 each or \$9.00 per dozen. Safe arrival guaranteed. Orders may be booked now for bees, queens, drones, etc., and they will be shipped when wanted.

2-94-tf J. N. COLWICK, Norse, Texas.

Please mention the Review.

NEW YORK CITY

Is the center of more R. R. and Ex. Co's, than any other place in the country. That means low transportation charges. Combined with this the fact that our prices are low and supplies first-class, shows a reason WHY you should send for our circular.

L. J. STRINGHAM,
105 Park Place, 1-94-12 New York, N. Y.

Please mention the Review

Given Away,

Our new catalogue of Bees and Bee-Keepers' Supplies to any sending their address. It contains the latest prices on **HIVES, CRATES, SECTIONS, FOUNDATION**, and the new **Stirer FEEDER**; one of the best feeders in the market—just the thing for spring feeding.

OLIVER HOOVER & CO.,

4-94-tf Riverside, Pa.

BEE SUPPLIES SUCH AS HIVES SECTIONS, FOUNDATION, EXTRACTORS, AND EVERYTHING ELSE USED BY A BEE-KEEPER. ALSO CLOVER SEED, BUCKWHEAT, BEES AND QUEENS. LARGE WHOLESALE AND RETAIL CATALOG FREE. IMMENSE STOCK. ADDRESS **JOS. NYSEWANDER, Des Moines, Iowa.**

DADANT'S FOUNDATION

Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. **CHAS. DADANT & SON, Hamilton, Ills.**

4-94-12t

Please mention the Review.

5-Banded, UNTESTED, Italian Queens

the balance of the season at 50 cts each. Tested queens, \$1.00 each. Breeding queens, the VERY best, \$1.50 each. These queens are of the Doo little strain and are golden beauties. Fine tested queens from imported mothers, only 75 cts each. Safe delivery. Money order office, Decatur. **CLEVELAND BROS.,** Stamper, Newton Co., Miss.

5-94 4t

Please mention the Review.

M Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and 5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS,** Lavaca, Ark.

5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root.

Please mention the Review.



BINGHAM PERFECT
BEE SMOKER
Pat'd 1878, 1882, & 1892.

Cheapest & Best on Earth.

Send Card for Circular to
Bingham & Hetherington
ABRONIA, MICH.

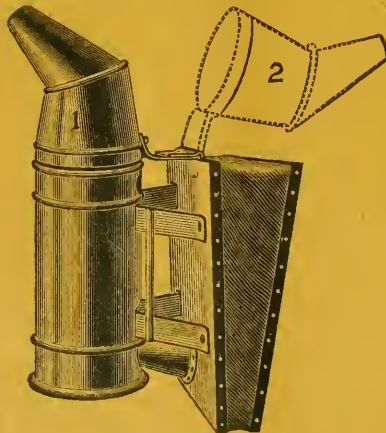
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HONEY JARS, Beautiful, Accurate and Cheap. The trade supplied. Bee Supplies; Root's goods at Root's prices and the best shipping point in the country. Write for prices.

WALTER S. POWDER,
1 84.12t Indianapolis, Ind.

Please mention the Review.



ALL BEE-KEEPERS Want a Good Bee Smoker.

The Higginsville Smoker is designed to supply this want at a reasonable price.

The Higginsville Smoker is a "daisy," has a 3 inch fire box, a hinged curved nozzle that will turn back out of the way while loading, and has a bar of folded tin running horizontally with the fire box to keep the hand from coming in contact with the hot fire box.

We claim the following points for this smoker: Cheapness, Excellence. Strong blast, Heavy volume of smoke and no burnt fingers.

Price, 60c. each; 6 for \$3.00; \$5.00 per doz.

20 cents extra by mail Special prices to dealers.

If you will send us your name plainly written on a postal card we will mail you our catalogue of Bee-Keepers' supplies, also a copy of the Progressive Bee Keeper, a journal devoted to Bees and Honey.

Address:

LEAHY M'F'G. CO., Higginsville, Mo.

SEP., 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

Clubbing List.

I will send the REVIEW with—	
Gleanings.....	(\$1.00).....\$1.75.
American Bee Journal.....	(1.00)..... 1.75.
Canadian Bee Journal.....	(1.00)..... 1.75.
American Bee Keeper.....	(.50)..... 1.40.
Progressive Bee Keeper.....	(.50)..... 1.30.
Bee Keepers' Guide.....	(.50)..... 1.40.
Apiculturist.....	(.75)..... 1.65.
Bee-Keepers' Enterprise..	(.50)..... 1.40.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

KANSAS CITY, Mo.—We quote as follows: No. 1 white, 15 to 16; No. 1 amber, 14 to 15; No. 1 dark, 9 to 12; white extracted, 6; amber, 5; dark, 4. Beeswax, 20 to 25.

CLEMONS-MASON CO.,
July 9. 521 Walnut St. Kansas City Mo.

BUFFALO, N. Y.—The honey market in Buffalo is somewhat improved in demand and a little in values. Fancy, one pound clear white comb, is selling nicely at 13 to 14; common grades proportionately lower. It is well known that this is one of the largest outlets for honey and large quantities can be placed as well here as any where. We will advance ten cents per pound on any quantity of fancy No. 1 one pound comb. We quote as follows: Fancy white, 13 to 14; No. 1 white, 13; fancy amber, 10 to 12; No. 1 amber, 9 to 10; fancy dark, 9 to 10; No. 1 dark, 9; white, extracted, 6 to 7; amber, extracted, 5 to 6; dark, extracted, 5. Beeswax, 25 to 28.

BATTERSON & CO.,
Sept. 29. 167 & 169 Scott St., Buffalo, N. Y.

CHICAGO, Ill.—White comb honey in good condition sells at 15 cts.; extracted white, in cans, at 7 cts.; and amber to white, in barrels, 5 to 6 cts. The trade is fair and receipts also liberal.

R. A. BURNETT & CO.,
Oct. 4. 163 So. Water St., Chicago, Ill.

NEW YORK, N. Y.—The market on extracted remains quiet. There is some demand for the new crop of comb but prices are not yet established. Beeswax is dull and slowly declining. We quote as follows: White extracted, 6 to 6½; amber, 5 to 5½; dark, 50 to 55 cts. a gallon; beeswax, 27.

HILDRETH BROS. & SEGELKEN,
Aug. 15 28 & 30 West Broadway New York.

MINNEAPOLIS, Minn.—The demand for honey is very light and higher prices are not expected. It is probable that miscellaneous shipments will be sold by some commission men below our quotations which are as follows: Fancy white, 18; No. 1 white, 15 to 16; fancy amber, 14; No. 1 amber, 10; fancy dark, 8; white extracted, 6 to 7; amber, 5 to 5½; beeswax, unsalable.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Aug. 15.

CHICAGO, Ill.—We have sold thus far this season over 1,000 cases of comb honey, ranging in price from 15 to 16 cts., in a small way, while we wholesale it at 14 cts. We can dispose of all our receipts promptly, and advise shipments to market early. We will make liberal advances on consignments. Extracted honey is selling at 6 cts. We are trying hard to crowd the market to 7 cts. for new crop of clover and basswood. Beeswax, 28 cts.

S. T. FISH & CO.,
Sept. 21. 189 So. Water St., Chicago, Ill.

ALBANY, N. Y.—Honey in better demand, especially the high grade of white comb honey; No. 1 white, 14 to 15; No. 2 white, 13 to 14, mixed, 11 to 12; No. 1 buckwheat, 12 to 12½; No. 2 buckwheat, 11 to 11½; white extracted (northern), 7 to 8; Amber, 6 to 6½; buckwheat, 5½ to 6. Beeswax, 27 to 29. Do not look for much of any change in these prices and advise now to have honey on market early as possible for best prices.

H. R. WRIGHT,
Sept. 21. Cor. Broadway and Hamilton Sts.

\$1,000 in PRIZES
Divided into 4 1st prizes of \$150 each, and 42d prizes of \$100 each will be given for best designs for
WALL PAPER

Send 2c. for complete detail information. Designs must be entered before Nov. 15, 1894. Designs not awarded prizes will be returned, or bought at private sale.

No matter where you live, don't pay retail prices for wall paper. We make a specialty of the mail order business and sell direct to consumers at factory prices.

SPECIAL FALL PRICES: Good Paper 5c. and up. Gold Paper 4c. and up.

At these prices you can paper a small room for 50c. Send 10c for postage on samples of our new fall paper and our book "How to Paper and Economy in Home Decoration," will be sent at once, showing how to get 50c effect for \$5 investment. Send to nearest address.

ALFRED PEATS, DEPT. 88.
30-32 W. 13th St., NEW YORK. 136-138 W. Madison St., CHICAGO.

FEEDING BACK

Honey to secure the completion of unfinished sections can be made very profitable if rightly managed during the hot weather of July and August. In "ADVANCED BEE CULTURE" may be found complete instructions regarding the selection and preparation of colonies, preparation of the feed, manipulation necessary to secure the rapid capping of the combs, time for removing the honey, and how to manage if a few sections in a case are not quite complete; in short; all of the "kinks" that have been learned from years of experience and the "feeding back" of tons of honey.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

Your

ATTENTION, PLEASE.

One untested queen in June,	\$1.00
One " " July to Sep., .....	.75
Six " queens in June,	5.00
Six " " July to Sep.,	4.00
One 2-frame Nucleus in June,	2.75
One 4-frame "	4.00

All nuclei contain untested queens. Send for circular and sample of my **5-Banded Beauties**.

J. F. MICHAEL,

1-94-9t Germa., Darke Co. Ohio.

Please mention the Review.

Muth's HONEY EXTRACTOR PERFECTION

Cold-Blast Smokers
Square Glass Honey Jars, Etc.

For Circulars, apply to CHAS. F. MUTH & SON
Cor. Freeman & Central Aves., Cincinnati, O.
Send **10c.** for Practical Hints to Bee Keepers.

1-94-1f. Please Mention the Review.

BEE SUPPLIES!
Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address
T. G. Newman, 147 So. Western Ave., Chicago.

Please Cut Out
this whole Advt.
sign, and Mail.

Please send me
the American Bee Journal
each week for Three
months. At the end
of that time I will re-
mit \$1.00 for 1 year's
subscription, or 25c.
in case I decide to
discontinue.

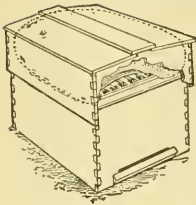
To the Publishers of **American Bee Journal,**
56 Fifth Avenue, CHICAGO, ILL.

Name _____

P. O. _____

State _____

THE



Root Dovetailed Chaff Hive.

IT IS NEAT, LIGHT, WELL DESIGNED,

—AND A—

PERFECT WINTERING HIVE.

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The Bee-Keepers' Review

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

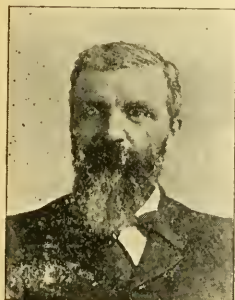
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W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, SEP. 10, 1894. NO. 9.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.



It has long been a question with some bee-keepers of experience whether all samples of section foundation are alike in point of desirability for practical purposes and it was with the hope of

doing something toward the solution of this question that experiments were instituted last year for the purpose of comparing several of the different makes of foundation. These experiments were made with the idea that there were two leading and important points in either or both of which it might be there existed considerable difference among different samples of foundation and these points were first the readiness and rapidity with which the bees worked out the foundation and secondly the thinness to which they reduced its septum. The importance of the determination of these matters and of the reasons for differences if any existed, to the interests of bee-keepers, is too evident to require comment.

During the season of 1893 it was thought practicable to make at least an approach toward the solution of the first point by filling sections with the different samples of foundation and then, after placing those containing the several kinds alternately in a case without separators, giving them to the bees to be worked out and filled. It seemed evident that the kinds which the bees worked the most promptly and rapidly would contain the greatest amount of honey when completed and that by weighing separately the sections which had been filled with each kind of foundation the preferences of the bees and the consequent desirability of each kind of foundation would be determined by the definite criterion of the scales.

This experiment for two principal reasons was only partially successful. One cause of the partial failure was that sections of too great width were employed. The sections were scant $1\frac{3}{4}$ inch while as is well known sections of a width of from $1\frac{1}{4}$ inch to $1\frac{3}{8}$ inch would afford ample space for the building of comb of such thickness as the bees usually prefer, so that, as a consequence of the use of the sections of the greater width, though the bees began to work some samples of foundation sooner and more rapidly than some others, it was observed that, when a comb in a section arrived at the stage where it was a little thicker than what they usually prefer, the bees suspended work upon it largely and hesitated, to bring up the combs built from foundation less liked by them, so that when completed there was not the dif-

ference in the thickness and weight of combs that had been looked for. This mistake was remedied the present year by procuring for the purpose of the experiment sections of a width of $1\frac{1}{8}$ inches or nine to the foot so that it required thirty-six of them to fill a case instead of twenty-eight as of the others.

The other reason for the partial failure of the experiment last year was the palpable mistake of attempting to compare directly more than two kinds of foundation in the same quarter of a case. This error was corrected this year by devoting at least one-half of a case to each two kinds sought to be compared.

During the present season seven varieties of foundation were employed in making the experiment and six comparisons were made—that known as the Given foundation—of my own manufacture—being used in comparison with each of the other six. The six were what is known as the flat-bottom from the factory of J. Van Deusen & Son, Sprout Brook, N. Y., the Dadant, made by C. Dadant & Son., Hamilton, Ill., the Hunt, made by M. H. Hunt, Bell Branch, Mich., the Root, made by A. I. Root, Medina, Ohio, and the other two were made from wax selected by M. H. Hunt—the Given-Hunt being made on the Given press and the Root-Hunt, by A. I. Root, on his roller mill. The two last and the Hunt were the result of an effort to get samples made on three different mills from the same lot of sheeted wax, but judging from the difference in the shade of the wax composing the sheets and that composing the foundation of Mr. Hunt who furnished both, as well as from the somewhat contradictory results obtained it would appear that the plan miscarried.

The approximate weight of each kind tested, appears from the following table :

Name.	Sheets to the lb.	Size of sheets in inches.	Inches in the lb.	Feet per lb
Van Deusen	32	8x8	2045	14.22
Given	25.5	$3\frac{3}{4} \times 15$	1434.375	9.91
Dadant	32	$3\frac{3}{8} \times 16\frac{1}{2}$	2046	14.21
Hunt	32	$3\frac{3}{4} \times 15$	1800	12.50
Root	32	$3\frac{3}{4} \times 16\frac{1}{2}$	1880	13.75
Given-Hunt	24	$3\frac{3}{4} \times 15$	1356	9.375
Root-Hunt	26.66	$3\frac{3}{4} \times 19\frac{3}{4}$	1975	13.715

In all, four cases of sections were used in making the experiment, one whole one of each was devoted to the comparison of the Hunt with the Given and of the Van Deusen with the Given and to the others but one-half a case. In the table hereinafter presented giving the results from a comparison by weights in order to make the object les-

son more complete where only half a case was used for any kind the weights are doubled so that all may stand before the eye upon the same footing.

In order to show to the eye the difference in the work of the bees upon the different foundations a photo, of the honey was taken, from which the accompanying engraving was made; in explanation of which it should be said that the honey was removed from the cases and arranged as here shown and if an imaginary perpendicular line is made dividing the lot into two equal parts it will leave each section related to its neighbors exactly as it stood in the case so that a fair idea of the comparative advantage which each kind of foundation presented to the bees may be obtained by a simple inspection of the engraving. As will be seen each section is labeled with the name of the foundation with which it was filled from which the place of each lot is readily seen. Thus the sections containing the Hunt foundation tested, occupy the upper one-fourth of the picture and that containing the Van Deusen the lower right one-fourth and so on. In the case of the latter the difference in the thickness of the combs made from the two kinds of foundation is very clear, in the case of the former, the difference, though not great, is still apparent.

The following is a table showing the weight of each lot separately and in connection with the weight of the kind alternated with it in the case so that the comparative desirability of each in the view of the bees is seen at a glance :

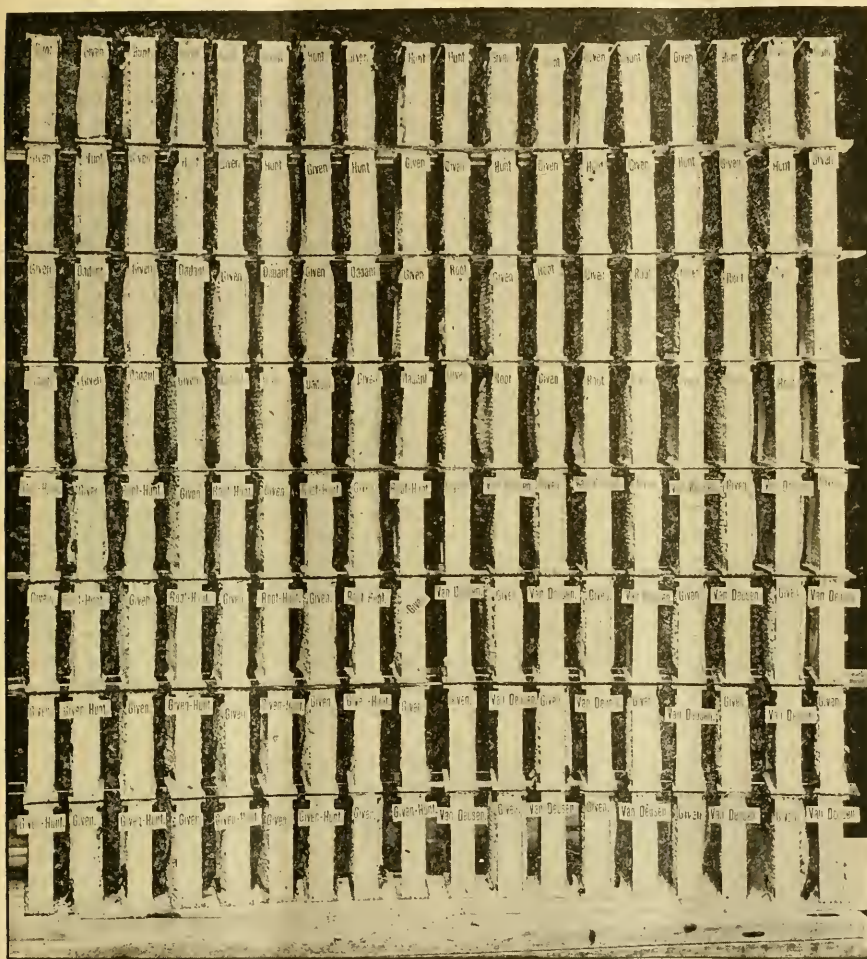
Case	No.	Name of fdn.	No. of Sec'ns.	Wt. lbs.
1	...	{ Given	18	11 $\frac{1}{2}$
		{ Hunt	18	12 $\frac{3}{4}$
2	...	{ Given	18	13
		{ Root	18	11
		{ Given	18	14
3	...	{ Dadant	18	10
		{ Given	18	15 $\frac{1}{4}$
4	...	{ Van Deusen	18	9 $\frac{1}{2}$
		{ Given	18	13 $\frac{1}{2}$
5	...	{ Given-Hunt	18	10 $\frac{1}{2}$
		{ Given	18	14 $\frac{1}{2}$
		{ Root-Hunt	18	10

The success of the experiment has been very gratifying and it is thought demonstrates the utility of the method pursued, for the purpose of determining the quality of foundation.

The results are so evident that it is hardly necessary to say much in explanation of them, but it may be of service to call attention to two or three points which might escape the attention of some.

First, the quality of the wax either in its original characteristics or in the method of its manipulation previous to the final process of melting it cuts a considerable figure in determining the degree of its utility for

the same lot of sheets of wax—the former on the Given press, the latter on the roller mill—the former falls behind the Given foundation (used generally for the purposes of comparison)—little more than 28 per



SECTIONS OF HONEY BUILT UPON DIFFERENT MAKES OF FOUNDATION.

the purpose of foundation. This is shown from case No. 5 where one of the two samples of the foundation compared, though made on the same machine and of about equal weight, contains more than 28 per cent. more honey than the other.

Secondly, either the kind of machine used in making foundation greatly affects its value, for, of the two foundations, the Given-Hunt and the Root-Hunt, both made from

cent., while the latter falls behind 45 per cent., or else

Thirdly, heavy foundation has a decided advantage over light.

The sample of Hunt foundation used in the experiment seems worthy of special commendation for it excels the Given by $3\frac{1}{2}$ per cent., while the latter excels the best of all the others by more than 18 per cent.

LAPEER, Mich.

Sept. 8. 1894.

Bees From Northern Bred Queens Seem More Free From Bee Paralysis.

T. S. FORD.

I HAVE bee paralysis in my apiary, and I have noticed that Northern queens seem to resist the effects of the disease more than do colonies bred from Southern queens. It may be that I am reasoning from a very limited experience, having bought only about half a dozen Northern queens, but I have found no exception so far. Is there any remedy for bee paralysis? I have tried salt, re-queening, and to a limited extent, sulphur, but have never seen much benefit except from re-queening, and that seems temporary. I take several bee journals, and have been watching for the appearance of some new remedy.

The disease does no harm except in the spring and during the honey flow. At that period, the bees die in such quantities that I have seen as many as a peck of dead ones in front of a single hive. When warm weather sets in during June, it disappears in nearly all the colonies, and only an experienced eye can detect it.

COLUMBIA, Miss.

Sept. 19, 1894.



Carniolans are Good Workers, Very Gentle, and Not Great Swarmers.—The Energy of a New Swarm Explained.

E. FRANCE.

MY experience with Carniolans for the last four years has convinced me that, for extracted honey, they are the best bees I ever worked with. I have never tried them for comb honey, but I have no doubt about their good behavior in that direction. I now have 140 colonies of them. A very few of them are a little mixed with the Italian, and I did intend to requeen the whole yard the past season, and bought two queens in the spring from which to raise my queens, but as our honey harvest was short I raised only about forty. The only time we had that I could open hives without setting robbers to work was about sixteen days—when the basswood was in bloom—so I had to give up requeening the apiary this year. However, I have but few in my home yard that are not good Carniolans.

Some raise objection to them on account of their swarming too much. I have never

had any trouble with them by their swarming too much. I work them in 8-frame L. hives three stories high, keep them strong and then swarm them by dividing them. I made only forty-five new ones from ninety-five old ones, and had only three natural swarms. I don't call that excessive swarming.

They are good bees to winter. I winter all out of doors on their summer stands.

Some think they are poor honey gatherers; mine made more honey to the colony than any other bees I have.

We have five out-yards, over 400 colonies in all away from home, many of them good Italians, the balance mixed Italians and blacks, and the Carniolans beat them last year when we had a good season and the same this year when we had a poor season.

They are the mildest and easiest to work of any bees I ever worked with. I worked with them all summer without a veil. I wish all of our bees were pure Carniolans.

In the REVIEW of 1893, page 233, is the following idea expressed by R. C. Aikin: "The energy of a newly hived swarm is more apparent than real. There is no brood to care for—nothing to do but gather honey and make comb—hence the apparent energy and the great rapidity with which stores accumulate."

That the new swarm *does* work with more energy is certain. Why is it? We make our increase by division; take brood, combs and bees from three or four old colonies, put them together in one hive, fill the hive, let them raise a queen or give them one, and make them strong. Will they work with the apparent energy of the newly hived swarm? No sir. Why not? Because about all the bees we have in this artificially made colony are *young bees*. They have never been out to work; they are not old enough, and we don't expect much of them for a week. So if we make a new colony near the close of the last honey harvest we give them enough honey to winter on. After about a week or ten days this artificially made swarm will work as good as any natural swarm, and in three weeks the artificial swarm, will have the best honey gatherers of any in the yard. So a swarm that was made in clover time will just revel in the basswood honey.

Some think natural swarms are best on account of this energy of the newly hived swarm. Let us see, have we lost any energy by making artificial swarms? Not at all.

The energy that is put in a hived swarm is left with the old colony; with the artificial method, the workers are left with the old queen, and will work there, making new combs or filling old ones that may have been given them, as the case may be, while the old colony, by the natural method, has lost its old workers, except what workers were in the field at the time the swarm came off. So it is which and t'other; bees that are of the proper age to gather honey will gather and store honey if it is to be had.

PLATTEVILLE, Wis.

Sept. 25, 1894 □



The Stampede Bee Escape.

C. W. DAYTON.



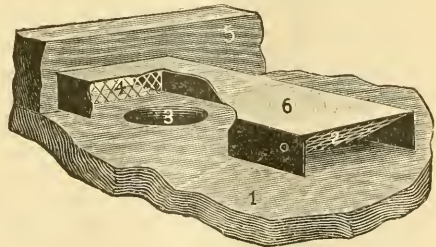
FRIEND H.:—I send you by this mail a model of my bee escape. (I have had a cut made.—Ed.) No. 1 is a section of the escape board proper. No. 2 is a gate of wire cloth hinged at its upper edge and under which the bees pass in their

efforts to reach the opening (4), towards which they are drawn by the light coming in. By the time they reach the screen through which the light comes they discover a more satisfactory route (No. 3) to the brood nest. No. 5 is the raised rim around the escape board. No. 6 is the escape proper, made of tin, a portion of which is cut away to show openings 3 and 4.

The escape rests on the top side of the escape board instead of being let down into it. This renders the screened window discernable from all points of the board, however distant. In my experiments I have found that they go through the escape rather than an open outside exit. In the case of an outside exit the first uneasy bees, after coming to the outside, return inside again, and it is not until they become *very* uneasy that they dare take wing or course down to the entrance on the outside surface of super and hive. The first attempt to reach the window results in such bee being *trapped* out of the super and

obliged to proceed toward the brood chamber. Thus in this escape it is trap first and strange passage afterward instead of strange passage first and trap last. After securing to the board, adjust the points of wires so to nearly admit a bee by bending a wire, the rear part of the gate, against the roof. The floor is uneven it makes no difference returning bees climb on top of the gate. I have cleared 200 supers this season with this escape.

Having the exit partially open is the turning point in the success or failure of all escapes, and in the neglect of which many cast escapes aside. If you wish the escape to operate very fine, ravel out front lateral wires to within two wires of spindle wire. It requires about s much experience to operate escapes as it does in the spreading of brood. An escape with a window to admit outside light will operate the best from morning until about three or four o'clock in the afternoon. But toward nightfall, bees will retreat from the light, so that to do the most rapid work the exit ought to be farthest from the window. This point was suggested and found true from the hiving of swarms with a lantern or by moon light. If the empty hive be placed on the moon side, as the bees are placed before it, they do well if they do not leave it entirely and retreat away toward the darkness. Place the hive on the dark side and they retreat from the moon right into it. So the moon exerts an influence on the hiving of bees and, possibly, the operation of escapes, so to say.



THE STAMPEDE BEE ESCAPE.

With the gate at inside end of enclosed dark passage robbers will not be caught. This season, even in the height of the harvest, I found a band of robbers prying around supers after the bees went out. I removed the super, but allowed escape and board to remain on the hive. When a robber approached the gate, and, seeing the

light at the other end, she thought she had discovered plunder and instantly jumped under gate. Result, dead robbers dragged out at entrance of hive below.

O yes, my adv't states that 1,000 bees per minute may go through. These are three inches long. A gate on each side of auger hole. The capacity of escape I send is 500 to 700. After adjusting escape, spread carbolized cloth (prepared *a la* Woodley) over top of frames and put cover down upon it. They will stampede.

FLORENCE, Calif.

Sept. 8, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

TERMS:— \$1.00 a year in advance. Two copies \$1.90; three for \$2.70; five for \$4.00; ten or more, 70 cents each. If it is desired to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing, otherwise it will be continued

FLINT, MICHIGAN. SEP. 10, 1894.

THE FOUNDATION experiments of last year and this, all pointing in the same direction, have a significance that ought not to pass unheeded.

ERNEST ROOT has dropped the editorial "we" for "I," and he hints in kind of a round-a-bout way to Dr. Miller about "a pound of figs."

FLORIDA has furnished a good yield of honey this year. J. B. Case of Port Orange, reports as follows: "Fifty colonies run for honey gave me over 19,000 pounds. I have nine tons off the hives and will get from 1,000 to 2,000 more. I moved two-thirds of my bees to a mangrove location, and they averaged 400 pounds to the colony that I have taken off and there are from 20 to 40 pounds more per colony to come off."

H. R. BOARDMAN finds that it pays to feed his bees plenty of sugar for winter stores and then in the spring feed enough to keep brood rearing going at a lively rate. He feeds clear up to the beginning of the honey flow. The brood nest is then full of sugar and brood, and the honey that is gathered

must from necessity go into the supers. In this way he sometimes secures a crop of honey when his neighbors get nothing. This I learn from *Gleanings*.

THE TORONTO GLOBE of August 25, gave nearly two pages to a description of "Bee-Keeping in Ontario, and its Development." It was well illustrated, showing pictures of prominent apiarists, apiaries, implements, etc. Such articles help our industry, by calling attention to honey, its healthfulness, and the methods necessary to keep it in its best condition.

THE TARIFF, or duty, on honey imported into the United States is now only ten cents per gallon instead of twenty, as heretofore, but Mr. F. O. Somerford, a bee-keeper of Cuba, writes to *Gleanings* that we need have no fears of Cuban honey flooding our markets. Honey cannot be produced for nothing even in sunny Cuba; it costs something to start an apiary as everything must be imported; the work is spread over the whole year instead of only a few months as in this country; and the days of cheap and slave labor are past. Most of the Cuban honey goes to Europe.

A POOR CROP, "one of the poorest on record," is the way *Gleanings* refers to the honey crop of the present year, and this conclusion is drawn from replies sent in response to about 200 postals that were sent out. The crop seems to have been good in central and lower Florida and in Texas; fairly good in spots in one or two counties of California, in Oregon, Utah, Colorado, Minnesota, Wisconsin, Ohio, Michigan, New York and New England; very poor in other portions of these States, and a total failure in most of California, Nebraska, Iowa, Illinois, Missouri, Kentucky, Tennessee, Mississippi, North and South Carolina and Georgia.

QUEEN CAGES are discussed in *Gleanings* by H. L. Jones of Australia. He says that the end of the cage containing candy being the heavier will settle down in the tumble that the mail bag gets, and being left in that position for a three-weeks' voyage, the dead bees drop down upon the candy and shut off the supply of food. He also objects and properly, to a cage having only a small passage to the food, as a bee is likely to become

stuck fast, thus cutting off the food supply. The passageway should be cut clean away, not simply bored. For these long ocean voyages, food in both ends of the cage is recommended.

PRESIDENT ABBOTT is to be employed the coming winter in attending farmers' institutes in Missouri and speaking upon the subject of bee-keeping. I think he is a good man for this work and that he can do good in this way. Other States might follow this example with advantage.

"A MUTUAL ADMIRATION SOCIETY" is what some people say there is among bee-keepers, and especially among editors and contributors. I think that bee-keeping brings out the better nature of a man to a greater extent than is the case with some other occupations, and the editors of this class have fallen into that habit of speaking well of those whom they think deserve it and saying little or nothing of the opposite class, while editors of other class journals, at least many of them, pursue an opposite course—find fault when they can and avoid giving praise if it is possible.

THE REVIEW has sometimes been accused of not reviewing enough, of giving too few extracts. This complaint surely cannot be brought against this issue. The truth of the matter is that sometimes one department crowds another, but it is not always the same department that does the crowding. Sometimes the advertisements crowd, then, again, there are a lot of correspondents that have something of value to say and it is pretty hard squeezing to give them all a place, at other times the other journals have so much good matter that a large amount of space is required to give even the best of it. The bee paralysis topic is what swelled the Extracted Department this month—next month I hope it will be correspondence on that subject. Then, of course, I shall tell something about the convention.

MR. HEDDON sent an advertisement of honey for sale, but it was too late for this issue. He writes that his yield from basswood was not heavy, but the best in quality that he ever had. He is now getting a crop of fall honey that is of excellent quality. He is offering the latter at \$3.00 for a sixty pound can, and the former for \$3.60 to \$4.20 per can, according to the number taken.

Considering the talk that there has been about his adulterating his honey, he offers to pay \$100 for any adulteration found in his honey, and to allow the return of any honey not found entirely satisfactory.

MR. J. VAN DEUSEN, of Sprout Brook, N. Y., the senior member of the firm that makes the celebrated flat-bottom foundation, recently made the REVIEW a short but pleasant call. He was leisurely pursuing his way westward, traveling only by daylight. He expects to be present at the coming St. Joseph convention.

By the way, the Van Deusens propose putting their foundation on the market another year in smaller packages—as small as six and one-fourth pounds. Retailers are often called upon for small quantities, and the work of preparing it for shipment takes up a good share of the profits. The proposed plan will do away with this objection.

A FEEDER of the Heddon or Miller style can be temporarily transformed into a percolator by crowding rags into the passage through which the feed flows from the reservoir into the apartment where it is taken up by the bees. The reservoir is then filled with equal parts of sugar and water and the resulting syrup slowly soaks or "percolates" through the rags into the part of the feeder that is accessible to the bees. There is no boiling, nor fussing to make syrup, simply the sugar and water put into the feeder and that is all there is to it. I believe that Dr. Miller is to have the credit for this discovery and *Gleanings* for giving it publicity. Any vessel, like a crock or can may be used in a similar manner. Just fill it with sugar and water, cover the mouth with several thicknesses of cloth, cover the cloth with a plate and then invert the "whole business."

THE STATE FAIR was held this year in Detroit, and, as usual, I made an exhibition of bees and honey. The show of bees and honey was the slimest that I have seen at our State fair. The premiums are not very liberal, the financial condition of the Society being such that large premiums cannot be offered. If Hunt and Cutting and the rest of the "boys" went, and the premiums must be divided up among us it did not seem as though it would pay me to go. Finally, I decided to take a few things and put them in place and then come home. Only a short

time before the opening of the fair I learned that neither Mr. Hunt nor Mr. Cutting expected to make an exhibition so I gathered up what things I could and went, but I really did not feel proud of my exhibition. It was my absence two weeks at the fair that still keeps the REVIEW behind, and there will not be much chance to catch up this month on account of the time spent at the coming convention, but I think the time will be well spent, and after that I hope there will be nothing to prevent me from gradually getting the REVIEW back "on time."

HIVE ENTRANCES.

C. W. Dayton, in the *Progressive*, advocates the old-time fly-hole in the front of a hive, in place of the entrance at the bottom that we have so long cherished. He uses three, three-fourth-inch auger holes, in the center of the front of the hive, thus making the front of the hive answer as an alighting board. We have been so accustomed to seeing bees drop down upon an alighting board that at first thought it seems as though it would be awkward for them to alight on the front of a hive, but a little thought shows that it would not; and whoever has had "fly-holes" in the front of his hives knows that many of the bees use those openings from choice. Friend Dayton says that one hole is equal to two or more inches of usual entrance, still one bee can defend it from robbers. Another thing, such an entrance is away up from the reach of toads, mice and lizards, is not so easily clogged by grass growing up in front of it as is the case with a lower entrance, and when we are moving bees it is so easy to stop these entrances with a piece of paper or rag. Although friend Dayton does not mention it, there is another point in their favor, there is no danger of their clogging up with dead bees in the winter. This is quite an item in out-door wintering. Such an entrance almost demands a loose bottom board, but there are many who prefer them any way. I do.

BEE PARALYSIS.

In the warmer portions of this country bee paralysis is becoming a really serious matter. Here at the North it amounts to but little; I have never seen a case of it. All that I know about it is what I have read. In this issue of the REVIEW I have copied quite a number of articles bearing on the subject.

That of Mr. Getaz seems to explain the nature of the disease the most clearly of anything that I have seen. He quotes Erank Cheshire to show that it is of a bacillus nature; that it is to grown bees about what foul brood is to the brood. It is of slower growth than foul brood, or else the grown bee does not offer so good a feeding and breeding ground as that of the brood. It is worse in those seasons when but little work is being done and the number of bees hatched is not very large. In the height of the working season when bees are hatching daily by the thousands, and the labors of the field are rapidly wearing them out, there is not sufficient time for the disease to make much headway before the life of a bee has run its natural course. It would seem in many cases that the bees are hatched with the seeds of the disease already in their bodies, that the egg was really infected by the queen before it was laid. For this reason a change of queens brings at least a temporary relief, and in some instances a permanent cure seems to be the result. The introduction to a healthy colony of a queen from a colony suffering from paralysis is almost certain to bring with it the disease. Just how or why the disease again starts up in a colony after it has been given a healthy queen I do not know; possibly the queen becomes diseased from being fed by diseased workers.

Some have attributed the trouble to starvation. It is quite evident that this is a mistake. The disease has appeared in many instances when there was not only plenty of honey in the hive, but also *unsealed* stores. A long period of honey dearth, by causing enforced idleness on the part of the bees, would tend to aggravate the trouble, and it is possible that this is why it has been attributed to starvation. It seems that feeding has sometimes cured, or at least benefitted, the suffering colonies. Just why this should result I do not know, unless the food acts as a tonic.

The remedies that have been tried and received favorable recommendation are salt, sulphur and re-queening. Of these re-queening is looked upon with the most favor. One difficulty with knowing definitely whether these remedies are curative is that the disease is likely to disappear of itself and then the remedy is given the credit. To learn the true value of remedies, part of the diseased colonies should be treated and part left to

cure themselves. This is another problem for our experiment stations to wrestle with.

I should be glad to hear from those who have had experience with the disease.



THE COMING CONVENTION AT ST. JOSEPH,
MISSOURI.

The North American Bee-Keepers' Association will hold its annual convention on the 10th, 11th, and 12th of October, at the rooms of the Commercial Club in St. Joseph, Missouri. How to get there is the first consideration. A great many in the North and East may take advantage of the Harvest Excursion going on the 9th and returning on the 19th or 29th, that is, if they wish to stay so long after the convention; but I presume that very few will wish to stay so long. The majority will wish to return immediately after the meeting. To all such there is the opportunity of coming home for one-third fare if the precaution is taken to secure of the agent a certificate showing that a ticket has been purchased and full fare paid going. This certificate signed by the Secretary of the Association will enable the bearer to buy a ticket for home at one-third the regular fare. But there must be 100 persons present bearing such certificates before the Secretary is authorized to sign them. For this reason, let every one who gets a ticket for St. Joseph be sure and get one of these certificates. There is little doubt now but there will be more than 100 present, as Nebraska alone will send forty in a special car. To all those who are coming from the North and East, those whose path will naturally lie through Chicago, or even those who live near Chicago, I would say that it would be much more pleasant if all such could meet in Chicago and go from there on the same train, and possibly in the same car—a special car can be had if there are enough to fill it. I have been corresponding with Bro. York on this point and we have agreed to advise all bee-keepers who are going via Chicago, to stop or call at the Commercial Hotel, corner of Lake and Dearborn Sts. (where we have held several conventions) and that all go from there in a body at five o'clock p. m., on Tuesday, the 9th, and take the 6:10 train on the Chicago, Burlington & Quincy for St. Joseph. There is only this one train each day on this road for St. Joseph and it reaches there the next morning at 9:00 a. m. just in time for the first session. Let every

one who comes into Chicago on his way to the convention, stop at the Commercial House, or at least go there as soon as 5:00 p. m., and then we can all go together to the C., B. & Q. There are, of course, other routes to St. Joseph, but there are no better, and to all go together will be so much more pleasant. The social times that we have going and coming, and between times at the convention, are really the best part of the whole proceedings, so let us all go to Chicago and then all together take the same train. If you buy through tickets before reaching Chicago, be sure and get them via the C., B. & Q. and then you will be all right.

The Bacon House at St. Joseph is to be the headquarters for bee-keepers. As I said about the railroads, so I say about the hotels. There are, of course, other good hotels in St. Joseph, but bee-keepers would never be happy if scattered around among half a dozen hotels. The Bacon House is first-class in every respect and reduced rates are given to bee-keepers, and in consideration of this the proprietor would like to have them crowd up as much as possible. If you have some acquaintance with whom you are willing to room, or possibly sleep in the same bed, inform the clerk at once, as all these things will help them to take care of the crowd. To all who are willing to do this the rates will be only \$1.50 or \$1.25 per day. Those who "want the house" must not expect this reduction. I have written the proprietor that he will find us one of the easiest crowds to get along with that he has ever had in his house.

I think no mistake was made in deciding to hold the meeting at St. Joseph, nor in electing Bro. Abbott for President. He has worked hard and faithfully, and it looks now as though he had aroused the bee-keeping public and that success would crown his efforts. The *Progressive* remarks that the convention will be well "edited," as all of the Western editors, as well as Bro. Holterman of Canada will be present.

EXTRACTED.

A Seat for Bee-Keepers.

I have never yet had a specially prepared seat to use in the apiary. I often use a hive cover, sitting upon its edge; of course, this is not the most comfortable seat in the

world, but there is such a dislike, perhaps it is a prejudice, against having anything to carry around the apiary, to have to look it up and bring it where wanted each time it is needed, that I have never attempted anything of the kind. When rearing queens I often felt the need of a seat. I would get down on my knees, then sit on my feet, and finally sit flat down on the ground just as a baby sits on the floor, and finally, rather than be bothered with carrying around a seat, I put all of my queen-rearing hives up on stilts or tall legs, and thus was able to manipulate them in a standing position. I once made a sort of stand, with a handle to carry it by, to use in hanging frames on when examining a colony. I used it a little while when it was "new," but time soon found me setting the first frame removed on end or edge by the side of the hive, and the stand went into the rubbish heap. I have always felt that a seat would share a similar fate. I will say, however, that I have just read the description of a seat that almost tempts me to make one another year. It is given by C. W. Dayton in the *Progressive*, and reads as follows:—

"First get a good strong box about ten inches in measure of each of its lateral dimensions. It needs a back which is sloping like that of a rocking chair. Cut an inch-thick board, eight inches wide at one end and taper to three inches at the other. Put the wide end down and nail firmly to the lower edge of the box. As it passes the upper edge of the box it is nailed again, but an inch-strip is put under to maintain the back-walk pitch.

The back should extend above the box about twenty inches and the upper end contain a two-inch hole as a handle to carry it by and grasp without stooping. The upper half of the front side is left open to hold tools which may be tossed into it while sitting. I also bore a hole in the upper end of the back to receive the handle of an umbrella after the crook has been screwed off. Then, to secure stability, four pieces of three-eighths rod iron are inserted into corresponding holes in the bottom, so that placing a foot heavily upon the seat the rods are driven into the ground. These rods, when not needed, are carried inside."

Starvation Not the Cause of Bee Paralysis.

"I see on page 137 of the *American Bee Journal* that Prof. Cook thinks that starvation is partly or wholly the cause of bee-paralysis. Now, I don't like to dispute such good authority on bee matters as the Professor is, but I know that starvation is not the cause of the disease known as 'paralysis' in this part of the country, for I have col-

onies that have from 50 to 75 pounds of honey now, that are badly affected with that disease, and it is almost always my strongest and best colonies that are affected first. Of course feeding will check it, but it will reap-pear almost as soon as the feeding is stopped, or if there should come a sudden flow of honey, it will always check it.

I have had this disease in my apiary ever since I came to this county (Lampasas), four years ago, and from what I can find out, it had been here for several years before I came, for several of the old-time bee-keepers told me when I came here that I could not keep bees in this county, saying that the ants and moth-worms would destroy them. All said that the bees would gather lots of honey, but that ants would eat the bees in the summer after the weather became hot, and leave the hive full of honey. But I had come to this country to make bee-keeping a speciality, and would not believe such foolishness, and the ants and moths have given me no trouble, but the disease known as bee paralysis has, and I am sure it was this disease that was causing the trouble instead of ants and moth-worms, for I have had several of those old-timers to come into my apiary and say to me, 'Why, see here, Smith, the ants are carrying them off?' When the truth was, it was only the dead and sick bees that the ants were carrying off."—L. B. SMITH in *Am. Bee Journal*.

Why the Subscription Price of Class Journals Must be High.

A month or two ago this subject was introduced into bee journalism by some subscriber of the *American Bee Journal* complaining of the poor quality of paper used. The explanation was that the price of the journal would not allow of a better grade being used. The *Review* commented on this and advised a raise in price or the addition of a supply trade. Bro. York quoted what the *Review* said, but declined to engage in the supply business—doesn't wish his readers to have a chance to say that he recommends an article simply because he has it to sell. As to a raise in price—well, he has asked his readers to say what they think of it. Commenting on this topic, the *Progressive Bee-Keeper* says: "When one tries to give two dollars' worth for a dollar, he has lost sight of business interests, and a reaction will come sooner or later." And then Bro. Leahy goes on to advise against the addition of a supply business to an unprofitable publication, or *vice versa*, with the hope that success will follow. I think he is correct. I doubt if a journal ever became a permanent success that had for its prime object the booming of its owner's supply trade, or a supply trade

became profitable that was engaged in because the one who started it had a journal in which to advertise the new venture. It is true that publishing, manufacturing and dealing in supplies have been successfully combined, but the men at the head of such establishments have been peculiarly adapted for the management of such a combination, which has usually come about of "itself," so to speak. But instead of pursuing this subject further myself, I will introduce an editorial from a late issue of the *Trade Press*, a journal devoted especially to the interests of class journals. Its editor says:—

"An Eastern trade journal publisher writes; 'Very few trade journals are getting from their subscribers the bare cost of the manufacture of the white paper.' This is, perhaps, true—true, at least, of many publications. But it is not the fault of the subscribers. It is the fault, pure and simple, of the publishers of the journals about which the statement is true. When the publisher of a journal supposed to contain news and technical information obtainable in no other paper, competes in subscription price with a country weekly, filled with patent boiler-plate matter, printed with worn out type on news-print, it is natural he will lose money on his subscription list. There are weekly and monthly trade journals which charge \$5 and \$6 a year subscription. Such do not lose money on subscribers. Of course, the plea is made that competition of journals of your own class makes it impossible to charge the proper price. True, two papers of equal size and value in contents, one at a subscription price of \$1 and the other at \$2, the first would catch the subscribers. But these are not the conditions. Where the trade journal loses money on subscriptions it is usually due to the abnormal size of the paper, the great preponderance of advertising pages, made up of full and half-page ads at low rates, making the printer, paper and press bills out of all proportion to the subscription price. It is this that kills the profit on the subscription list. Small ads, high rates of advertising and subscription, and a small sized paper, filled with the best of valuable technical matter, is what makes a solid and permanently profitable paper. Once established on the opposite basis it may seem impossible to change, and yet if your paper has any hold on its readers you will be astonished how few discontinue subscription because of a raise in rates. With most business men, the price of subscription is not near so much a consideration as is the question whether a paper contains in each issue something they consider worth reading, and which may be of value to them. There is more money in \$1,000 subscribers at \$2 per subscriber than 3,000 at \$1, and the higher your subscription price the more valuable is the paper for advertisers, for a subscriber who pays a good price for a paper values and uses it according to the cost. *The Trade Press* is 'harping' on this string a little

strong, in the hope that a readjustment of subscription rates for trade journals may in due time be brought about."

There is one sentence in the above that pretty nearly contains the pith of the whole matter; it is the following: "Small ads, high rates of advertising and subscription, and a small sized paper, filled with the best of technical matter, is what makes a solid and permanently profitable paper." I have proved the truth of the above in the case of the *REVIEW*, as it is exactly the plan upon which I try to conduct it. I have also learned that, if a paper has any hold whatever upon its readers, a reasonable and necessary raise in price causes but few of them to give up the paper. There is also another point that is worthy of consideration, viz., that "With most business men, the price of subscription is not near so much a consideration as is the question whether a paper contains in each issue something they consider worth reading."

Perhaps some will wonder of what particular interest all this can be to bee-keepers. It is just this: the success of bee-keeping has been, and is yet, largely dependent upon the dissemination of knowledge through the medium of bee journals; the better the journals the greater will be the success of their readers, and it is not to their interest that the price of journals shall be forced down, or remain so low, that the journals will not be as good as it is possible to make them.

Salt and Sulphur Don't Cure Bee Paralysis —The Fault is in the Queen.

"I notice your mention of sulphur for 'bee-paralysis.' Sulphur was no cure in my hands, and I tried it in every conceivable way and extent: also salt. A change of the queen has cured in every instance of some 30 colonies—last season and this. Some diseased colonies which went through the winter showed it again last spring. It appears to be caused by imperfect queens, which become imperfect through extensive egg-laying.

I have seen the disease in Iowa, but it was slightly different from the California kind. Here it usually attacks a colony about the time it gets populous enough for the surplus receptacles. Then the colony gradually weakens until the surplus receptacles will not be occupied, and they are taken off as empty as when put on. Even in an abundant honey-flow they are unable to get much ahead, and often are unable to gather their daily food. It begins gradually, so that by keeping a few newly-reared queens they may be introduced as soon as the first symptoms appear, and avoid very great loss.

I do not discredit the statements of those who have recommended salt and sulphur, but I write this for those who having tried those remedies with failure may try the supersedure. Caging the queen for awhile, or in any way restricting her egg-laying, seems to be influential. Colonies which lose bees rapidly in summer, lose none in winter. This is the same in Iowa."—C. W. DAYTON in *Am. Bee Journal*.

Are Brace Combs Really Needed ?

We have labored for years to get rid of the nuisance of brace combs. We have invented honey boards above which the bees seldom come with these pesky combs, and we have tinkered away at the width, and depth, and spacing, of the top bars until we can pretty nearly induce the bees not to put any brace combs above the top bars, and now comes friend Doolittle and says that these same brace combs that have given us so much trouble are really a benefit, as the bees can climb into the supers so easy by using the combs as ladders, that work is commenced much sooner in the sections as the result of allowing the combs to remain. Here is a part of what he has to say on the subject in the *American Bee Journal*.

"But their greatest advantage appeared when I came to put on the sections, for the bees seemed to consider them as little ladders on which to climb up into the sections, for it is a very noticeable fact that the bees entered the sections much the sooner where these brace combs were left than they did those where they had been removed; and, if I correctly remember, I so wrote in the *American Bee Journal* at the time, advising all to remove the brace or burr combs from the bottom of the supers, but not from the frames.

The next year I tried the same experiment again, and so on for several years, until at last I became thoroughly convinced that these combs added largely to my crop of comb honey by leading the bees into the sections much sooner than they otherwise would go.

Now, some may say that it is of no use getting the bees into the sections as soon as the first honey comes in; but I claim that this has very much to do with our crop of comb honey. It is not that the first three or four pounds of honey stored in the sections could be sold for so much cash that I wish it placed in the sections, although that might be quite an incentive where a person kept 500 colonies, the same amounting to about a ton of honey in that case; but all my past experience teaches me that, for every pound of honey stored in the brood-nest at the commencement of the season, or honey harvest, there will be five pounds less stored in the sections that year. Let the bees once commence to store honey in the brood-nest thus

early in the season, and they are loth to enter the sections at all, and, instead of giving us lots of section honey, they will keep crowding the queen from the brood-cells more and more, storing them full of honey, until, when fall comes, we have little honey for market, and our bees in poor shape for winter.

Then, again, these thick top-bars, which are used to do away with these brace combs, place a barrier between the brood combs below and the sections above, instead of forming ladders to lead the bees to the sections. Who has not noticed that where an inch or two of sealed honey intervened between the brood in the hive and the tops of the frames, that the bees were much more loth to go into the sections immediately on the first appearance of honey from the fields, than they were when the brood came up all along the top-bars of the frames? This was one of the claims for the contraction of brood chambers in the interest of comb honey, that where contraction was used the brood must come close to the bottoms of the sections, and, so coming, the bees were in the sections in a twinkling when the honey harvest arrived. I doubt not but what all will be free to admit that an inch of sealed comb honey would be a better leader to the sections than an inch of wood, as is now proposed. When we come to fully understand this fact we shall see that, wherein these brace combs are the means of having our bees enter the section sooner, just in that proportion are they of value to us.

Try the experiment, brethren, and see if, at the end of such a trial, you will not be willing to put up with the inconvenience they cause you, for the sake of their great value."

Bro. Doolittle may be correct. If the space between the top bars and the supers is very great, so great that the bees cannot easily get into the supers, I suspect there is something in what he has to say, but when the space is only one-fourth of an inch it does not seem as though the brace comb would be an advantage. I one year ran out of honey boards and was obliged to put a dozen or more supers right down on top of the brood frames, and I took particular notice to see if the bees commenced work in the supers any sooner, or if they stored any more honey, and I could see no difference until I came to take off the supers, and then there was a "muss" between them and the top bars, but no more honey in the sections. If there is really any doubt on this subject, it is another nut for our experiment stations to crack.

There is one point, however, upon which I do agree with Bro. Doolittle, and that is the importance of getting the bees to make an early start in the sections, and it is possible that with some of the hives in use, those in

which there is a large space between the top bars and the sections, there may be more advantage in the brace combs than some of us imagine, but advantage or no advantage, brace combs built against the sections or the receptacle in which they are placed can never be tolerated.

Flat-Bottomed Foundation Not as Liable
to Have Fish-Bone in the Comb, But
Not as Acceptable to the Bees.

As the report of Mr. Taylor's foundation experiments for the past season appears in this issue of the REVIEW, it is quite appropriate to reproduce from the last issue of *Gleanings* the following from Mr. Doolittle.

"Bees never leave the base of the cells as they come from a foundation-mill making foundation with flat-bottomed cells. This is one reason why there is never a base of yellow wax apparent with flat-bottomed foundation, where such is used in producing comb honey. With foundation having the natural-shaped base, the bees often, in times of an excessive honey flow, add their own wax right on to the raised part of the foundation, so that this added part can be scraped off with the honey, the foundation washed, and the same be nearly or quite as perfect as when given to the bees. This gave rise to the 'fish-bone' center in comb honey, complained of when comb foundation was first used for sections, and the flat-bottomed process of making foundation was invented especially to overcome this 'fish-bone,' if I am correctly informed. When bees are given the flat-bottomed foundation, the first thing they do is to go to work to change the base; and in doing this the side walls are manipulated also, but just how this work is accomplished I have never been able to tell after all the close looking I have been enabled to do; for, when the work is being done, the bee has its head in the cell; hence the vision of curious eyes is cut off so long as it is at work. While I prefer this foundation to all other makes for section honey, it has two drawbacks, which are, that this manipulation of the base of the cells takes time, so that sections filled with such foundation are not completed quite as quickly as is the case where the natural shaped base is used; and where the sections are placed on the hive before the honey flow is fully on, the bees will mischievously work at it far more than they will that with the natural base, often biting and tearing it down, where the honey flow we expected does not come, so that it is necessary to look after the sections to see that they are all right when the bees are about to enter them to fill with honey, after they have been on the hives during a season or period of scarcity. I have had hundreds of sections which were filled with this foundation, and which had been on the hives during a period of scarcity of honey, the

foundation of which was eaten or gnawed away so that only a neck of foundation, of from a quarter to half an inch wide remained next to the tops of the sections, while the lower half of the foundation remained as when put in. When honey commenced to come in from the fields, and the bees began to work on the foundation, as all good bees should, it would twist about so that it would touch the separators, and be fastened there; and when I expected to take off nice comb honey, the whole thing would be spoiled by the tearing necessary in getting the separators off. This is the worst trouble I have with the flat-bottomed foundation; and were it not for this, I would never think of using any other make in the sections. For the brood frames I can not see where the flat-bottomed has any advantage over that having the natural base, while it has the disadvantage of taking the bees longer to manipulate it; consequently I prefer the other makes of foundation to this for brood frames.

[Mr. D.'s experience with flat-bottom foundation is quite in line with our own. If I am not mistaken, Mr. R. L. Taylor will have soon some interesting results on this subject in the REVIEW. Excuse me Bro. T., for 'telling tales out of school.'—Ed.]

There is no question but what the bees change over the base of the flat-bottom cells, and in so doing it seems as though they change the character of the wax to a slight extent—lighten it up and make it more like natural comb—but it is not necessary to use the flat-bottom foundation in order to get *thinness* of base, as was shown by the earlier experiments of Mr. Taylor reported in the REVIEW of last December.

Suggestions for Contributors.

On this subject, F. L. Thompson, of Colorado, writes to the *American Bee Journal* in the following refreshing manner:—

"The editor makes a good point on page 103, when he asks, 'Have you discovered any new kinks that are worth knowing?' Our bee papers are already about as good as they can be editorially, but there is plenty of room for improvement on the part of contributors. We all know the man who successfully runs large apiaries and attends all conventions, at which he is continually letting fall words of wisdom in the shape of kinks—though even there he does it principally in conversation before and after—but the bee papers never hear from him.

It has been said that the periodicals have gradually taken to themselves all functions of conventions except the face to face meeting. It ought to be so; but it is not entirely so yet, by any means. Mr. Hasty says it is because most bee-keepers don't know how to write. I don't believe it. It is because they have not the right attitude of mind toward writing of this kind. If by associa-

tion of ideas a man unites in his mind the *Century*, *The Nation*, or *Harper's Monthly* with the *American Bee Journal*, and does not write for the latter because he could not for the former, that does not prevent him from writing business letters which are plain and to the point.

American Bee Journal needs no more style from its contributors than a collection of business letters would. Besides, we are working toward a plain and simple style even in purely literary performances; unless we except certain erratic schools of poetry, which do not concern sensible people. Indeed, one characteristic of modern style is the absence of style. The matter is looked to more sharply than the manner. Practical men like bee-keepers have nothing to fear on that score. The Senate Chamber no longer resounds with stately imitations of Burke and Webster. It would be considered bad taste. W. D. Howells, the greatest living American novelist, takes particular pains to erase all passages from his works which sound too literary.

But, after all, it does not matter so much in what shape the kinks come, as that we get them all right. If a kink is spread over a page, which might be put in a paragraph, let us be thankful it is no worse. We want kinks. If we don't help one another to them, we shall not get them. The bee books contain a few, but only a few; revisions occur too seldom, and there is not room enough for them all, anyhow. I cannot agree with Mr. Heddon in thinking it best to compress *everything* into the smallest possible compass. That is all right as a department of bee literature; but it would be a serious blow to progress if it was the whole of it. Plenty of kinks are the life and soul of bee culture. By their aid we comprehend the essential principles much more fully than we otherwise could. We need such periodicals as the *Review*; but no less do we need the *American Bee Journal* and *Gleanings*. Concentrated food alone, weakens the digestive powers.

But, it may be said, it is the business of editors to prod up the successful men, as they know 'who rides this hobby and who that,' in Mr. Hutchinson's words. That may be; and in the essential principles of bee-keeping this plan leaves nothing to be desired; but in the department of kinks, to judge by results, they do not reach one one-hundredth of the men we ought to hear from, nor is it to be expected. To get kinks, we must look to the number, as well as the reputation, of bee-keepers. One would think for instance, that R. L. Taylor would be an experiment station in himself; but one of the first things he did on being appointed was to ask for suggestions—not from a select few, whose names were known—but from *everybody* who is a practical bee-keeper. Let us not forget, in our zeal at condensing, boiling down, getting the 'cream'—that the 'General Public' is an old veteran at bee-keeping. The old gentleman is occasionally behind the times, but he knows a thing or two.

Besides kinks and short cuts, there is another department depending largely upon

the general contributor for support. You know how provoking the bee books are sometimes. You look up something, and apparently find out all about it; then work according to directions, and fail; and after finding out the right way by experience, you look it up again, and find that it did tell you of that point, but in such a way that you failed to appreciate its connection with the rest. Or, that point may have been omitted entirely in the book. You can't expect everything of a book. If all details were given so as to preclude any possibility of a mistake in any department, the result would be a regular encyclopedia, and would defeat its own object—people would care neither to buy nor to read such a book. But an article describing the process, in a back number of the *Bee Journal*, would likely be much more detailed and satisfactory than the description in the book; the writer, writing from fresh experience, and not bothered with the desire to be brief, would probably be so impressed with that particular point, that there would be no mistake about what he meant. There is considerable value in articles which treat of nothing new, but only tell how some man successfully did something.

Who will write such articles? Not the 'veterans,' altogether; they are too much occupied with the 'unsolved problems' of apiculture: it must be largely the rank and file, providing, of course, they have a certain amount of experience. They should be given in as few words as possible; but better too many than none at all.

Finally, let contributors remember that they are casting bread upon the waters; every contribution which is a fruit of their experience adds not only to knowledge, but also to the desire of imparting knowledge, and they will reap the fruits of it in learning more of the experience of others. The 'let us hear from all the brethren' idea, being an essential principle of human nature, must be represented *somewhere*. It will not 'overboard into the deep, deep sea' yet awhile, though a dozen Mr. Hastys flourish their scissors at it. Arvada, Colo."

The one great point to be considered, when looking at correspondence from an editor's or reader's point of view, is *does it contain any information?* If it does, it matters not who sends it, or whether it comes from one or many. There was a time in bee journalism when there seemed to be an attempt to publish communications from as many correspondents as possible, perhaps with the idea to please said contributors, although I am not certain of this, and to object to long articles—in short, to make a sort of letter box of the journal. It is to this that Mr. Hasty very reasonably objects. Mr. Thompson is correct when he says that the days of "style," so-called, that is, of stilted style, have passed; and Bro. York is right in saying that an editor alone cannot make a paper, that he must have the help of his readers.

The Nature of Bee Paralysis and Some Suggestions for its Treatment.

In the treatment of any disease it is a long step to learn its nature. The best of anything that I have seen in this line regarding bee paralysis is an article from Mr. Getaz of Tenn., that appeared lately in the *American Bee Journal*. It is as follows:—

"Some of the readers of the *Bee Journal* will be somewhat astonished to learn that bee paralysis has always existed here, more or less, in all or nearly all the apiaries; at least for seven or eight years, and probably much longer. Nevertheless it is a fact. The malady is much worse some years than others, and generally much worse in the spring, precisely when we can the least spare the bees. Workers, drones and queens are infected. I have seen drones with the symptoms of the disease ejected from a queenless hive, the same as diseased workers. Frequently I have had queens not more than one or two years old, disappear during the honey flow, or at some other unexpected time. I suppose they were superseded when found too sick to do their duty.

The first spring that my bees died in considerable numbers, I thought they had been poisoned by somebody spraying his trees too soon. A year or two later I fed outside, and concluded that the shiny bees, dying around the feeders, had been daubed in the syrup, and the others had pulled their hair in trying to lick the syrup.

It is a fact that the diseased bees will hang around the feeders longer than the others, but perhaps it is because they are not strong enough to fly in the fields.

My first eye-opener on the question, was during a honey flow. I had accidentally left some honey from burr combs close to the hive, and when I came back I found the pretended robbers trying to get into the hive, and the burr combs untouched.

Well, what is the disease? Cheshire says it is a bacillus much smaller than the one that produces foul brood, and of a much slower growth. It is found in the grown bees more than in the brood, and more in the queen than in the workers. Cheshire calls it *Bacillus Gaytoni*, his attention having been called to it by a Miss Gayton. Miss Gayton thought the disease was connected with the queen, and had succeeded in curing it by changing of queens.

Somebody may ask here what is a bacillus?

Bacilli are microscopic 'critters' in the shape of a stick. These sticks grow rapidly under favorable circumstances, and when they reach a certain length, break into two or more pieces. These pieces grow as well as the first ones, and break also, and so on as long as there is plenty to eat, and the other circumstances are favorable.

When the feed is about to give out, the last 'sticks,' instead of growing and breaking, contract themselves into egg-shaped 'spores' These spores are to the sticks exactly what the seeds are to the plants. They can be kept like seeds perhaps for years, un-

der certain circumstances, without any change, and then when placed in the right conditions, develop into sticks again, and these sticks multiply like the original ones as long as they are favorably placed to do so.

Foul brood is caused by a bacillus called *Bacillus alvei*, which develops rapidly in the brood, but seemingly under difficulties in the body of the grown bees, though it is found there also. The spores are transported from one cell to another, also one hive to another, by the bees, and even the apiarist. The disease can be prevented from spreading to the healthy hives by spraying the diseased bees with some antiseptic (phenol or salicylic acid). The operator is also to wash his hands and instruments carefully.

But these spores cannot live exposed to the air very long, some say not more than a few hours. On the other hand, they will keep their vitality almost indefinitely in honey, and when honey containing spores is fed to larval bees, the 'sticks' develop at once with an astonishing rapidity.

Owing to the impossibility of reaching everywhere into the hive, and in all the honey, with antiseptics, the treatments with such have generally (not always) failed.

There is a similar disease attacking the silk-worms, but of a more slow growth, and developing itself in the moth as well as in the worm. If the attack is strong, that is, if the bacilli are numerous, the worm will succumb before spinning its cocoon, but usually dies in the cocoon. Often the silk-moth comes out of the cocoon and lays her eggs as usual. In such cases spores are found not only in the body of the silk-moth, but also in the eggs; and of course these eggs hatch diseased worms.

Generally, the spores come from the excreta of the diseased worms, or the putrefied bodies of the dead ones, and are swallowed by other worms when eating.

By what proceeds, it seems as though bee paralysis is much more like silk-worm disease than foul brood. Like silk-worm disease, bee paralysis develops itself gradually, and attains its full development in the grown insect. I have never seen any brood that did not look perfectly healthy, but for all that it might be diseased already—only on account of the slow development of the *Bacillus Gaytoni*, the disease would not show itself until much later.

The silk-worm disease is disastrous; bee paralysis comparatively not. This may be due to the fact that as bees void their excrements, and also die outside of the hive (except in winter), the spores contained in their bodies are generally carried out. I do not know whether the queen transmits the disease to the brood by her egg or not, but the fact that removing the queen has often cured the disease, seems to point in that direction.

What can be done? The treatment used to cure silk-worm disease cannot be applied to bees. The chief part of it consists in a microscopical examination of the eggs to ascertain if there are any spores in them, and reject all but the healthy ones.

Two processes suggest themselves: Since the disease resides chiefly in the grown bees it is probable that salicylic acid administered in syrup, or some other antiseptic, would destroy the disease. The other consists in removing the queen to be sure she cannot transmit the disease to her brood through her eggs or otherwise; and at the same time spraying the bees and combs with some antiseptic (salicylic acid, phenol, sulphur, or perhaps salted water) in order to destroy what spores might be in the hive, and repeating the process until all the diseased bees should be gone.

The bees themselves help a good deal in checking the disease, by ejecting and literally carrying out the diseased bees; and since bees void their excrements outside, and also die generally outside of the hive, most of the spores are thus carried away. Somebody has insisted, however, that the dead bees ought to be collected and burnt, so as to avoid any danger from that source,

I have not tried anything yet.

Knoxville, Tenn., July 20."

[In a later issue of the *Journal* Mr. Getaz contributes the following:—Ed.]

"I must say positively and emphatically that Prof. Cook is mistaken when he says that feeding will cure bee paralysis. The disease is in all the apiaries of this section of the country, more or less; and been in mine since I bought my first bees. It has shown itself as well in fed colonies as in others, and often in strong, well-provisioned colonies as much as in weaker ones.

It is early in the spring that the malady is the worst. It is shown by a large number, often the majority of bees, being black, or rather hairless and shiny, as if they had been polished. At the same time they are sluggish, and as if half paralyzed in their movements. Those in which the disease is less advanced, show it by uneasiness, frequent scratching and twisting of their wings and legs, as if they were itching. As the season advances, the old, shiny bees gradually die out, brood-rearing increases, young bees are born by the thousand, more or less diseased; but in all cases not so much as the old ones, or at least they do not show it so much. Later on the number of young and healthy, or at least comparative healthy bees increase considerably, and the management of the hive, if I may use that term, falls into their hands. They soon realize that something is wrong with the old bees, and proceed at once to throw them out of the hive. This, in this locality, and with the average colonies, occurs during May and June. The diseased bees are thrown out gradually, occasionally in large quantities, and the process is kept up as long as other bees show signs of the disease.

During the summer bees wear out too rapidly to have time to show much of the sickness; young bees come in rapidly, and as the season advances less and less diseased bees are seen, until when the winter comes, none but apparently healthy bees are in the apiary.

By that time the inexperienced (?) apiarist thinks that the disease has run out of itself, or if he has applied salt or sulphur, or something else, he imagines that he has found a sure cure, and immediately writes so to some bee paper. But, alas, for his hopes—the following spring, black, shiny bees will be as numerous as the previous years.

In a recent article in *Gleanings*, Dr. Brown of Georgia, describes some disease of bees that he thinks was caused by poisonous honey from the yellow jasmine. According to his description, his bees must have the bee paralysis; the fact that the yellow jasmine is in bloom at the time the bee paralysis is most shown, does not prove that the poisonous (?) honey is the cause of it. We have no yellow jasmine here, and yet our bees show the same symptoms as his do.

Knoxville, Tenn., Aug. 24."

The Changed Conditions in Bee Culture and How They Should Be Met,

Over a considerable portion of the United States has come a change as regards the certainty of the honey crop. Only so short a time ago as when I began bee-keeping there was as much certainty of a honey crop as of a crop of potatoes. Some years the yield was much better than that of other years, but a crop of some kind was almost a certainty. This is no longer true. I presume that this change has been brought about by the clearing up of the country. The cutting away of the forests destroys a very important source of nectar and brings about climatic changes. For years I have believed in specialty, and have argued for it, and I still believe that the highest success is attained only by specialty, but I am forced to admit that there are localities where a poor man cannot depend upon bee-keeping alone for his support. It must become a side-issue if followed at all. Even in those localities that are blessed with a reasonable certainty of a crop, the specialist must be ever on the alert for improved methods. To show that I am not alone in holding these views, and because of the good advice it contains, I copy the following from *Farm, Stock and Home*. It was written by one of the Review's correspondents, Mr. B. Taylor:

"We have now had four seasons of light honey crops. In the early years of the settlement of Minnesota a good honey crop, when the colonies were properly managed, was almost a sure thing. A great crop of wheat was not more certain, but there has already a great change taken place in both the wheat and honey crops. The bread for

he people of Southern Minnesota is now chiefly made from wheat made in Dakota and other distant parts. Who could have dreamed of this thirty years ago. The question now is: Can any possible skill in culture restore old-time crops of honey? We fear not. There have, owing no doubt to the ignorance of greedy man, changes taken place in the country through false methods of agriculture that have already made changes in rainfall and other climatic conditions that cannot be easily restored. One particular noticeable to me, is the fact that the millions of birds of various kinds, whose songs used to be heard from daylight till dark, are now mostly gone from us, many species having entirely disappeared. In wandering through the woods lately we were struck by the solitude—no cherry bird songs.

* * *

The bee-keeper will now, in our opinion, have to recognize the changed conditions and use more skillful ways. We have for many years believed that we could get a crop of surplus honey that would pay well for the labor expended, even in what we call poor seasons, and we have this year proved it to be possible. The average bee keeper, with old methods and ordinary care, got no surplus white honey here this year. While we, by extra care and new means, secured fifty pounds of white comb honey per colony, spring count. The means by which this was accomplished was by having strong colonies ready for the only considerable honey flow, that of basswood; and then having plenty of supers readily filled with sections of drawn comb. We have these combs made the year previous by giving the colonies sections filled with comb foundation. The honey is then extracted from all unfinished white ones and from all dark ones. The sections are then returned to the supers and then set out in the evening of a warm day to be cleaned by the bees of every particle of honey. The combs are then leveled to equal thickness with the comb leveler and kept in a secure place for use the next year.

This year the flow from basswood was fair and lasted about twelve days. Now, with supers of sections filled full of foundation the bees in this short time will finish but little comb honey; but with plenty of empty combs in which there is nothing to do but empty the loads of nectar the combs will be filled and finished in a surprisingly short time. The same is true of extracted honey where we have extracting combs ready to be filled.

We are confident that bee-keepers whose object is honey for home use would get far more paying results by working for extracted honey: it takes far less skill than comb and is superior to it in point of health for daily use, provided it is cured properly.

We found the swarms that had large stores of honey when set out this spring and needed no doctoring gave the earliest swarms and by far the largest yields of surplus. This is not saying that feeding may not be done with greater profit in proper circumstances, but the average bee-keeper is poorly able to judge of such proper circumstances, and the best policy is to let the bees fill their hives

well with fall honey where possible. Where there is no fall flow of course feeding will be in order, but to be safe it should be done as early as the middle of September, and earlier would be better. In our own apiary all supers were taken off at the end of basswood. The extra strong colonies will be given an extra hive of extracting combs; these combs are the same size as the brood combs, and when filled will be used to supply any colonies that may be found light in stores at the end of the honey season."

A Condensed View of Current Bee Writings.

E. E. HASTY.

AND now the reports of the Baldrige style of treating foul brood are beginning to come in. There must be more than an ordinary wire cloth cone on the hive to be treated, else some of the bees will occasionally get back again (no great harm) and extra-enterprising robbers will find the way in—and that won't do at all.

And so, because his bees swarmed little last year and none this year, Heddon thinks he is having cheerful success in breeding out the swarming impulse. We thought he had an older head on his shoulders than that. Look here; my swarmy bees didn't swarm any to speak of this year; and I haven't been doing any thing at all to hinder them, or breed out their impulses. Only a penny to choose 'twixt Heddon who works and Hasty who plays—and the playful boy will get it, if you don't look out, brother H.

If friend John Phin was in a courting way, and he should meet his fair one some morn carrying a poodle, I just wonder if he would have the courage of his convictions, and say, "Good morning, Miss Sweetsie; I am delighted to meet you, and your mongrel dog." As to the word "cross," it can and will be used to some extent. In some sentences it is all right; in others it has the disadvantage of being ambiguous. No one who takes pride in his apiary likes to speak of his bees as "cross" bees—bulk of mankind too ready to go for the wrong meaning.

I fear the method of fumigating recommended by Mr. Doolittle seldom or never makes a very good job of it, and often results in nearly total failure. I never trust mine without an air pipe, and diligent blowing with a new smoker. Am none too well satisfied with my results either. Glad to see from friend Van Deusen (REVIEW, 214) a

method which is evidently much ahead of the old way, whether it is good enough to stand as a finality or not. At least it won't make the bee man think he has burned some sulphur when really he has properly burned almost none. Just a big iron ring, at a dull red heat, laid on a stick of roll brimstone—no coals or ashes anywhere around for melted sulphur to hide in.

AMERICAN BEE-KEEPER.

Perhaps as good a treatment as any for the *A. B. K.* this time will be to take a short dip into each of the original articles of the July and August numbers.

Charles D. Hill, Dennison, O., speaks very highly of 8 half depth frames, worked directly over 7 full frames, for comb honey. He uses no excluder until surplus time. At that date the half frames will be mostly filled with early honey; but some colonies will have considerable brood in them. The sections are then put between the half frames and the full sized ones, the queen being carefully left below and kept there with an excluder. *A. B. K.*, 101. Barring an untimely cold spell to chill the lifted brood, this looks like level-headed tactics.

On page 100 is a pretty illustration—Globe Academy, Globe, North Carolina—a charming bit of natural scenery, touched by man just enough to lighten it up, and not enough to spoil it. The student who sends the picture and letter (*J. C. Moore*) says that nearly every farmer keeps a few bees, but frame hives have hardly got there yet; and the nearest Italians are ten miles away. Think of that, ye brethren, ye who are already lamenting that *pure* German bees can hardly be had any more, even for experimental purposes. Say, keep the Italian bees away, and so have one national preserve where the old fashioned bee can be had—

"As long as the Globe on its axis turns round."

A. B. K. has not been much given to illustrations heretofore, and so this picture seems to hint of stepping ahead.

Ed. Jolley, Franklin, Pa., handles Stimulative Feeding, and gets in the following sensible remark:

"It is unwise to feed when there are any symptoms of spring dwindling; for by a little coaxing their ambition will rise, and they will start brood beyond what their decreasing numbers can care for; and the dead brood thus occasioned will be more to the detriment of the colony than all the extra bees that a colony in this condition can rear. *A. B. K.*, 99.

On the well worn question, Does Bee-Keeping Pay? *Charles H. Thies*, Steelville,

Ill., reminds us that farmers are not going to leave off wheat raising, notwithstanding they have to sell for 48 cents a bushel—and so I suppose if we can't do any better than five cents for extracted, we are to grin and bear it. Page 98.

Friend *Barnum*, of Denver, reviews a previous number on page 97, and remarks that stimulative feeding will not die for some time yet. The gist of this matter is, I think, that we should look out for that stimulation which *does not stimulate*. Folks naturally assume that stimulation would stimulate of course. It transpires that often it does just the other thing. Then of course the pendulum swings the other way, and may swing too far, and need to come back a bit.

Chester Belding, Middletown, N. Y., proposes on page 119 to postpone extracting as long as possible, convinced that his "too previous" efforts last year checked brood rearing in July and August. The longer honey can be kept in the hive (if you don't get caught with your dish wrong side up in a honey shower) the better the honey, the better the bees, and the better all around. Friend *Belding* also laments a batch of queen cells that two-thirds of them turned up defunct, in spite of what seemed to be sufficient efforts to have them O. K. Takes queen breeders to manipulate queen cells; we u'ns must expect a "rocky road to Dublin."

The following from page 118 needs no comment, but still we may have a quiet smile over it—which friend *Carr* may join in when he is a few years older.

"I notice that the instant that I raise the cover they pitch at anything that is black. I discovered this on June 22nd at about three p. m.; and before I went to bed that night I had painted everything a different color."

On page 117 friend *Jolley* tells the tale of the origin of an apiary. Grandpa killed a bear; and, lo, bees in his wool, and honey on his paws—inferences and consequences very obvious. And when we wonder why the story is in such stilted English we discover an occult rhyme, running—hair, bear—came, game—trees, bees—come, hum, etc.

On the same page *W. T. Collins*, of Indian Fields, N. Y., helps the editor beg for contributions. I suspect that the time has gone by when a leading journal in any department of human thought or effort can exhibit much of that sort of mendicancy without doing itself great harm and wrong.

On page 116 friend Thies gives his own A, B, C, experience in getting a ten dollar queen killed—reliable plan—make the colony queenless ten days beforehand; cut out the cells, but miss one; then chuck in your queen. Same article gives evidence that squints in the direction of the transportation of eggs from hive to hive. A colony left long queenless for experimental purposes turned up with a young queen, and the newly opened cell from which she emerged was there. Interesting—but then a wandering queen *might* have come in, and after laying a half dozen or so of eggs might have been killed.

A. C. Amos, Delhi, N. Y., on page 115 says queen-clipping scissors should be blunt ended. Also hold the lady between thumb and finger in such a way that you will keep the wings above the fingers, and the legs below them. No F. F. bee man at present advocates cutting off the latter members, though many (I fear) practice it.

Mexico on the brain is what ails H. E. Hill, Titusville, Pa.—12,000 colonies run for beeswax in adobe pots on Mexico's hills, where honey brush is like wool on a sheep's back. Feed back the honey in the dry season to get more comb built to render up. Don't have to export the wax, because the Catholic church frowns on anything except pure beeswax for its immense supply of candles; and prices are high. Certainly very much wilder schemes than this have sometimes got afloat. See page 113.

THE GENERAL ROUND - UP

What do you suppose Doolittle has been saying lately? Says that 50 cents a hive would'nt hire him to have done what a lot of us are laboriously trying to accomplish—replace the burr combs with thick bars and no burrs. Mr. D. thinks them better than Hill's device for wintering, and worth more than the trouble they make to encourage bees in going above in honey harvest time. *American Bee Journal*, 262, I can go part way with him. The bees *actually kept* in some apiaries may be reluctant enough to go above that it may pay to preserve burrs as a persuader; but I can't say I think a man who runs for comb honey *ought* to keep such bees at all. A couple sections of drawn comb should be persuasion enough, whenever there is honey coming in. Reluctance above and beyond this ought to lead to some royal head-pinching.

Racket is still kept up because the names of journals are not given in full, when quoting in such papers as this. To help peace in the family I think I might stand it to quote a name pretty fully one time, and then initials in subsequent quotations. That would give bran new readers the means of knowing what the initials stand for, and allow me to economize space a little too.

On a part of its pages *A. B. J.* gives a new look to its face by casting out the dividing rules, and throwing two columns into one. Did'nt like it at first peep, but got used to it very quickly.

Friend Dayton thinks no ear can distinguish between the roar of contentment and the roar of discontentment. *A. B. J.*, 277. Perhaps—but then who knows what some bee boy may find out yet?

As a queen-finding device for use in difficult cases when the combs are crowded with bees, Dr. Miller gives one which is new to me on page 138 *A. B. J.* Bring on extra hive, and set the combs all two and two—each pair quite close together, and quite a space from the next pair. After hanging in this way a little while the bees will mostly be on the outside, there not being room for them elsewhere: but the queen probably will be in one of the inside spaces, and so may found with tolerable ease if you work quickly and deftly enough. If left long enough the bees on the pairs where there is no queen will begin to show excitement.

Randolph Graden, page 150, *A. B. J.*, reports wasps and hornets as suffering greatly from foul brood. Possibly this observation should be repeated, and in such a way that we might have at least one observer that is an expert in such matters.

To Italianize an apiary among impure neighbors Jennie Atchley advises raising some drones in the fall, after surrounding bees have all killed their drones, and doing the job then. Little danger of crossing, and no honey crop sacrificed. *A. B. J.*, 174. Tip top—if you don't miss of it some way.

Complaint about heavy damages from bee paralysis continues to come in, mainly from warm localities. A writer in *A. B. J.*, 179, thinks every queen-breeder shipping queens while the disease remains in the apiary ought to be blacklisted. May be he's right.

John Balmer, of Wash., having a 2,300 mile journey by rail to take with his bees, followed the up-to-date methods of proceed-

ing; and yet four colonies out of 14 perished, and the rest suffered severely. *A. B. J.*, 183. Perhaps 2,300 miles in hot weather is too big a boo for any colt—and then again, perhaps just a trifle of something additional or different would have caused them to come through in fine order.

Alley thinks the prompt destruction (and removal also, I presume) of the first few bees in a colony that show bee-paralysis will stop the progress of the disease. *Apiculturist*, page 103. No harm to try it certainly; but I suspect he has been misled by colonies that would have recovered without any treatment whatever.

Friend Alley's advertisement, on page 94 *Api.* (and elsewhere) claims substantially that his bees are foul-brood proof. Hardly the honest thing to tell young beginners, who know no better than to swallow it whole. Very likely in a good honey flow vigorous bees have *sometimes* thrown off foul brood infection without help, when the disease was in its milder phase.

And this is Alley's way of introducing virgin queens. Colony three days queenless—half an hour before dark—entrance plugged with a plantain leaf—tobacco smoke well diffused through the hive—queen dropped in at the top. Recently succeeded in 46 cases out of 47. *Api.*, 90.

Mr. Alley also thinks his plan of keeping a stock of queens ready for order better than the section nuclei plan recently circulated. Just a frame filled with 35 nursery cages hung in a queenless hive. *Api.*, 85. And the time to cut the drone comb out of frames is just when bees are killing their drones. *Api.*, 88. Build worker comb after that *if any*. Capital—except in the cases where the holes are left to be filled next year.

Dr. Miller has been doing some experiment-station work, as you may learn from *Gleanings*, 617. How to have foundation-built combs fast to the frame all round. To make a long story short, it is to put in a sheet of foundation, and fasten it all round; and then at 1½ inches from the bottom bar cut out a half inch strip to allow for the expansion and sagging in working out. A nice little kink about it is, don't open the space clear across; leave an inch by each end bar (no sagging there) else they'll have an open space clear down to the lower corner. Creditable to the Dr., and no doubt serviceable to the apiarist *for awhile*. But if I am correct nothing can cure bees of their

habit of running down to the bottom to pinch up a little wax for use in emergencies. In a few years they will have the space open, no matter how solid you fix it at first.

RICHARDS, Lucas Co., Ohio, Sept. 3, '94.

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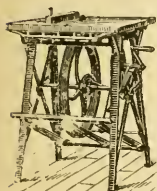
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 1-94-12t Mazeppa, Minn.

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By Return Mail. FINE ITALIAN QUEENS. Bred for Business. Beauty and Gentleness. Untested in June. \$1 00; July to October 75c each; 6 for \$4.25. Safe arrival and satisfaction guaranteed. Send for free circular to

Theo. Bender,

6.94.tf

Canton, Ohio.

Please mention the Review

THE BACON HOUSE

—WILL BE THE—

Bee - Keepers' Head - Quarters

—AT THE—

St. Joseph, Mo., Convention.

The only Hotel in the city having Rooms with Private Baths. Electric Bells, Passenger Elevator; Gas Light and Steam Heat in every room. First-class in every respect.

SPECIAL RATES of \$1.50 and \$1.25

Per Day to Bee-Keepers during Convention.

E. E. BACON, Propr.,
 St. Joseph, Mo.

—If you are going to—

BUY A BUZZ - SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

KNOCK DOWN !

Yes, I have a large stock of D. T. Hives, Supers, Frames, Sections, etc., all in the "knock down," and ready to ship at a moment's notice.

Write at once for large catalogue and price list of everything needed in the apiary.

E. L. KINCAID,

3-94-tf

Walker, Vernon Co., Mo.

Please mention the Review

— If you wish the best, low-priced —

TYPE - WRITER.

Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars or to correspond with any one thinking of buying such a machine.

The Practical Bee - Keeper

Possesses brightness, reliability, honesty, purity of tone, circulation, and the confidence of its readers. In addition it is PRACTICAL from cover to cover. Published monthly, 50 cents per annum. Sample copy on application. THE PRACTICAL for one year and one genuine Five-Banded Golden Italian Queen for \$1.00.

THE PRACTICAL BEE-KEEPER,

Tillbury Center, Ontario, Can.

BEE SUPPLIES!

Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address **T. G. Newman, 147 So. Western Ave., Chicago.**

Out on the Prairie,

Away from other varieties of bees, I rear Italian queens that cannot be excelled for Beauty, Gentleness, and Business Qualities; and I offer them for April delivery at the following prices:—

One Untested Queen, 65 cents; three for \$1.75; six for \$3.25. Tested, \$1.25; select, tested breeder, yellow to the tip, \$1.50. Virgins. 25 cts. each. 3-94-tf

G. E. DAWSON, Carlisle, Ark.

If you are not using the

New Heddon Hive

It may seem incredible that it would enable you to obtain the same results with considerable less labor and much more comfort than with other styles of hives, but a fair and impartial consideration of the reasons, as set forth in my circular, will show that this statement is not overdrawn, and the circular is yours for the asking.

11-93-tf A. E. HOSHAL, Beamsville, Ont.

Please mention the Review.

UNTESTED ITALIAN QUEENS,

From the best of imported, and golden stock, 60 cts. each; \$6.00 per doz. Warranted queens, 80 cts. each. Tested queens, \$1.00 each. Safe arrival and satisfaction guaranteed.

J. W. K. SHAW & CO.,

4 94.tf

Loreauville, La.

Please mention the Review.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

Please mention the Review.

WRITE US

Before ordering your sections and we will give you **BOTTOM PRICES** on the

"BOSS" ONE-PIECE SECTION,



Also D. T. HIVES, SHIPPING CRATES and other Supplies.

We have everything in tip-top order, and can fill orders on short notice. Let us hear from you for prices.

J. FORNCROOK & CO.,

Jan. 1st, 1894.

Watertown, Wis.

Please mention the Review.

Home-Made, FOOT-POWER BUZZ-SAW.

I have for sale a home-made, foot-power buzz-saw made by my brother. The frame work and table are well and substantially made, the main shaft and band wheel are of iron, and the mandrel one of Root's \$3.50 mandrels, with a seven inch saw. Although the machine has been used a year or two it is in perfect order, and is probably as desirable in all respects as any foot-power saw made. It is offered for \$18.00.

W. Z. HUTCHINSON, Flint, Mich.

TELL YOUR READERS

To order queens of J. N. COLWICK, Norse, Texas, where they can get a nice tested **ITALIAN QUEEN** (reared in 1893) for \$1.25. Untested queens in April or May at \$1.00 each or \$9.00 per dozen. Safe arrival guaranteed. Orders may be booked now for bees, queens, drones, etc., and they will be shipped when wanted.

2-94-tf

J. N. COLWICK, Norse, Texas.

Please mention the Review.

NEW YORK CITY

Is the center of more R. R. and Ex. Co's, than any other place in the country. That means low transportation charges. Combined with this the fact that our prices are low and supplies first-class, shows a reason WHY you should send for our circular.

I. J. STRINGHAM,

105 Park Place, 1-94-12 New York, N. Y.

Please mention the Review.

Given Away,

Our new catalogue of Bees and Bee-Keepers' Supplies to any sending their address. It contains the latest prices on **HIVES, CRATES, SECTIONS, FOUNDATION**, and the new Stirrer **FEEDER**; one of the best feeders in the market—just the thing for spring feeding.

OLIVER HOOVER & CO.,

1-94-tf

Riverside, Pa.

BEE SUPPLIES SUCH AS HIVES SECTIONS, FOUNDATION, EXTRACTORS, AND EVERYTHING ELSE USED BY A BEE-KEEPER. ALSO CLOVER SEED, BUCKWHEAT, BEES AND QUEENS. LARGE WHOLESALE AND RETAIL CATALOG FREE. IMMENSE STOCK. ADDRESS **JOS. NYSEWANDER, Des Moines, Iowa.**

DADANT'S FOUNDATION

Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. **CHAS. DADANT & SON, Hamilton, Ills.**

4-94-12t

Please mention the Review.



QUEENS,

Either golden or leather colored; as good as any and better than many. Try one queen and be convinced. Satisfaction is guaranteed. Warranted queen, \$1.00; tested, \$1.50; selected, \$2.50. Queens ready to ship June 1st. **JOS. ERWAY,** Havana, N. Y.

Please mention the Review.



Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and 5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS,** Lavaca, Ark.

5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. 2-94-tf

Please mention the Review.



BINGHAM PERFECT BEE SMOKER

Pat'd 1878, 1882, & 1892.

Cheapest & Best on Earth.

Send Card for Circular to **Bingham & Hetherington** ABRONIA, MICH.

Please mention the Review.

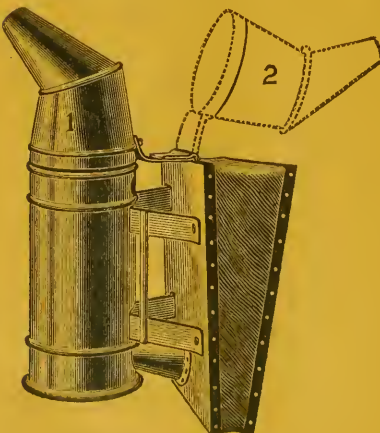


HONEY JARS, Beautiful, Accurate and Cheap. The trade supplied. Bee Supplies; Root's goods at Root's prices and the best shipping point in the country. Write for prices.

WALTER S. POWDER, Indianapolis, Ind.

1 84.12t

Please mention the Review.



ALL BEE-KEEPERS Want a Good Bee Smoker.

The Higginsville Smoker is designed to supply this want at a reasonable price.

The Higginsville Smoker is a "daisy," has a 3 inch fire box, a hinged curved nozzle that will turn back out of the way while loading, and has a bar of folded tin running horizontally with the fire box to keep the hand from coming in contact with the hot fire box.

We claim the following points for this smoker: Cheapness, Excellence, Strong blast, Heavy volume of smoke and no burnt fingers.

Price, 60c. each; 6 for \$3.00; \$5.00 per doz.

20 cents extra by mail. Special prices to dealers.

If you will send us your name plainly written on a postal card we will mail you our catalogue of Bee-Keepers' supplies, also a copy of the Progressive Bee Keeper, a journal devoted to Bees and Honey.

Address:

LEAHY M'F'G. CO., Higginsville, Mo.

OCT., 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

Clubbing List.

I will send the REVIEW with—		
Gleanings.....	(\$1.00)	\$1.75.
American Bee Journal.....	(1.00)	1.75.
Canadian Bee Journal.....	(1.00)	1.75.
American Bee Keeper.....	(.50)	1.40.
Progressive Bee Keeper.....	(.50)	1.30.
Apiculturist.....	(.75)	1.65.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

CHICAGO, Ill.—Choice white comb honey sells at 15c. per pound, grades that come under the class "dark," at 10 to 12c; extracted, 6 to 7. Beeswax, 27 to 28c.

R. A. BURNETT & CO.,
Oct. 29. 163 So. Water St., Chicago, Ill.

CHICAGO Ill.—Honey receipts quite liberal, and we quote as follows: Fancy white, 15; No. 1 white, 14 to 15; fancy amber, 13; white, extracted, 6 to 7; amber, extracted, 5 to 6. Beeswax, 26.

J. A. LAMON.
Oct. 29. 43 So. Water St., Chicago, Ill.

BUFFALO, N. Y.—Stock on hand is light, but the demand will improve as soon as small fruits are all out of market. Prospects look good, and we advise liberal shipments to our market. We quote as follows: Fancy white, 14 to 15; No. 1 white, 12½ to 13; fancy dark, 10 to 11; No. 1 dark, 8 to 9; white, extracted, 6 to 7. Beeswax, 25 to 30.

BATTERSON & CO.,
Oct. 29. 167 & 169 Scott St., Buffalo, N. Y.

KANSAS CITY, Mo.—We quote as follows: No. 1 white, 15; No. 1 amber, 13; No. 1 dark, 10 to 12; white, extracted, 7; amber, extracted, 6; dark, extracted, 6. Beeswax, 20 to 21.

CLEMONS-MASON CO.,
Oct. 30. 521 Walnut St. Kansas City Mo.

NEW YORK, N. Y.—We have received more comb honey this year than ever before and the market is well supplied. Demand is fair, only. We quote as follows: Fancy white, 14; No. 1 white, 12 to 13; No. 1 amber, 11 to 12; Fancy dark, 10; No. 1 dark, 9; white, extracted, 6 to 6½; dark, extracted, 5 to 5½ cts. per gallon. Beeswax, 29 to 30.

HILDRETH BROS. & SEGELKEN,
Oct. 31. 28 & 30 West Broadway New York.

MINNEAPOLIS, Minn.—There is a good demand for strictly fancy white clover and the supply is light. Arrivals are meeting with ready sale, but it is evident that any very heavy shipments would overload the market and lower the price one cent per pound. We quote as follows: fancy white, 17 to 18; No. 1 white, 16 to 17; fancy amber, 15; No. 1 amber, 13; fancy dark, 11; No. 1 dark, 10; white extracted, 8; amoer, 6; dark, 5; beeswax, 25 to 28.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Oct. 31.

CHICAGO, Ill.—We have sold thus far this season over 1,000 cases of comb honey, ranging in price from 15 to 16 cts., in a small way, while we wholesale it at 14 cts. We can dispose of all our receipts promptly, and advise shipments to market early. We will make liberal advances on consignments. Extracted honey is selling at 6 cts. We are trying hard to crowd the market to 7 cts. for new crop of clover and basswood Beeswax, 28 cts.

S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.
Sept. 21.

ALBANY, N. Y.—Honey in better demand, especially the high grade of white comb honey; No. 1 white, 14 to 15; No. 2 white, 13 to 14; mixed, 11 to 12; No. 1 buckwheat, 12 to 12½; No. 2 buckwheat, 11 to 11½; white extracted (northern), 7 to 8; Amber, 6 to 6½; buckwheat, 5½ to 6. Beeswax, 27 to 29. Do not look for much of any change in these prices and advise now to have honey on market early as possible for best prices.

H. R. WRIGHT,
Sept. 21. Cor. Broadway and Hamilton Sts.

\$1,000 in PRIZES

Divided into 4 1st prizes of \$150 each, and 4 2d prizes of \$100 each will be given for best designs for

WALL PAPER

Send 2c. for complete detail information. Designs must be entered before Nov. 15, 1894. Designs not awarded prizes will be returned, or bought at private sale.

No matter where you live, don't pay retail prices for wall paper. We make a specialty of the mail order business and sell direct to consumers at factory prices.

SPECIAL FALL PRICES. Gold Paper 3c. and up.

At these prices you can paper a small room for 5c. Send 10c for no. face on samples of our new fall paper and our book "How to Paper and Economy in Home Decoration," will be sent at once, slow in how to get \$50 effect for \$5 investment. Send to nearest address.

ALFRED PEATS, DEPT. 88.
30-32 W. 13th St., 136-138 W. Madison St.,
NEW YORK. CHICAGO.

WINTER LOSSES

Are not always the result of the same cause. They may come from starvation; from poor food; from improper preparations; from imperfect protection; from a cold, wet, or, possibly, a poorly ventilated cellar; etc., etc. Successful wintering comes from a proper combination of different conditions. For clear, concise, comprehensive conclusions upon these all-important points, consult "ADVANCED BEE CULTURE." Five of its thirty-two chapters treat as many different phases of the wintering problem.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

I have several hundred

QUEEN CAGES

of different styles and sizes, made by C. W. Costellow, and I should be pleased to send samples and prices to any intending to buy cages.

W. Z. HUTCHINSON, Flint, Mich.

—If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

Muth's HONEY EXTRACTOR PERFECTION Cold-Blast Smokers

Square Glass Honey Jars, Etc.

For Circulars, apply to CHAS. F. MUTH & SON Cor. Freeman & Central Aves., Cincinnati, O. Send **10c.** for Practical Hints to Bee-Keepers.

1-94-tf.

Please mention the Review.

BEE SUPPLIES!

Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address **T. G. Newman, 147 So. Western Ave., Chicago.**

Please Cut Out
This whole Advt.
Sign, and Mail.

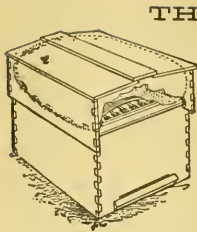
Please send me the American Bee Journal each week for Three Months. At the end of that time I will remit \$1.00 for 1 year's subscription, or 25c. in case I decide to discontinue.

To the Publishers of **American Bee Journal,**
56 Fifth Avenue, CHICAGO, ILL.

Name _____

P. O. _____

State _____



THE

Root Dovetailed Chaff Hive.

IT IS NEAT, LIGHT, WELL DESIGNED,

—AND A—

PERFECT WINTERING HIVE.

The walls, both outer and inner, are made of clear 3/4-inch pine, and have two inches of space between them for packing. The corners are, of course, dovetailed for strength and lightness. The cover is seven inches deep, and telescopes clear over the water-table, making it impossible for water to seep in and wet the cushion. In summer this cover makes a perfect "umbrella shade-board." The furniture, including supers and covers for the regular single-walled Dovetailed Hive, also fits the hive. For a hive for **ALL PURPOSES** we know of nothing better. It weighs, when packed with chaff, only five pounds more than the same capacity in the single wall. As to **WINTERING**, we have tested this hive thoroughly, and know it to be a success. By the way, don't forget that we have a

Dovetailed Winter Case

Designed for use as a protection in wintering, for the regular single-walled Dovetailed Hive. It is made up of the same cover as shown above, and the same outside wall. Write for prices and particulars on both the winter case and Dovetailed Chaff Hive before you place your order.

A 52-page Catalog sent free.

A. I. ROOT, Medina, Ohio.

DAUGHTERS of one of Doolittle's best, 5-banded breeders mated to selected drones from Jennie Atchley's 5-banded strain, untested, 60 cts; tested, 90 cts.; extra yellow. \$1.25.
5-94-tf L. H. ROBEY, Worthington, W. Va.



FREE: My new price list of pure Italian bees and queens, and white and brown ferrets. 3-94-12t

N. A. KNAPP, Rochester, Ohio.

World's Fair Medal

Awarded my **FOUNDATION**. Send for Free Sample and Large Illustrated Price List of everything needed in the apiary.

M. H. HUNT,
Bell Branch, Mich.

9-94-tf

PATENT. WIRED, COMB FOUNDATION

HAS NO SAG IN BROOD FRAMES.
Thin, Flat - Bottom Foundation
HAS NO FISHBONE IN SURPLUS HONEY.
Being the cleanest, it is usually worked quicker than any fdn. made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),

3-90-tf Sprout Brook, Mont. Co., N.Y

Please mention the Review.



ON HAND NOW.

THE MOST COMPLETE STOCK
OF BEE HIVES, SECTIONS AND
SUPPLIES IN THE NORTHWEST.

W. H. PUTNAM,

1 94-12t.

RIVER FALLS, WIS.

If You Wish Neat, Artistic

PRINTING,

Have it Done at the Review.

MONEY RETURNED

to all buying **PORTER BEE ESCAPES** not satisfied after testing them. Prominent bee-keepers everywhere use and highly recommend them as the best. No others received a World's Fair award. Testimonials, etc., free. Prices: Each, postpaid with directions, 20 cts.; per doz., \$2.25. Order from your dealer, or the mfrs., **R. & E. C. PORTER, LEWISTOWN, ILL.**

The Bee-Keepers' Review

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, OCT. 10, 1894. NO. 10.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

AN EXPERIMENT WITH FOUL BROOD.



MUCH ques-
tion has been
recently made as
to the likelihood
of foul brood
germs being
preserved and
conveyed in the
beeswax of com-
merce, and, so, as
to the danger of
contracting the
disease of foul

brood by the use of foundation manufac-
tured from such wax. I think that no seri-
ous question will be made that the vitality of
the germs referred to would be destroyed
were the wax containing them brought to
the temperature of boiling water and that
temperature maintained for say a quarter of
an hour, but it is to be remembered that
there are several facts which make it possi-
ble for wax to be rendered and put in a
marketable form without bringing it even
approximately to the temperature of boiling
water, and, indeed, without the careful use
of a thermometer one may easily be deceived
and induced to believe that his wax is of

that temperature when it lacks many degrees
of it. Thus the melting temperature of wax
is about 140°, which makes it possible by ap-
propriate methods to render, cleanse and
cake wax without employing a temperature
to exceed 150° or 155° while the temperature
of boiling water is at least 57° greater.
Then, anyone who has had much experience
in the manipulation of wax could not have
failed to notice that as wax is slow to give off
heat it is in the same degree slow to receive
it, *i. e.*, as compared with water: the conse-
quence of this being that the water under
melting wax may be brought to the boiling
point and by its action cause the wax to bub-
ble and appear to boil while in fact it re-
mains many degrees below the temperature
of 212°, indeed, much of it may be still un-
melted and consequently below 140°. Again,
of late, much use is made by bee-keepers of
the solar wax extractor in the rendering of
wax, the temperature of which in this local-
ity seldom reaches 180°. In all this it is also
to be borne in mind that as the weakest link
is the strength of the chain, so the lowest
temperature to which any part of a lot of
wax attains is the temperature to be con-
sidered with reference to the degree neces-
sary for the destruction of foul brood germs.
The danger then is in failing to bring all of
the wax to the temperature necessary for
the thorough devitalization of the germs.

It may be said that though wax made from
the combs of diseased colonies may contain
and preserve germs in a state of vitality, yet
the process of its manufacture into founda-

tion is such that that vitality is destroyed thereby. This may be so, but it cannot be confidently affirmed without a knowledge of the degree of heat which is applied in the process to all parts of the wax. It is well known that it is a generally accepted fact that a high temperature is injurious to wax in consequence of which we may suppose there is a laudable desire on the part of manufacturers to apply no more heat than is necessary to the wax in the process of its manufacture into foundation, and, as no more than 160° is absolutely necessary for that purpose, the maker, under an impression that a given lot of wax is free from disease germs—an impression which may be without any solid foundation—may apply a temperature no higher than that, and if it shall turn out that the wax contained live germs, and that 160° is insufficient to kill them, the consequence would be the almost certain propagation of the dread disease in places where perhaps it was never before known.

The danger is thus apparent unless it can be determined that the temperature necessary for the rendering and manufacture of wax into foundation is sufficient for the destruction of the germs.

With the purpose of attempting at least a partial solution of this question, in the summer of 1893 I placed combs, pretty thoroughly affected with foul brood, into a solar wax extractor to be rendered into wax. In rendering the combs a thermometer was kept in the extractor and frequently observed, and at no time was it seen to show a temperature higher than 180°, and only once at that point, but of course the wax melted and ran into the receptacle below, at all temperatures below that which were sufficiently high for the purpose. There being no opportunity to complete the proposed experiment that season the wax thus obtained from the combs was laid aside till the present year.

This year in June the wax was again put in the solar wax extractor, the temperature rising in the process to 175°. When the wax was melted and stood in the receptacle in a liquid state the dipping tank was supplied with water at a temperature of 155° and when everything was ready the melted wax was poured into the tank and sufficient of it dipped to supply two colonies. The resulting sheets were made into foundation with the Given press and fitted into the frames of two hives and on the 20th of July a colony of

bees was put into one of them and on the 25th one was put into the other. The last was rather a weak colony and a little later superseded its queen so that it worked out only about one-half the foundation, while the other one made use of nearly all its foundation. At different times the colonies were examined for foul brood, but no sign of it was found till the 8th of October when nearly all brood being hatched out a thorough examination was made and a single cell of apparently foul broody matter was found in each. This raises a very strong presumption, almost amounting to certainty, that the wax conveyed the disease but the hives will be watched another season for further developments.

The method of curing foul brood heretofore recommended, and which I have so often proved effective, was tried again this year, upon a colony which was rather badly affected, with the usual satisfactory results. The method pursued will be found fully explained in a former report.

It is a question of much interest whether a colony once affected with the disease of foul brood always succumbs if left to itself, or, whether, under some circumstances, it is able to overcome and eradicate the disease. The colony referred to a year ago as having foul brood unmistakably in the year 1892 is still being kept under observation with reference to this point. The colony has continued strong and prosperous. During the month of August one cell containing foul broody matter was discovered but early in October when there was only little brood remaining, not a single sign of disease could be discovered on a thorough examination. It is too early to affirm that the disease may die out of itself, but it has certainly decreased in this colony within two years, and appearances favor the opinion that its eventual extirpation is possible.

LAPER, Mich.

Oct. 11, 1894.



Sulphur an Apparent Cure for Bee Paralysis.

O. O. POPLETON.

BEE paralysis seems to be the most thoroughly misunderstood of any important part of bee culture, and it is fully time that some of our experiment stations were giving us some definite knowledge of the disease.

I first met it in my own apiary in Iowa, some fifteen or sixteen years ago. It was a very serious matter for a couple of years, cutting down the income from the apiary fully one-fourth; then it gradually died out, but the apiary was never entirely free from it during the working season. I saw a little of it in Cuba, but not enough to trouble one's self about. It has been very bad in my apiary here last year and this, cutting short my this year's honey crop by from 5,000 to 8,000 pounds.

Mr. Getaz gives a fair description of the disease in *September Review*. I never saw any brood affected with the disease. It is an exceedingly erratic disease. At times it seems to follow no rules; at other times it works in well defined limits. This leads to many opinions concerning the disease, all of them practically worthless when the observer has had only a very few cases, and opinions are nearly as valuable where one has observed a hundred or so colonies, as I have.

Mr. Dayton says (page 248) that colonies affected in summer were not in winter. My experience both in Iowa and here is different. He also says that it appears to be caused by imperfect queens, which become imperfect through extensive egg laying. With me, my nuclei with young, perfect queens has suffered much more than old colonies with old queens; exactly the reverse of his idea. Changing queens has worked well with him. Has been a failure with me. Salt has been strongly recommended by Mr. Alley and others. It had no effect whatever for me. Sulphur has been a failure with Mr. Dayton. It is the only thing I have tried that had any effect whatever. Mr. Ford (page 240) thinks Northern bred queens are more free from the disease than others. Every queen I have had from the North for two years, except one, has had the disease and their daughters have seemed peculiarly liable to the disease. Mr. Ford also says the disease does him no harm except in the spring and during the honey flow. With me it has been worst at those times, but not confined to them. In your editorial you say that in the working season there is not much time for the disease to make headway before the life of the bee has run its natural course. On the contrary in bad cases during the working season but few bees indeed ever reach the field-working age. One of the important points to be learned about the dis-

ease is, as to whether there is any thing contagious about it, and, if so, what part of the hive and its contents will carry the contagion. I have experimented some on these points; not enough to reach any conclusive opinion, but still results pointed to the fact that neither hive, honey, nor combs of brood would carry the disease, but the queen and diseased bees would carry it. If this proves true, one can easily eradicate the disease in his apiary by destroying all old bees and queens, and giving brood to other colonies. I have practiced this some, but in doing it one wants to use great care that no dead or diseased bees remain sticking in any of the cells. Diseased bees are very apt to crawl in a cell to die.

I have tried every remedy I could hear suggested. Changed queens with no result. Used salt, both in the feed and on bottom of hive. Have also used salicylic acid. All failed.

Last spring I dusted my diseased colonies, three or four at a time, with sulphur. Used about a table-spoonful of dry sulphur, and saw that all the combs and bees were well dusted. More bees would die immediately after treatment than before, but in a couple of weeks after treatment, all dying seemed to cease and no trace of the disease has as yet reappeared in the treated colonies. I treated them all, a few at a time, so as to observe the difference, if any, between those not sulphured and those that were. In all cases those not treated remained diseased and those that were recovered. So far, no trace of the disease has returned in my apiary, but next spring is when it will be most apt to return if at all. In two or three cases I gave too much sulphur, which resulted in not only killing all the brood, but all eggs laid for some days afterwards refused to hatch. I remedied this by changing these combs for combs and brood from healthy colonies. While the fifteen or twenty colonies I treated last spring were perfectly cured, I do not feel that the experiment is any where near extensive enough to make it certain that it is going to be a success.

Some of our experiment stations can confer a great boon on bee-keepers by making a thorough examination of this disease and learning more of its nature than individuals who depend upon their bees for a living can do. I have often marvelled why this has not been done long before this.

POTSDAM, Fla.

Oct. 12, 1894.

Symptoms of Bee Paralysis; What May Be
Done to Cure it and Prevent its Spread-
ing,—Mistaking it for Poisoning
by Yellow Jasmine.

T. S. FORD.

DEAR SIR:—Sitting down this morning to carry out my promise to furnish you with an article on bee paralysis, I happened to think of a letter that I had written for the *American Bee Journal*, which was not forwarded for the reason that just as it was finished, I saw a letter from another Southern apiarist refuting the article referred to by me, and therefore I did not send it. It contains a description of the disease, and perhaps you can by striking out such parts of it as you choose, make it serve, or by turning to the back numbers of the *Bee Journal*, which I have failed to preserve, you can fill out the blank in my letter, and use the article as it is. Having suffered severely from not recognizing the signs of the disease at first, and being of the opinion that it is a worse affection than foul brood, I hope that the bee journals will familiarize their readers with the subject, and teach them its danger. The fact is that I believe that there is no topic of more vital interest to apiarists than this. If you will take it up, and institute a systematic inquiry as to the nature, history and cure, you will do more for the cause, and be of greater benefit to the beekeepers of the country, than you could do in any other way.

While on the subject of bee paralysis, I will say that I have tried the sulphur cure, salt, re-queening and salicylic acid and transferring to new combs, and all these remedies have failed in my experience. There are of late letters published in the periodicals devoted to bee culture, stating that sulphur has cured the disease. Last year Mr. Golden and others, have reported cures from the use of salt. Now it is strange that all these have failed in my hands. The only explanation that occurs to me is that the return of warm weather always makes an apparent cure, and the reported success of these various remedies may be due to the fact that the disease gave way to the approach of summer weather. I fed one colony on salted honey for weeks, without any appreciable benefit.

Judging from the number of letters published during the last two years reporting

cases of bee paralysis, it must be that the disease is greatly on the increase. North of the Mason and Dixon line, it does not seem very serious in its effects, but in this latitude most of the colonies that suffer from it are worthless to their owner. The colony runs down in numbers during the honey flow, which comes in the spring, so that they store no surplus. It may recuperate in summer and build up so that the hive is full of bees, but it all amounts to nothing, as the bees store nothing but honey dew, during our hot weather. When cool weather returns, the disease reappears to blast the hopes of the apiarist again. It would be far better for the luckless apiarist to lose his bees outright than to be thus tantalized by the hopes of a final recovery.

There are some truths in regard to bee paralysis that I regard as settled.

First, the disease is highly infectious. A queen from a colony that is infected, though she show no sign of the disease at all, will infect the colony into which she is introduced. Robber bees will carry the infection. Where the hives are kept within a foot or two of each other, the malady will spread from one to another until all are diseased. This is effected, probably, by the bees, which by mistake enter the wrong hive.

Secondly; the various remedies so far proposed are wholly ineffectual to produce a cure. The correct method of procedure, clearly is, to destroy the diseased colony, and disinfect the hive and combs, if the disease is detected, before it has spread. If it is permitted to remain in an apiary any length of time, it gets a foot hold by spreading to neighboring apiaries, and to colonies in the woods, so that it will effect a permanent settlement in a county, and thus remain to blast all prospects of success in apiculture in that locality. This has already happened in one part of California.

Finally, it is suggested, that no queen breeder should ship queens from an apiary that is infected. I took a queen from a colony that had apparently made a perfect recovery from the paralysis, and had shown no signs of the disease for six months and introduced her into a colony in my brother's apiary; and the result was, that in a few months, his bees perished from the disease. As a class, I have found that people who get interested in bees are morally superior to the average of men and women. But there are bad men in the business. The man who

sold me the colony which infected my apiary persists to this day in asserting that he has never had bee paralysis in his apiary, and now I suppose that he is selling queens and scattering the disease all over the length and breadth of the land. Every scientific man, who is acquainted with modern ideas, knows that there is no such thing as spontaneous generation, and that an infectious malady like this has its origin in some germ or bacillus, and is propagated like small pox, from contagion. A conscientious queen breeder will not sell queens from an infected apiary. I propose that the bee journals invite their readers to report any outbreak of the malady and if it comes from a queen purchased from a breeder, to give his name to the world, so that he may have no further opportunity to disseminate contagion through the country.

You will render an untold good to your readers, if you will invite communications of this sort. Probably 99 per cent. of your readers have no queens for sale, and you will enlarge your subscription list if you will let it be known that you will undertake the task of exposing those unscrupulous persons who have so little conscience as to spread disease and death in the apiaries of the land. The various associations ought to take the matter up and do every thing possible to prevent the further spread of this malady. The journals devoted to bee culture should keep the matter before their readers and invite communications from those who have anything of interest to give to their brethren in regard to this subject. No man should purchase a queen from a breeder without first inquiring whether there had been for six months past any bee paralysis within two miles of the apiary. If a breeder should then make a false statement in reply, to the effect that there had been no bee paralysis in his apiary, and it should turn out that the queen was infected, a prosecution for obtaining money under false pretenses might be maintained successfully. Queen breeders, who are honest, and who have not got the infection, will find it to their advantage to add in their advertisements, "There is no bee paralysis in my apiary." In my opinion, it will not be many years, before it will be impossible to carry on the business without some assurances of this sort being given to the purchaser.

Cholera and yellow fever are excluded from our country by quarantine methods. This has resulted from an understanding of the

nature and methods of the propagation of these diseases. There was a time when these visitations were regarded as inevitable and as Providential. It is now known that they can be controlled. And so if it were understood that this disease is infectious, and the proper precautions are taken against the spread of the disease, by bee-keepers at large, it is possible to prevent its further dissemination.

[Here follows what Mr. Ford originally wrote for the *American Bee Journal*.—Ed.]

In a late number of the *American Bee Journal* was an article copied from *Gleanings* upon the poisonous character of the pollen of the Southern yellow jasmine, to which I wish to call the attention of Southern bee-keepers as written under an apparent misapprehension. The writer maintains that the pollen of this flower is poisonous and that the bees swell up and die in great numbers during the period when these flowers are in bloom. I have not the article before me, but the readers of the *Journal* will probably recall it.

I am aware that many mistakes are made in the progress of every department of scientific inquiry occasioned by two obstacles: One is the habit of jumping at conclusions without sufficient data upon which to base them, and the other is the lack of close and accurate methods of observation, and patience in verifying and collating them before accepting them as proven. We are most of us prone to these mistakes.

It is submitted that one intelligently observed and accurately established fact is worth a whole volume of theories, to the intelligent apiarist, who reads the periodicals, in which all find so much pleasure.

Now, in order to enable our friends who are interested in this subject to get at the truth as to whether the instincts of the bee fail to protect her from laying up for the young of her well-ordered community a food that is poisonous, and calculated to destroy instead of preserving it, I propose to submit with diffidence, in opposition to the views of the above writer, that the symptoms of poisoning from the yellow jasmine flower, which he gives on page 182, are precisely the symptoms of a very contagious disease well known under the name of bee paralysis, which I have had in my apiary continuously for three years. He does not give all the symptoms, but those that he does give are unmistakable, and indicate clearly to my mind

that he has in his apiary a disease for which no remedy has yet been found, and which in my experience, is a worse foe to the success of the apiarist in the South than the dreaded foul brood. The attention of this gentleman is invited to the symptoms of bee paralysis, which are as follows: The first advent of an infected bee into a healthy colony is detected by the vigilant little guard bees, who will be seen pulling and hauling at the infected individual, striving with all their might to drag it from the hive, and gnawing it all over. The suspect in vain tries to appease the guard by offering the contents of the honey sac; she extends her proboscis at great length, and may be seen scraping it with her forefeet, but all to no purpose. The guards get on her back and gnaw her all over, and use their best efforts to get rid of her by every means short of using their stings. At the next stage the infected bees will be seen stripped of their hair, and showing a thorax of a bluish black color, which discoloration extends to the greater part of the abdomen. This loss of hair has been attributed by some to the effects of the disease, but a more careful observation has led me to believe that the bees gradually gnaw all the hair off of them. These hairless bees will now be seen to grow emaciated, some of them being shorter and more slender than natural. They then will be seen with tremulous wings shaking and quivering as though palsied. After a period more or less extended, the third stage is reached, when the hive is thoroughly infected and bees begin to appear at the entrance with their abdomens very much swollen and distended by thin yellow feces, which they sometimes discharge, spotting the alighting board with yellow splotches. The bees appear paralyzed, and move with difficulty, while their wings exhibit a characteristic quivering motion that once seen can never be mistaken. They now die in the hive and in the morning they are dragged out by scores. Soon a heap of dead and rotting bees will accumulate in front of the affected hive and a peculiar disagreeable odor will be noticed on lifting the hive cover. About this time the infection becomes so virulent that bees will begin to drop dead by thousands all about the apiary. Standing under a wild peach tree in bloom at such a time, I have seen bees with no sign of the disease drop dead from the flowers. About and in front of the apiary, bees will be seen to fall with heavy loads of pollen,

and to die instantly. All this happens, some years, during the height of the honey flow, and the apiarist feels tempted, after trying every remedy that he can hear of, to give up in disgust; but, as the warm nights come on, and the honey flow has passed, these symptoms moderate, and colonies that have not lost their queens begin to build up again, and by the middle of summer, only an experienced eye will see any sign of the disease in most of the colonies. Perhaps one colony in twenty will persist in putting out a few swollen dead bees each morning, and will manifest the presence of the enemy every month in the year. This is bee paralysis as I have seen it for three years. It is much worse some years than others. And during all this time there will be a few colonies that do not show any signs of the disease at all. Now if the writer above quoted were correct, and these effects followed the blooming of the yellow jasmine, why do not these signs appear in all the colonies? Why does one apiary show this mortality, and another only a mile off show nothing of it, and finally, if it is the jasmine flower, that does this work, how is it that this whole series of effects appear in the North and West, where no yellow jasmine ever grows?

In our Southern climate at least, it is important for the apiarist to be able to recognize the disease when it first appears. He ought not to rest under the delusion that his bees are suffering from the consumption of the pollen of yellow jasmine or from any other poison, but as soon as the disease is observed, he ought to isolate the affected colony by moving it to a distance. And if he does not wish to take the radical measure of stopping the spread of it by killing out the bees, he ought at least to watch it carefully, and the moment the robber bees begin to assail the weakened community, he ought to make way with it at once, because beyond all doubt, robber bees do carry the infection home with them.

There is no excuse for the length of this article except the importance of the subject, and my desire to prevent others from suffering the loss that has fallen to my lot, from not being able to recognize the disease at the outset.

COLUMBIA, Miss.

Sept. 14, 1894.

Entrances; Brace Combs; Introducing;
Economy in Labor; Blacks; Seat
Tool - Box; Bee Paralysis Cured
Through the Queen.

O. W. DAYTON.



THE bees have gathered sufficient honey for household use each day since last January. From Feb. 1st to July 1st they were near starvation, because it held out foggy until ten o'clock and then was cloudy from two o'clock until

night. But they lived on the daily gather, then. One colony starved. Those moved to the sage belt got a light flow about the first of May. I am located ten miles from the sea shore.

In using auger holes for entrances, if the apiary is not surrounded by a tight board fence, cold, windy weather might trouble. Then if there is such a fence the bees may get outside of it in the shade, and perish. Here it is always warm, and seldom windy. Some one thinks mice may enter. With $\frac{3}{8}$ wide frame material this is possible as the spaces are $\frac{1}{2}$ inch or more. With material one and one-sixteenth wide and three-elevenths spaces mice are practically excluded. With my kind of entrance there is more or less accumulations on the bottom boards distant from entrance. If we clean the bottom boards it is as well to move more or less but with nailed bottom boards it is impossible to move any however great the need.

It appears that Mr. Doolittle's 13-inch-long top bars of this material would have no more brace combs than 18 $\frac{1}{2}$ -inch-long top bars of thick material, if as may be inferred, sagging causes wide spaces and wide spaces cause brace combs. Considering that both lengths of top bars are of the same width of material.

Even that ten-day method of introducing queens on page 255 would not work at the beginning of or before the harvest here. I kept queens caged 20 to 30 days and they were balled whenever released. After the harvest, after the drones were killed, any

plan worked. My plan was to cause the colonies to rear cells and then put in a cell of my own selection.

It is poor management where 175 pounds of man spends his time turning extractors or putting up sections when a 12-year-old boy would do the same for \$1.50 per week. Let the man sit out in the apiary and study how to improve his queens, and figure out why it is that one colony stores four times as much as another, why certain colonies cluster out or refuse to enter the sections, etc., etc. Allow him no newspapers but plenty of bee books and journals and shade.

Those colonies which were the gentlest and and would allow any kind of rough handling without veil or smoke before the harvest are, since the harvest, as cross and mean as yellow jackets. The purer the Italians the worse the temper. The opposite is the case with blacks and hybrids. October, November and December seem to be of the greatest dormancy in this climate (of the bees.)

For years it has been known that sugar and water could be mixed by agitation but the percolated article described by Dr. Beall is a far more desirable material. Extractors were invented to extract honey and presently bee-keepers fell to extracting nectar. I never could "go" water and sugar on flap-jacks but that percolated syrup was ahead of most honey.

It is becoming apparent that hives should be sized according to good and poor seasons rather than poor and better localities. When there only comes a six days' yield the bees are better to be all gatherers rather than divided into nurses and inside workers and brood. Have surplus combs drawn before hand. Then contract sufficiently and in a manner that the bees will act at the first inducement. The main thing is the forecasting of the yield and not to expect too much. Prepare to get a little and *get it* rather than prepare for much and get nothing.

Blacks have the name of capping their honey whitest. I find some Italians which cap honey whiter than any blacks. First, they store whiter honey. Then they travel over it less. Where blacks pile on much wax it makes a dead white. The most beautiful honey is gray and glistening. It seems impossible for some bees to cap white and without plastering on propolis, causing the honey to sell for less price. Hence the need of selection in breeding.

The principal use of a seat is the tool box it may contain for queen cages, escapes, cell protectors, register cards, etc. As a honey producer, four-fifths of my time is devoted to rearing queens. I do not want to run into the shop for every little trinket. Nor leave cages scattered about the apiary lying on hive covers. They not only get lost but they soon rust. To transfer larvae by the batch, and cage fifteen hatching virgin queens, and not slight the job, requires ease and shade. To get the best, cells are to be sorted before hatching and queens must be sorted before and after fertilization. Watch the manoeuvres of every new queen for a month or two and know how to distinguish a business queen. Queens which start out poorly almost invariably prove to be poor. Bee-keeping may be compared to poultry keeping. It requires some dexterity to make hens lay but any ignoramus can gather up the eggs.

In my last year's location there was much bother with hornets meddling with honey, fruit, meat and even killing hive bees and carrying them away. This year, only twelve miles away, I have not seen a hornet. Last year I did not see a mosquito. This season they have existed in clouds. Kingbirds are very numerous and until last spring I did not know that there were any in the State. With so much variation in the visible insects in so short a distance may it not explain why bees would not be so necessary for the fertilization of fruit blossoms on the islands in Lake Erie as far out on the dry mainland?

My experience with bee paralysis runs thus: In the spring of 1893, as the colonies began to get strong, I noticed the disease—the stronger became the colonies the more disease—the larger the heaps of dead bees before the entrances. When it had attained fair headway, four or five colonies were re-queened. In ten to twenty days the symptoms were gone. In about two months later four or five more colonies were requeened with like effect. Then late in the season, too late to rear queens, I bought six queens and introduced them to as many diseased colonies and that ended the disease there. Several, some five or six, remained diseased through the winter. Three of these I kept, and a party to whom I sold twenty-five colonies insisted on his own choosing, picked out two of these paralytic ones. Those I kept were re-queened early and have been among the best in the apiary this season. Those sold, still have their old queens, one

dwindled out entirely; while the others have been the cause of vexation and worry all summer. I told him how to cure it but he knows nothing about queen rearing or introduction.

Last season (1893) two diseased colonies did their own re-queening, in one of which I found both the old and young queens laying eggs in the same comb. Finally the old queen disappeared. The colony containing this young queen is *the* best. In 160, this season—casting a swarm which storcd 140 pounds of honey in one-pound sections. Fifty daughters show no disease so far.

Last year I knew the disease to be present in numerous valley apiaries while a number of mountain apiaries only a few miles away had none of the disease. In the valley, different from the mountains, there was a continuous supply of honey yielding flowers to keep up constant breeding from February to October. So I say stay out of such localities or else re queen. For my part, I would not vary my course any to avoid the disease. In every case I have seen, the queen was an unusually prolific layer.

FLORENCE, Calif.

Oct. 15, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

TERMS:—\$1.00 a year in advance. Two copies \$1.90; three for \$2.70; five for \$4.00; ten or more, 70 cents each. If it is desired to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing. otherwise, it will be continued

FLINT, MICHIGAN OCT. 10, 1894.

IF A MAN HAS a thousand friends, he has not one too many.

A SPECIAL BULLETIN, "A Year With the Bees," is now out and gives the results of the first year's work at the Michigan Experimental Apiary. It is now being sent out to 1,200 Michigan bee-keepers the names and addresses being furnished by the REVIEW. Others outside of Michigan should write for it, addressing the Secretary of the Michigan Agricultural College, Agricultural College, Mich.

A SUBSCRIBER in Minnesota complains that Shea & Co. are quoting honey too high.

THICK FOUNDATION is preferred by the bees to that that is thinner; at least it seems so from the experiments of experimenter Taylor. Ernest Root calls attention to this fact, and it is certainly worth looking after. Mr. Heddon has for years declared that he did not want the lightest foundation in sections, that the heavier grades gave better results, and he has favored the Given because in that style there is a thin base with the surplus wax in the side walls.

Mr. Root also calls attention to the fact that a heavy foundation may be productive of the so-called "fish-bone." It is possible to use too heavy foundation, and we must strike for the golden mean.

WHAT DEDUCTIONS SHALL BE DRAWN FROM THE FOUNDATION EXPERIMENT?

Friend Hasty calls attention to what seems to me an important point in connection with the experiment lately closed regarding the different makes of foundation. He argues, and with a show of reason, that the bees have simply shown a preference; that if only one style had been used in a case, and that had been the least desirable style, that just as much honey, or, nearly as much, would have been secured as with the more desirable style.

When I was at Mr. Taylor's last summer I put the matter to him in the same light. I said to him "Suppose johnny cake and mince pie are placed before me. I may choose the pie, but if given only johnny cake I would probably eat enough of it to satisfy my hunger, as it would be that or nothing else. Do you really think that the bees would store as much more honey, if all Given foundation had been used, as is shown to be the case where they are given a preference between that and the Van Deusen?" He thought a moment, in that quiet way of his, and then said he thought they would store *nearly* as much more as indicated by the experiment. Continuing, he said, "If given all mince pie, you would eat more of it than you would of jonny cake, because you would like it better." I think the weak point in Mr. Hasty's theory is in assuming that the quantity of honey gathered, or that *may* be gathered, is the same in both cases. When bees are furnished with drawn combs they store more honey than when they have to

draw out foundation, and a foundation that is very acceptable, and very quickly made into comb, may lead to the storing of greater quantities of honey. If twenty-five colonies were furnished with one style of foundation, and the same number, as nearly like them as possible, were furnished with a different style, the experiment would probably furnish some excellent pointers, if nothing more. It is only when we begin to experiment that we see how really difficult it is to conclusively decide some questions.

THE MUTUAL ADMIRATION SOCIETY.

There is scarcely a bee journal that has not lately touched upon this topic. Last month the REVIEW had a little to say, and it now proposes to say a little more. Once or twice before, this idea has been hinted at in a vague sort of way by the very few in our ranks who write best when their pens are dipped in gall. There are a few people in this world who are never happy unless they are unhappy and finding fault with others. A great many lines of journalism are conducted upon this plan, that of criticism, of fault finding, of looking for the opening in the armor of some brother through which to thrust in the lance and then hold him up and see him squirm. I have a slight acquaintance with an editor who once admitted that this style of journalism had made him a murderer at heart. He had been that angry at a brother editor that had it been possible to kill by a thought there would have been a murder. The older bee-keepers must remember when bee journalism was conducted in this style. It is possible that some of the bee-keeping editors are now given to over-praising their friends, and doing it in such a fulsome way as to be offensive. It is possible that they neglect to mention the good qualities of their enemies. The attempt to correct this abuse is to be commended, but we don't want a remedy that is worse than the disease. To begin a rebuke with a sneer and end it with a sting may ease the mind of the one who administers it, but so far as correcting abuses is concerned it is a brilliant failure. It simply angers. It is brushing the fur the wrong way. Some people have the happy faculty of bringing out the best that is in everyone whom they meet. They can even point out faults in such a way that the person corrected will feel that a kindness has been bestowed. These are the men to undertake reforms. I do not mean that

only those of this class should point out wrongs, but all should remember that provoking a man to anger is a long step backwards in his reform. I do not advise the polishing, and softening of a criticism until the life has been fairly 'rubbed out of it, but there is such a thing as pointing out an error in vigorous and forceful, yet *respectful* language.

That editors and correspondents have been praising one another simply that they may receive the same in return I don't believe. All the kind things that I have said of others have come from my heart, they have been honest, and have been uttered with no hope or thought that I should receive praise in return unless I deserved it. Even those who have complained of the great amount of flattering things found floating around in the bee journals, have said kind things of their friends, and I have sufficient charity to believe that they were honest expressions of deserved praise. Alack the day, when a man cannot speak well of his friends for fear that he will be accused of self-interest.

BRO. HEDDON AND HIS JOURNAL.

Bro. Heddon has now gotten out three numbers of his *Quarterly*. Each number has been an improvement upon its predecessor. Bro. Heddon is an unusually bright bee-keeper; he is really what might be called brilliant; I doubt if there is a bee-keeper in the country that can make more clear money out of bee-keeping than he can, and in this journal he is gradually unfolding the different plans whereby he is enabled to raise honey so cheaply. He also attempts, and succeeds pretty well, in reading the other bee journals and reviewing them. In one sense the *REVIEW* and the *Quarterly* are working in the same field, but with this difference, as it seems to me, that the *REVIEW* makes a specialty of gathering together all of the good things found in the other journals, while the *Quarterly's forte* seems to be that of criticism. If Bro. Heddon could lay aside that style of criticism in which he so glories, that of "handling without gloves" those with whom he does not agree, his journal would be more pleasant reading and meet with more general favor. I think that many of his criticisms are fair, that is, they are deserved, while others I consider entirely uncalled for, but it is the unkind, stinging, sarcastic style in which many of them are written to which I object. Having said this,

I will go still farther and say what I think has developed this style. Mr. Heddon's natural bent is for argument and criticism, and he has always delighted in flinging at an adversary a choice collection of keen, cutting, somewhat sarcastic, and usually unanswerable arguments. Another thing, he invented and patented a bee hive over which there was a long and bitter discussion in which the attempt of some to defraud him of his rights aroused and intensified his combative nature. And, last, came this unfortunate adulteration matter in which he was given no opportunity to compel his accusers to prove him guilty, and, no matter what the motive that inspired them to the course they adopted, he certainly could not be expected to have for them the kindest of feelings. I have sometimes thought that one of the incentives to the starting of the *Quarterly* was the pent up feelings of this character in Bro. Heddon's breast, and to which he could in no other way give vent. If such was the case, it is not to be wondered at, perhaps, that they have overflowed in the style that they have, but my dear brother, you must know that a clear, calm, concise, dispassionate statement of *facts* will carry with it conviction when a sarcastic outburst of righteous indignation will have but little effect. Go ahead, Bro. Heddon, with your criticisms, use vigorous language, but through it all let there shine forth a kind feeling for your fellows even if in their errors they may have done you an injustice, and the *REVIEW* will stand by you and help in bringing about any needed reforms.

WHY SOME OF THE JOURNALS DO NOT NOTICE THE QUARTERLY.

In the last issue of his paper Bro. Heddon takes some of the other journals sharply to task because they do not notice his latest venture. I have given the matter quite a little thought, and tried to decide in my own mind *why* some of the journals took the course that they have. Sometimes I have thought that it was because Mr. Heddon had been accused of adulterating his honey. If this is the reason, it does not seem to me that it is a good one. If he has not adulterated honey, then this unproven charge that has been brought against him leaves him in a condition deserving of deepest sympathy. If he *has* been guilty of the practice, he has received a lesson that will never be forgotten. He now not only guarantees the purity

of his goods, but offers to pay \$100 if any prove to be adulterated, and allows the return of any that are not in every way satisfactory. If he did not do wrong, or, if he did, and is now doing better, it is not just the thing to hold aloof the helping hand.

Perhaps I am all wrong in the above surmise; I hope I am. If I am, then the silence may possibly arise from a personal dislike or disrespect for the man. This, too, I am loth to believe, because it is well known that we are expected to respect the office or position that a man holds, even if we have no respect to bestow upon the man.

The trouble does not arise from any fear that the new paper will take business away from the other journals, because the journals that *are* noticed by those who ignore Mr. Heddon's are also rivals for business.

I can think of only one more cause for the silence, and while it may not be the only point in the case, I think it the principle one. I have reference to his continued, severe, and harsh criticisms of some of the other journals. Perhaps the adulteration matter caused the other journals to keep silent at first; this, it seems likely, nettled Mr. Heddon and was largely instrumental in leading him to say the sharp things that he has. Lest some may think that Bro. Heddon is all porcupine, let me say that he isn't. I probably know him as well, have looked as deeply into his heart, as any bee-keeper in this country, and I *know* that he has a kind and sympathetic nature. Let me give just one little incident that some of my readers, as well as myself, may have witnessed. Several years ago, before a crowded convention in Chicago, father Langstroth paid a glowing tribute to the memory of Adam Grimm. When he had finished, George Grimm arose in the audience and in a most heartfelt and touching way thanked father Langstroth for the kind words that he had said of his father. As I felt my own eyes grow moist, I stole a glance at Mr. Heddon, and saw the tears actually rolling down his cheeks. Mr. Heddon has his faults, but he is not a man that we can afford to lose. He has made a great many enemies by his sharp criticisms, but he has also done a great deal of good. He takes opposite views from a great many leading bee-keepers, and, for this alone, he ought to be encouraged. We don't want everything all one way unless that way is best, and to learn if it is the best, comparisons are needed.

If Bro. Heddon will fill the next number of his journal with good things for bee-keepers, telling of plans, methods, and implements, that they are *his* will be no objection, if he will do this without sneering at the fellow that does not know so much as he does, if he will criticise fairly and kindly, not necessarily *softly*, if he will do this, I am surer of nothing than that every journal, without one exception, will have a good word to say for the *Quarterly*.

To those who have thus far ignored Mr. Heddon's journal, I would ask, would it not be a kind, graceful, generous, Christian-like act to notice the good things that have appeared in his paper? Even *you* must admit that it contains much that is good and valuable—that in this respect it is really worthy of notice, and why not set an example by noticing the *Quarterly* without waiting to see what its editor will do in another issue, and thus show how truly you are following Him who taught that we should love our enemies and do good to those who spitefully use us. A few kind and really deserved appreciative words now may change the whole course of the *Quarterly*. Shall they be withheld?

The writing of the foregoing has not been a pleasant task, but if it leads to a better understanding between my editorial brothers, I shall be repaid a thousand fold for the pain that it has caused me.

THE ST. JOSEPH CONVENTION.

[The following was originally written for the American Bee Journal, but Bro. York has kindly consented to allow me to use it, and thus save me the trouble of writing for the REVIEW a separate account of the same thing.—ED.]

How much watching, planning and contriving, and how much hard work is required of an editor that he may be absent even for only a few days. Monday morning, October 8th, found me at the end of such a preparation for an absence of nearly a week to attend the St. Joseph convention. The REVIEW was out and mailed, all possible correspondence answered, all queens mailed, Mrs. Hutchinson given numerous instructions as to how this and that was to be looked after, and such and such answers made to such and such inquiries, the coal stove was blacked and set up, coal in the bin, wood in the wood shed, care taken that there was a stock of groceries on hand that the good wife might not be obliged to leave home on a

marketing expedition, the little black sachel that had been standing for several days on a shelf near at hand, so that when I thought of anything that I might wish to take with me I could put it in the sachel and thus not forget it, received a dainty but wholesome lunch as its last consignment, and I kissed the wife and babies and was off.

I have several times been over the road between here and Chicago, hence there would be nothing new in the scenery, so, to pass away all the day's ride I had sent for a book to read. It was "Picture Making by Photograph." It came a day or two before my departure, but I resolutely put it away without even looking at it, because I knew too well what even a glance at its pages would mean.

I reached Chicago between five and six o'clock and went at once to the office of the *American Bee Journal* where I found Bro. "George" putting the finishing touches to a preparation for absence. Six o'clock found us on the train for a six mile's ride out to Ravenswood, where the editor of the *American Bee Journal* and Dr. Peiro live as neighbors. Bro. York has a pleasant home. Mrs. York is not only an excellent house-keeper, but, if I mistake not, she is also an excellent "business manager." Bro. York once wrote me that although Mrs. York was not publishing the *American Bee Journal*, she knew all of the time pretty nearly what was going on at the office. As I am more than willing to admit that Mrs. Hutchinson is a better business woman than I am, I feel sure that Bro. York will not be offended at my throwing out these vague hints.

I had supposed that there would be something of a little crowd gather in Chicago to go on the same train to St. Joseph, but when six o'clock came and Bro. York and myself and Dr. Peiro climbed aboard of the "Eli," (the train is given this name I suppose, because it "gets there") we were all the crowd of bee-keepers there was on board. Out at Aurora we picked up Dr. Miller, which, in one sense, doubled our crowd. Soon we were snuggled away in one of the compartments at the end of the car and I brought out my collection of apicultural photographs and passed them around. Then we talked of the past and built castles in the future, and, as Dr. Miller remarked, enjoyed the best part of the convention. At last we were tucked away with a Dr. in each berth, and

my last memory was of raising the curtain a wee bit and seeing the moonlit, prairie landscape apparently slipping silently back towards Chicago. When we awoke in the morning the sun was shining brightly on what might be fairly called the garden spot of the earth. How home-like it did seem to see rolling land again with good sized trees growing upon it. Then there was orchard after orchard bending with bright red apples that glistened in the morning sun. The soil was dark and rich, and, with one exception, there was a thrifty look about the farms, and that was the great fields of corn stalks going to waste; that is something seldom seen in Michigan.

As we left the "Eli" at about ten o'clock, the first man to meet and greet us was E. F. Quigley of the *Progressive*. He is a nice appearing young man, but, like myself, is a little too quiet in conventions. Bro. Quigley you must talk.

President Abbott had left no stone unturned to make our stay in St. Joseph a pleasant one. The Commercial Club Rooms, at which the meeting was held, were the most pleasant of any place at which the North American has ever met. They were really luxurious. Carpets on the floor, stained glass windows, tables furnished with writing materials and covered with magazines and illustrated papers, while the chairs were great, big, comfortable, leather-covered, platform rockers. A few members had already arrived and Secretary Benton was at the desk taking in the dollars and giving out badges and "numbers."

Just a word of explanation about the "numbers." At all conventions there will always be present members who are strangers to the one reporting the proceedings, and when such a member addresses the meeting, if the President does not know him and announce his name it must be asked for, which makes an awkward break in his remarks. By numbering the list of members and attaching the respective number to the lapel of each member's coat, all this annoyance is done away with. This plan ought, however, to be carried one step farther. Let the secretary make arrangements with some near-by printing office to put the names and numbers in type at the end of the first session, and print enough copies to furnish each member with a copy. Then a simple glance at the list will show everybody who is present, and a glance at the numbers

and the list will show who is who. If many new members should come in after the list had been printed, a new list could be printed and distributed. It has happened that a man has gone home from a convention not knowing that some one he very much wished to meet was present. The value of a convention is greatly increased by an early acquaintance among members. If one objects to appearing upon the street with a number attached to his clothing, it can be removed upon leaving the hall. Friend Benton is to be congratulated upon inaugurating this scheme.

The criticisms brought against the Chicago meeting of last year, that of opening the meeting with no programme arranged, and of holding only a two-days' session when three days had been advertised, cannot be urged against the St. Joseph meeting, but there was one mistake made in getting up the programme, and I am not sure but it is a worse one than that of having no programme at all. It is not pleasant to point it out, as it is evident that this feature was secured at the expense of considerable trouble and correspondence and with the best of intentions. I have reference to the securing and reading of long papers descriptive of bee-keeping in foreign lands. They were evidently prepared with great care, and were really interesting reading, but they could have been read in the journals and enjoyed just as much as to have heard them read at the convention. We cannot afford to travel hundreds of miles to listen to what we can just as well read in the journals. The only use for essays at a convention—no, I think I better modify that a little, the *principle* use for essays at a convention should be to provoke discussion. A long, exhaustive essay by a master hand, an essay that covers every point, leaves little room for discussion, and would better be printed in some journal instead of read in a convention. A convention should be discussion—red hot discussion—from beginning to end, and papers that tend to bring about this condition are a help, otherwise not.

But there is such a thing as holding a convention down too closely to bee talk. The brain becomes tired and refuses to do good work. To begin in the morning and continue it until noon, then spend the whole afternoon in bee talk, and stop for supper only to begin again and keep it up until a late hour is too much of a good thing. Then

think of continuing this for three days! There should be frequent intermissions, or the introduction of music or something of this sort, and it is better that it be scattered through the sessions than that one whole session be given up to this sort of thing.

Having made these criticisms it is a pleasure to say that the St. Joseph meeting was a grand success. Those western men are whole souled and open handed, and so kind and cordial in their manners that some of them actually persuaded their wives to come with them! After the long essays had been read and the question box was opened the convention also seemed to open up and there was a lively discussion. "What valuable facts were brought to the surface?" That is what the non-attendant wants to know. Now let each person who was present be honest with himself and go carefully over the points that he learned at the convention and see how many he can count up. Those who are not readers of the bee journals may find quite a number; otherwise I think it will puzzle some of them to say what they learned. I have put myself to this test and I can remember just one thing, and that made me prick up my ears and go over and sit down by Mr. C. F. Lane of Lexington, Missouri; also to quiz him still further at the hotel. The question of the profitability of feeding back honey to complete unfinished sections came up, and Mr. Lane said that he made it pay and he succeeded by putting one or two colonies in a tent, piling supers of unfinished sections on top of the hives to the height of eight or ten supers to the hive. He then brought in weak colonies, or those having poor queens, or those that for any cause he did not consider very desirable colonies for wintering, and united the bees with the colonies over which the sections had been piled. This course filled the hives and the cases of sections "jam full" of bees. To feed the bees he simply took unfinished combs of honey, uncapped the honey that was capped, and stood the combs up around the hives, and the bees came out and carried in the honey and finished up the sections. Of course, it is not necessary to use unfinished combs for feeding purposes, any kind of comb will answer, but one would naturally use such if there were any, in preference to using full combs. Mr. Lane also said that after the bees had been in the tent a few days they could be fed with a feeder placed at the opposite end of

the tent. They would fly out and visit the feeder, load up, and then return all right. His tent is 40 x 20 feet in size. He admitted what I can readily believe is true, viz., that there are quite a number of little kinks about the business that can be learned only by actual practice.

To one who is making a practice of feeding back, the acquisition of this little item of information might be worth all that it cost to go to St. Joseph. I seldom attend a convention without running against some such chunk of wisdom; but to leave home with the idea that every hour will be fraught with startling revelations, and that words of wisdom will drop out whenever lips are opened, is to court disappointment. The most of our bee journals, if not all of them, are edited by bright men. Nearly all of them are practical bee-keepers and know a good thing the moment it is brought to their notice. All of them are on the alert for these good things with which to enhance the value of their journals, and some of them don't wait for these good things to "turn up," but go out and "rustle" around the country and *turn* them up. The moment that a discovery is made it is caught up by the journals and spread broadcast over the country. Under these conditions it is well-nigh impossible that anything so awfully, awfully new should be brought out at a convention. Sometimes we get hold of a veritable gold mine in the shape of a practical man that won't write but who can be made to stand up and talk; then we sometimes get hold of something worth going a long distance to hear. Then, again, the leading bee journals always have representatives present and little of value is said that does not appear on their pages. We may as well admit that the inducements to attend conventions are not what they were once; but, let us be thankful, there is one feature the papers can never usurp, even if they have given us pictures of most of the prominent bee-keepers, and that is the social part of the convention. It is the main thing left for convention goers, and there is nothing small nor mean about it either. We are a band of brothers, but sometimes some of us get to feeling a little edgewise towards some of the brethren. We think there is good reason for it, and perhaps there is, but when we meet the offender face to face, take him by the hand, sit by his side, and see an honest soul shining out of his eyes, we find our enmity melt-

ing away. It would not surprise me if several people went away from St. Joseph with a better opinion of somebody else than they had when they came. Then, again, it is an advantage to have a personal acquaintance with those who write for the journals, even if that acquaintance is only a short one. For instance, during quite a lengthy discussion last summer in the *American Bee Journal*, and I fell to wondering several times whether one of the disputants was a man of real good sense, or the reverse. Later I had the pleasure (?) of his company for one half hour, and in that short space of time he had "given himself away;" I had been enabled to decide in regard to the value that ought to be placed upon his observations and conclusions. An acquaintance with the writer increases the value, to us, of his writings.

One good stroke of work accomplished at this meeting was the revision of the constitution. All of that matter relating to affiliation, delegates, honey companies, etc., was thrown out; in fact, there are no by-laws left, nothing but a short and simple constitution. The salary of the secretary was placed at \$25.00; now when a man accepts the office he knows what to expect for his services and there will be no chance for any wrangling over the matter. Speaking of the Secretary reminds me of another suggestion that I would like to make, and that is that there is nothing gained in spending a large sum of money in printing notices of the meeting and paying postage on them in sending them out to agricultural papers. A man who is not sufficiently interested in bee-keeping to be a reader of some one of the bee journals will not come any great distance to the meeting because he saw a notice of it in some agricultural paper. Notices in the agricultural papers of the region in which the meeting is to be held might possibly induce the attendance of a few farmer bee-keepers, but, aside from this, notices in the bee journals are all-sufficient. Having made this criticism it is only fair to praise Secretary Benton for his success in persuading non-attendants to send in their dollars. By sending out circulars to all old members, thereby calling their attention to the advantages of keeping up their membership even if they could not attend each year, twenty members who did not attend were induced to send in their annual fees. Such an accomplishment is without precedence. It seems wise to each year point out the mis-

takes and the successes, that the latter may be patterned after in the future and the former not repeated.

One quite sweeping change was made, the wisdom of which is yet to be decided. To each annual paying member in 1895 the Society promises to give the choice of any bee journal published in the United States or Canada. To help the Society to this, all of the editors present, except myself, promised to furnish their papers at very low rates, way down below their lowest clubbing rates. I presume I should have made the same promise if I had been asked, but through some oversight, I presume, the question was not put to me. I fear the matter was not given sufficient thought. Why, at first thought, in his exuberant manner, Mr. Root offered to *give Gleanings*. Suppose all of Mr. Root's subscribers should decide to join the North American, where would he be? Suppose *half* of them should take that course? At the figures that were given some of the journals cannot stand it if any great number should join the Society. Any sum of money coming into the treasury as the result of this scheme would come out of the pockets of the publishers. Then there is another side to the question. Suppose that only the usual number, say 100, should pay their dues, then about half of that money would have to be used in buying bee journals, and there might not be enough left to pay the running expenses. If some plan could be devised whereby the membership and usefulness of the Society could be increased, it would be very welcome, but I fear it cannot be done by making ourselves presents or asking the publishers to make us presents. The whole thing is wrong in principle and was adopted without sufficient consideration. It is true that the Canadian Societies furnish their members with journals, but the money to buy them comes from the government; besides, no journal has yet been furnished below cost.

As the convention was held pretty well south and west I had hoped to learn something in regard to bee paralysis. The subject was freely discussed, and I had several private conversations with those who had had experience with the disease. The reports are all very conflicting. That the disease is likely to disappear of itself is a fact that I fear has been overlooked to a great extent. When this is remembered a great many strange things are explained.

A very pleasant incident occurred when it came to choosing the place for holding the next convention. The choice really lay between Lincoln, Nebraska, and Toronto, Ontario, Canada. Last year Toronto nearly captured the convention for this year, and there was a sort of a tacit agreement that we would all vote for Toronto this year, but when Bro; Stilson read invitations from the Nebraska State bee-keepers, from the Mayor of Lincoln, from the City Council, from everybody who could have any interest in the matter, and followed this up with a warm personal appeal, there was an evident wavering upon the part of some, but when Dr. Miller explained that the voting for Toronto was a matter of honor with a large number, what did Bro. Stilson do but get up and withdraw his invitation, an act that brought down the house and in all probability will take the convention to Lincoln in 1896. The choice of Toronto was made unanimous.

Mentioning the next meeting brings up another point upon which I wish to make a suggestion. As a rule, it has been impossible to secure the necessary attendance for obtaining the desired reduction in railroad rates unless the meeting is held in some railroad center of the North. These rates were secured at Detroit, Brantford, Canada, and at Albany. At Washington and St. Joseph there was not sufficient attendance. Publishers can show by their subscription lists that the great mass of bee-keepers is in the Northern and Eastern States, and Canada. Draw a line due north from St. Joseph, Missouri to St. Paul, Minnesota and another from St. Joseph to New York City, and the great mass of bee-keepers will be found north and east of these lines, and a great crowd can be gathered only inside these lines. Even inside these limits it is better not to depend upon securing reduced rates by the crowd of bee-keepers alone. For instance, I believe that the meeting of 1895 can be held in Toronto at the time of a great industrial fair, when very low rates will be given for long distances. Where this cannot be done it would probably be well to hold the meeting in connection with the meeting of some other Society, when the two combined would secure the requisite number for obtaining reduced rates.

About ten o'clock of the last day all of the members gathered in a group on the steps of

the court house and were photographed. The brick of different colors with which the street in front was paved furnished a neat foreground, while the fluted column and ornamental front of the court house formed a pleasing back ground. I spent at least an hour one morning in looking for just this spot. A local photographer made the exposure and I brought home the plates and developed them. For so large a group the faces are unusually good. There is not a person present that would not be instantly recognized by his friends. That little numbering scheme of Secretary Benton's came in very nicely here, as nearly all of the numbers show, and I have had a list of the members with the corresponding numbers printed and attached to the picture which enables even a stranger to decide in regard to the identity of each person. The size of the picture is 8x10 inches—twice the size of those taken last year at the World's Fair convention.

The journey home was uneventful; simply one long, swift, continuous ride of 800 miles broken only by a change of cars at Chicago. I reached home in the evening just as baby Fern was dropping off to sleep, but when she heard my voice she roused up with: "Papa, did 'oo dit my 'ittle pictou boot (book)?"

EXTRACTED.

Rolled vs. Given Pressed Foundation; Flat-Bottomed Foundation; Heavy Cell-Walls and Fat Combs.

We cannot have too much light on the subject of comb foundation, hence I am glad to reproduce here the editorial comments in *Gleanings* regarding the experiment that Mr. Taylor reported in last REVIEW.

"Reference is made in Bicycle Notes, in another column, to the experiment of R. L. Taylor, as reported and illustrated in the BEE-KEEPERS' REVIEW for September. We have been experimenting a little with different weights of foundation during the past summer, and perhaps I can throw a little light on some of the results. Well, these results show that the 'fattest' combs, if I may use the expression, were built from Given foundation; that the next fattest were from wax sheets sheeted for roller mills, but actually embossed or worked on the Given press. The next in order seems to be the Hunt foundation made on a Root mill. The rest of the results I have been unable to compare,

any more than to state that the Van Deusen shows the 'leanest' combs, to carry out the analogy, of all the foundations used. Mr. Taylor, concluding, says, first, that the quality of the wax in its original characteristics, or in the method of its manipulation, cuts a considerable figure; and, secondly, that either the kind of machine used in making foundation greatly affects its value; or, thirdly, that heavy foundation has a decided advantage over light. Mr. Taylor's third and last supposition, I think, is nearer the truth than the second, as I shall presently try to show.

Now, the various foundations above mentioned vary quite a little in the number of feet per pound. The Van Deusen (and this gives the leanest combs) was a trifle the lightest, being 14.22 feet per pound. The Dadant stood 14.21 feet per lb.; the Root 13.75; the Given, only 9.91; while the Given-Hunt—Hunt sheets worked on a Given press—was 9.37. Now, if you will look again over the figures you will see that the Given and Given-Hunt, both made on the Given press, were quite a little the heaviest foundation used; and it was these sheets that gave the fattest combs. The fatness of the comb in the case of the other makes of foundation, in like manner, seems to vary somewhat according to the weights; that is, the lighter the foundation the leaner the comb, and *vice versa*. The figures do not show this to be strictly so, but strongly enough to show which way the wind blows.

A few months ago reports were given showing that the Given foundation seemed to be more readily accepted by the bees—in fact, very largely substantiating the facts above given; but it should be understood that the Given foundation, made between two flat plates, was a heavier grade—not heavier foundation septa, or bases, but far heavier foundation walls. I did not realize there was so great a difference between the cell-walls of the Given press foundation and that made on the rolls until a Given press was sent us for experimental purposes. In fact, the walls were so heavy that the foundation looked more like sheets of wax with small hexagonal holes dented in equally distant from each other. It then occurred to me for the first time that it was not so much the *method* of embossing the sheets as it was the kind of dies, or punches, used in making the *cell-walls*.

I took a sample of the Given press foundation to our Mr. Washburn, and asked him to make punches that would make roller foundation like the sample, or very near it. He did so, and the foundation in every respect *seemed* to be as soft as that made on the Given. A test in the hive also seemed to show that bees regarded it in like manner. Of course, the foundation with heavy side-walls, with the same bases, or septa, will be heavier; and, also, the wax in these walls, not having been subjected to the same pressure as the wax in thinner walls, will be softer; therefore it follows that it will be worked by the bees the quickest; and such combs, being started first, will maintain their advantage, and be fattest in the end.

But right here it seems to me we run against a stump—or, at least, I fear there is danger of it. Will not those combs built from the heavy foundation, or, rather, that having heavy side-walls, show very objectionable 'fish-bone'? The Van Deusen foundation, which seems to have the poorest showing in the hive, may, when actually in the mouth of the consumer, have the best showing. The Van Deusens have advertised, as a special feature of their wax, that it has no 'fish-bone.' How far this is true, I do not know from experience; but I do know that there is no perceptible 'fish-bone' in the very light grades of foundation used by the Dadants, Hunt, and ourselves. If manufacturers should agree uniformly to make their surplus foundation with heavier walls—that which has given, according to the experiments of Mr. Taylor, fatter combs—consumers would object to it as not being like the honey of their fathers, and in time they would refuse to buy it, on the false assumption that it was manufactured, and therefore not real honey. As foundation-makers, we prefer to make our thin surplus just as it has been made.

In conclusion, let me say that I do not question the correctness of Mr. Taylor's experiments in the least. I accept them as actual facts, for I saw the combs myself while at his place this summer."

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Percolator Feeders ; Making Syrup in Large Percolator Cans, Syrup to be Fed in the Ordinary Way.

By the time this reaches my readers it will be too late to do any feeding this year, but, unless these items of information are given as they come up, while the subject is under discussion, they are likely to be forgotten; besides, it is best to have all phases of a subject considered at the same time, hence I copy the following from *Gleanings* ;

"We have been continuing in the use of the crock percolator, as described on page 769. They are still working nicely; but to test this plan further, we have been trying it with different kinds of receptacles. Where we desire to feed the colony up with one feed, or, at most, with two, the two-gallon crock is a little too large and unwieldy to be handled easily, for the crock itself forms an inconsiderable part of the weight. Looking over our counter store, my eyes lit upon some sap-pails. (Of course, those with holes near the top rim for the sap-spile will not answer.) 'There,' said I, 'here is just the thing.' These were filled with sugar and water, half and half, and then a shallow cake-pan was set over, with three or four thicknesses of cheese-cloth between. The whole was then inverted. But the flaring edge of the cake-pan fitted so close to the rim of the pail that it took the bees five or six days to get the feed out. This would be all right ordinarily; but as it was getting to be a lit-

tle late we desired to feed a little more rapidly. Instead of the cake-pan we finally substituted square pine boards $\frac{3}{8}$ thick, just large enough to cover the pail. These would warp enough to let the air through the cloth, and consequently the feed would run out the more rapidly. These the bees empty in from one to two days, and are then ready for another feed. The fact that the board is warped a trifle does not harm; but it should be stated that the crocks or pails, whichever are used, should be filled level full of sugar and water, otherwise the slight amount of air will allow some of the water to run out before it has incorporated the requisite amount of sugar.

COLD-WATER SYRUP ; B. TAYLOR'S PLAN.

Well, it is getting so late that we thought it inadvisable to continue the percolator feeders on the hives much longer, inasmuch as the syrup as fed was in the proportion of half sugar and half water—too thin for late feeding. Disliking to make syrup in the old fashioned way (heating it and stirring it an hour or two to get the sugar thoroughly dissolved), I thought I would try the percolator plan, as it was said this syrup would not granulate, and would be of the proper consistency for late feeding in ordinary Miller feeders. Our neighbor, Vernon Burt, told me that he had used the plan described by B. Taylor, with entire success; that his whole apiary of 180 colonies had been fed without heating an ounce of syrup. The plan that B. Taylor described was given in *Gleanings*, page 496.

Briefly stated, it consisted of an ordinary Dadant uncapping can. As most of you know, it is simply one can set on top of another—the top can having a false bottom of wire cloth, and properly stayed to hold up the center. Over this false bottom Mr. Taylor laid over three thicknesses of old bed-blanket, carefully tucked in around the edges. On to this he poured the sugar and water, and, in his own language, the result was all he could desire; for all he had to do was to keep the top can supplied, and draw off the clear liquid syrup from the can below. Of course, I naturally concluded that, if Mr. Burt and Mr. Taylor could make a success of this, we could. In the first place, flannel is rather expensive, so I told our apiarist to take six or eight thicknesses of cheese-cloth and put them into the bottom of the can. The sugar and water were put into the top can, and I eagerly awaited results, when, much to my disappointment, the syrup drained through but little better than sweetened water, and five pailfuls in only two hours. It ought to have taken about ten. It was drained off, and returned to the top can. The result was nearly the same, except that the syrup was a little thicker. Well, thought I, the trouble lies in the cheese-cloth. The sugar was taken out, and over this were put three thicknesses of new flannel. Again the results were not much more satisfactory. Three thicknesses of heavy white felt were then substituted, and still the syrup was too thin. At last, in desperation, I went down to Mr. Burt's, and asked him where my trouble was. He could not tell. He had used *old*

flannel, and got good thick syrup. Well, I have not yet found the 'nigger in the wood-pile,' unless there is something in the fact that old flannel, which has been used, is more fuzzy, and consequently more impervious to the rapid escape of the syrup. As a last resort, we cleaned out all the sugar, leaving nothing but the felt. Over this we deposited very evenly cotton batting, about an inch thick, and over all one thickness of muslin. We then poured in the sugar and water as before, and next morning I had the satisfaction of seeing good thick syrup—that which registered 45 on the hydrometer scale used by maple syrup makers to determine when the syrup is thick enough; but after drawing off the first pailful or two the syrup became thinner; and, to cap it all, the thing wouldn't percolate at all. We finally removed the felt, spread over the bottom a thickness of muslin; over this an inch of cotton batting, and then covered it with another thickness of muslin. Results: This combination is working finely; and, although we haven't found the 'nigger,' in the flannel, we have something better.

I have gone into details to prevent others from making the same mistakes we did.

I may explain to our readers that a hydrometer is a delicate instrument of blown glass, with a graduated scale. It is a very convenient implement for showing the thickness of honey or syrup for feeding. Maple-syrup makers tell me that the scale that they use is 32. This makes about 11 lbs. to the gallon, or about the usual thickness of ordinary extracted honey. They can be had at almost any hardware store; or if you cannot get them near home we can furnish them for 35 cents; postage 3 cents.

Later.—Since writing the foregoing I have learned from Mrs. E. R. that new unwashed flannel will let water go through it like a sieve; but after it has been used a while the woof, or web, becomes more dense. I asked her *how* she knew. She hesitated a minute, and said that *new* baby-diapers, unwashed, are not very serviceable until they have been through the laundrying process a few times. Our readers will pardon this allusion, for nothing but false modesty would object to it. The illustration is a good one, and explains why I had trouble with *new* cotton flannel letting the syrup through too fast, and why B. Taylor and Mr. Burt, using *old* flannel and *old* bed-blankets, had entire success. The 'nigger' is found out at last."

A Condensed View of Current Bee Writings.

E. E. HASTY.

I BELIEVE I have never "slopped over" on the subject of experiment stations, and therefore I can be the more free to express my admiration of the style of the work whereby experimenter Taylor gets at the real preferences of the bees as to different

kinds of foundation. Pleasant to see the Given hold its place the second year as the standard of excellence. And friend Hunt, who succeeded in getting a little above the standard, he deserves a sugar plum. But some of our heedless brothers will proceed to draw a very incorrect inference from the figures unless somebody heads them off. Take for example No. 2, the first case clear of fractions. These bees had 24 lbs. of honey to store, and they put 13 lbs. in the Given sections and 11 lbs. in the Root sections. Suppose now that this case had been filled with Given foundation throughout, how much honey would there have been then? The blunder to which I alluded would be to answer, 26 lbs. The probability is that they *did not* have two more pounds available, and so of course could not have put it in. Or suppose the case had held Root foundation throughout, would they have stored 22 lbs. only, and put the other two pounds below? Possible, but very improbable. The gain or loss to the crop is a further matter, which will require further experiment. And meantime we may sagely guess that any of the foundations tried, although less attractive than the Given, would have been sufficiently acceptable so that there would have been no loss to speak of. If 24 passengers ride, 22 in a horse car and 2 in an omnibus, how many (horse cars being stopped) would ride in two omnibuses. Shall we say 4? No indeed, 24. The passengers somewhat prefer the cars, but not to the extent of going afoot any of them. Perchance it may be so with the bees—a marked expression of preference, yet nothing beyond the expression of preference likely to result. But in getting at the one thing, preference, the experiment seems as conclusive as it is admirable.

Friend Dayton's new bee escape (REVIEW, 241) is at least worthy of notice. Window to attract the bees out by a beam of light. And yet (honest boy that he is) he tells us that toward night light rather repels than attracts them, as he finds in practice. And isn't it rather a new discovery that masses of bees draw away from moonshine into the shadow? I suppose moonlight at best is not strong enough for them to see by; and yet it impresses them with a sense of *exposure*.

One doesn't take kindly to his enemy's remarks when the rascal pokes fun; but sometimes it is as well to listen and inwardly reflect. Hear then our grape-growing enemy in *Rural New Yorker*, 646.

"Why a bee has no teeth with which to bite, any more than a hen; and a hen having no teeth, CANNOT EAT CORN! So the bee cannot eat grapes. Besides, some New York man shut some oees and grapes in the same bottle, and they didn't eat them.' I don't know whether the bees refused to eat the grapes, or the grapes refrained from eating the bees."

It certainly is a great annoyance to have multitudes of bees crawling over fruit while it is being picked; and a little frank expression of regret will *pay better* than frantic denials which no one but the affiant believes. That bees enlarge minute holes to big ones cannot be successfully denied.

THE PROGRESSIVE.

Doolittle thinks he gets some profit out of the mullein-on-a-pole way of catching swarms, which some of us had come to consider a worn out humbug. But then he uses with it a huge queen cage, with a big lot of bees caught at the hive entrance. If a mischievous boy should pick the mulleins all off the pole would not the thing work just as well? Certainly the pole and cage would slip around among the branches better without the mulleins; but then it wouldn't afford sufficient foothold for the bees, unless a box or something was attached. *Progressive*, 194.

Mrs. Hallenbeck wears her veil all over herself—no, not so bad as that, but tied around her waist. Large, plain piece of netting. *Progressive*, 196.

And here is her preparation for stick-emptight paper. One pint castor oil, one half pint honey, one and one-half pounds resin. *Progressive*, 237.

The editor on page 250 seems to get his head beautifully level where he advises the bee journal that *doesn't pay expenses* that adding a supply business would be supporting an additional baby. And same to a man who starts a journal to keep his unprofitable supply business from sinking. Many of us are afflicted with a mild sort of lunacy as to the honey that can be tapped out of a turnip by *starting* something. I know of a case where a man not insane, who was notorious for his emptiness of pocket, started the business of banker and broker, so far as room and shingle were concerned. Perchance he imagined people might *possibly* be led to deposit money with him till his limp money bag would become a bag of money.

S. E. Miller (*Progressive*, 260) thinks county editors have great abilities in the

line of selecting the most worthless bee articles for reprinting in their agricultural columns.

This is the way the journalistic side-shows look to Mrs. Hallenbeck, as per page 270.

"The American Bee Journal looks after our health, the Progressive furnishes us with law, Gleanings dispenses gospel and gardening, and the Nebraska Bee Keeper tells how we shall care for our poultry. The editor of the *Api*, expects to add a new department to the *Api*, soon. I wonder what especial topic he will select, Live stock, real estate, or what?"

Dayton thinks bee folks abjure seats for fear the lookers on will think them lazy. He has a wire cylinder queen cage that infringes on "grandfather's clock," in that it stands on the floor of the hive and reaches clean up to the ceiling. A queen cell full of honey furnishes the provisions; and more can be put in right through the wires with a spring bottom oil can. Dayton's modifications of the Willie Atchley method of lifting larvæ, cradle and all, I am not queen breeder enough to pronounce judgement upon, but they look worth a trial. They comprise several curious little tools, one of them a crimper to tamp the cell wax over the raw silk edges, so no meddlesome little tom-tinker can discover anything to pull at. For all these things see his very instructive article. *Progressive*, 267-9.

If somebody should knock that Observer over he perchance might discover, while the victim was gasping and coming to, that he didn't say a bee-keeper was "no more than a regular gambler," although he used those words. The "idee" was that he knew no more when he would win than does the regular gambler. Say, Brother Ob., the regular gambler knows he'll win when the big money is staked, and lose when the timid little stake is on. *Progressive*, 265.

Doolittle puts the *maximum* gatherings of one bee during its life time at one ounce of nectar, or one-third of an ounce of honey. *Progressive*, 266.

In the same article he gives an interesting case where a rather weak colony reduced 137 ounces of nectar to 60 ounces in one night. That was a big day's gathering of apple nectar, even if it was thin. The colony was down to a pound of bees, and less. A great colony should have harvested over 40 pounds that day. Friend D. tried to fetch it; and for the next three years the apple trees "wouldn't give down no milk."

On the whole the *Progressive* shows little or nothing of the prevalent disposition to

retreat, and retrench, and take in sail, which is current upon the apicultural high seas. Its constant writers and departments are about as follows: Poet, Will Ward Mitchell (I went off at half cock when I reported his supersession.) Then there is the Star Apiary over which S. E. Miller presides, another set of notes by Mrs. Hallenbeck, and part of the time a somewhat similar set of paragraphs by "Observer." Also Doolittle is now a very frequent contributor; then there is the regular lesson in law by lawyer Sprague; and "Somnambulist." O yes, there are also some articles and editorial notes. If one was contrary, and hunting for some fault to find perhaps he might say the *Progressive* was a little overloaded with reviewing and itemizing—but some of it is undeniably a good quality of itemizing. The paper has this merit also, that it makes the reader feel that he is not in exactly the same crowd as when reading other papers. Somnambulist deserves a word of separate notice at least. When the papers under that name first came out one naturally wondered if the quality would hold out. Perhaps there was a little come-down from the highest levels; but interest has been well kept up; and probably more readers still look first to see what Sommy has to say than scramble for any other particular thing in the journal.

THE GENERAL ROUND - UP

Mercy, doesn't Dr. Peiro of the *American Bee Journal* go for the kissing habit! (A. B. J., 364.) Sets his face against it, as it were. Had we only plenty of Dr. Peiros an anti-kissing reform would sweep over the country equal to that which in some former age must have swept over Japan. There it is a very rare thing for a mother to kiss her own babe. Who knows but what the Prohikissen party is already being organized in secret? To arms! to arms!! it's a coming. "I know not what course others may take, but as for me, give me —" no — let her come.

Jennie Atchley (A. B. J., 367) invites us to believe a sizeable snake story, which her young "olive plants" have put up on her. The present champion yarn-spinner—inventor of 1,000 bushels of corn that popped out, and the feeble-minded old mare that came, saw, thought it snow, and lay down and froze to death—will have to look out for his laurels. Little tree, size of a candy jar; hollow in tree; bees in hollow: at the top of

the hollow, resting on the combs and well bathed in bees, an 8 foot snake. He was coiled up, he was, and peace reigned. How would an 8 foot snake look coiled up in a candy jar sized hole? If we might read 8 inches for 8 feet, and suppose his snakeship had a separate apartment until the fall of the tree crushed his walls, why then—why then the whole thing would be too hum-drum for notice.

Two pieces of string and some bits of lath make a rope ladder. And with the said rope ladder you can tie a layer of straw against the two sides and back of a hive for winter. Dadant's way. A. B. J., 440.

"The bees around queen cells will fight with a vengeance equal to a tiger's when being robbed of her cubs, unless the precaution is taken to coax them to fill themselves with honey." Doolittle, A. B. J., 309.

"When the bees undertake to tear down queen cells they never miss any, as you do." Dr. Miller, A. B. J., 235.

"Never in all my life have I had a swarm abscond when I gave a frame of unsealed brood, honey and eggs." Mrs. Atchley, A. B. J., 269.

Evidence, well, not quite strong enough to convince Mr. Alley, is given in *Gleanings*, 607, that a queen may meet a drone from $4\frac{1}{2}$ miles away. The affair was closely watched, and she was gone three hours. Her offspring proved crosses, with Italian blood in them; and the nearest Italians were at the distance named. This is from a German bee paper.

Dr. Miller vouches for two eggs laid in two cells half full of pollen, and the colony in normal condition. (*Gleanings*, 607.) Very interesting, and I think very rare. But then I believe we have evidence to the effect that fertile workers *sometimes* lay in a perfectly well regulated colony. Perhaps this is it. By the way, are there not many other insects that lay eggs resembling those of bees? And are there not cuckoo *bees* of solitary naughtiness, that dodge into a hive and lay an egg or two?

Allen Pringle is making strong demands on our credulity when he bids us believe that more Yankee honey is old in Canada than Canadian in the U. S. *Gleanings*, 610. What ails those hyperborean fellows, that they can't hold their own market?

Contradictory reports on the quality of apple honey appear on page 622 of *Gleanings*. There seems to be constant jarring on this point among bee-keepers at large. One says "quinine," and one ranks apple honey as among the best of honeys. I think the true solution is that apple honey is *usually*

more or less mixed with the bitter product of the willows and poplars. Those who call apple honey excellent are probably correct as to the pure article. I have noticed that (contrary to the usual rule) the raw thin nectar just brought in is delicious.

On the same page a report that the *British Bee Journal* furnishes affords important food for thought. Thin honey standing for some weeks in a large galvanized vessel was fed to bees. It seemed harmless to the old ones, but killed all the young brood in forty hives. Before feeding it had been largely mixed with sugar syrup; yet the result was as stated. When poison kills baby bees look out for baby humans. And do the rest of us really need to eat poison to prove that we are not babes?

Still another kind individual helps me on the road to my "potato trap." A. Grubb, *Gleanings*, 623. (Whether an Adam Grubb or an Ada Grubb I can't skiver.) The idea seems to be to use pretty broad elastic tape instead of small cord in the veil hem, to have the bottom, with its tape, extra full in size, and then make the two sides into two elastic arm-holes by the use of four safety-pins. When I get around to try it I may report whether it is too much rigging or not.

RICHARDS, Lucas Co., Ohio, Oct. 19, '94.

ADVERTISEMENTS

Convention Photographs.

In the account of the St. Joseph convention will be found the description of a photograph that I had taken of the members. This picture will give you a peep at the leading bee-keepers of the country, particularly those of the West, and will also show you seven editors all standing in a line. If you would like to see the picture with a view to its purchase, all you have to do is to send me a postal card saying that you would like to receive a picture on approval, and one will be sent. If it suits you, the price (75 cts.) may be sent in postage stamps. If you don't care to keep it, simply send it back, and no harm will be done.

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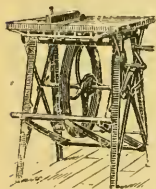
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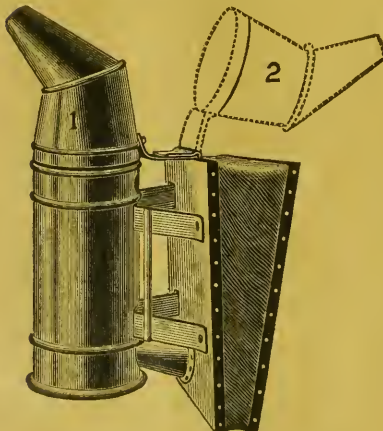
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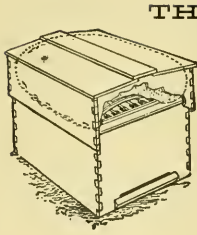
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The Bee-Keepers' Review

A MONTHLY JOURNAL

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W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, NOV. 10, 1894. NO. II.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

COMB FOUNDATION TESTS.



THE other point of special importance to be considered in determining the comparative value of different samples of foundations is the thinness to which the bees work the septum in drawing it out into

comb. The superiority of comb honey carrying the least possible amount of wax is readily seen and appreciated. Probably this kind is only obtained when the bees are compelled to build natural comb for its production during very warm weather and while nectar is coming in freely. During cool weather the bees find the wax not so readily worked and when nectar comes in slowly the bees seem to produce more wax than is absolutely necessary to contain the honey gathered and in each case so much wax is used that the comb honey produced under such circumstances is often decidedly in-

ferior. No doubt that made from foundation is often inferior, too, especially if the foundation is of poor quality, but the apiarist cannot well forego its use if it can be so made that the comb made from it approaches natural comb in appearance, lightness and friability. That it can be so made was amply demonstrated by experiments instituted last year for the purpose of directing attention to the desirability and possibility of improving the quality of foundation. That the object had in view has been accomplished to a most gratifying degree is amply demonstrated by the wonderful apparent improvement in the quality of the samples of the foundation, made by some of the leading manufacturers, which were used in the tests the present year, notably that made by the Dadants and that made by Root.

In consequence of the experiments made last year very earnest and commendable efforts were made especially by A. I. Root in the direction of improving the machinery used in making foundation and it is presumed also in the direction of improving the methods of manipulating wax. That so much apparent progress has been made is highly encouraging and gives abundant promise of rapid and permanent advancement. But with the manufacturers this is an experimental stage which is therefore a laborious and expensive one and the temptation on their part to slacken their effort must be combated on the part of bee-keepers by a faithful and public pointing out of every defect that appears in foundation sent

out. It is only thus that the experimental stage can be safely passed and the permanent superiority of foundation established.

The same course was pursued this year as last to determine the amount of wax in the comb drawn out from the several samples of foundation tested. First a section of comb made from each of the samples of foundation to be tested was selected, the honey was extracted and the combs then thoroughly washed and dried. Then each comb was trimmed to a given thickness, about half an inch, and with a tool somewhat after the fashion of a small cake cutter a circular piece was cut from each comb. At a temperature of about 80° F, all this was done nicely and with apparent exactness. These pieces were secured primarily for the weighing test. This test was made at the laboratory of Dr. Kedzie of the Agricultural College and the samples of comb were then used by Dr. Beal for measuring the thickness of the septa of each by means of the micrometer. Septa from the same sections as these pieces of comb were taken were used for securing the measurements taken at the establishment of A. I. Root of Medina, Ohio. These combs and septa were designated by letters of the alphabet, which were used with

significations as follows:

A. Van Deusen's flat-bottom foundation.

B, E, H, L, O, R each stands for foundation made on the Given press with the plates set so closely that some of the septa of the foundation were pierced with small holes by the close pressure of the dies.

C, F, I, M, P, S. The Given.

D. The Hunt.

G. The Given-Hunt.

K. The Root.

N. The Dadant.

Q. The Root-Hunt.

The weighing resulted as follows:

Weight in grains: A, 1.8635; B, 1.9882; C, 1.9604; D, 1.8816; E, 1.6889; F, 1.8618; G, 2.2938; H, 1.8270; I, 1.9509; K, 1.6245; L, 1.8012; M, 1.8685; N, 1.6615; O, 1.8013; P, 1.4572; Q, 1.8408; R, 1.7010; S, 1.8525.

The tables showing the thickness of the septa of the several sorts of comb in ten thousandths of an inch here follow. Three or four measurements of each specimen were taken. The figures are given in detail that the differences and difficulties may be seen. After getting Dr. Beal's first measurement the results seemed to call for verification, so I secured a second which is also given.

MR. ROOT'S MEASUREMENTS.

	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S
	80	60	60	80	65	60	70	60	65	55	60	70	50	60	60	70	60	60
	70	60	60	70	60	70	50	65	50	60	60	60	70	70	60	50	40	60
	70	55	70	60	70	70	80	65	70	60	60	60	60	60	55	70	50	60
	80	60	70	70	70	60	70	60	70	65	60	50	80	65	70	50	60	60
Total.....	300	235	260	280	265	260	290	235	270	230	240	250	220	270	250	270	210	220
Average	75	59	65	70	66	65	73	59	68	58	60	63	55	68	63	68	53	55

DR. BEAL'S FIRST MEASUREMENT.

	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S
In Millimeters.	.20	.17	.14	.15	.18	.15	.17	.12	.17	.13	.14	.11	.11	.10	.115	.11	.13	.12
	.20	.15	.15	.16	.19	.165	.19	.14	.17	.13	.16	.12	.12	.11	.11	.10	.14	.12
	.20	.16	.19	.19	.20	.21	.14	.17	.17	.14	.17	.14	.115	.12	.13	.12	.14	.13
Average in Mill.	.20	.16	.16	.166	.19	.175	.166	.143	.17	.133	.156	.123	.115	.11	.118	.11	.136	.123
Av. in 10,000th in.	78	63	63	66	75	69	66	56	67	52	62	49	45	43	46	43	54	49

DR. BEAL'S SECOND MEASUREMENT.

	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S
In 10,000th inches.	95	70	80	90	65	100	60	75	80	60	80	50	50	50	50	50	60	60
	90	75	70	65	70	70	55	60	80	60	70	60	50	45	60	47	60	55
	100	55	70	70	55	65	63	50	60	60	60	50	50	50	50	47	55	55
Total.....	285	200	230	225	190	235	178	185	220	180	210	160	150	145	160	144	175	170
Average.....	95	67	73	75	63	78	59	62	73	60	70	53	50	48	53	48	58	57

THE GENERAL AVERAGE.

	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S
Root's average.....	75	59	65	70	66	65	73	59	68	58	60	63	55	68	63	68	53	55
Beal's 1st average....	78	63	63	66	75	69	66	56	67	52	62	49	45	43	46	43	54	49
Beal's 2nd average....	95	67	72	75	63	78	59	62	73	60	70	53	50	48	53	48	58	57
Total.....	248	189	200	211	204	212	198	177	208	170	192	165	150	159	162	159	165	161
General average	83	63	67	70	68	71	66	59	69	57	64	55	50	53	54	53	55	54

Along with the following succinct statement of the general results obtained the present year is placed for comparison the results of last year in the cases where foundation of like manufacture and of the same or similar weight was then tested.

	1894.	1893.
Given foundation, punctured bases	60.3	
" ordinary	61.6	68
Van Deusen foundation	83	73
Root	57	84
Dadant	50	89
Hunt	70	
Given-Hunt	66	
Root-Hunt	53	
Natural comb		56.5

either pared down the septa or else manipulated the entire wax of the septa, using for them only what was necessary, so that the resulting comb does not suffer at all so far as thinness is concerned in comparison with the natural comb.

3. The same thinning process is very apparent in the drawing out of the Hunt foundation.

4. In the case of the Van Deusen and generally in a greater or less degree in the case of that made on the Given press the process has been changed to a thickening one.

	No. 1. Given-Hunt.	No. 2. Punctured Given Bases.	No. 3. Given.	No. 4. Van Deusen.	No. 5. Root-Hunt.	No. 6. Hunt.	No. 7. Root.	No. 8. Dadant.
Beal's Measurements in 100ths Millimeters.	24	14	14	12	20	26	24	13
	26	17	17	14	21	26	24	15
	31	9	19	17	22	27	30	18
	—	—	—	—	—	—	—	—
Total	81	40	50	43	63	79	71	46
Average	27	13 $\frac{1}{2}$	16 $\frac{2}{3}$	14 $\frac{1}{3}$	21	26 $\frac{1}{2}$	23 $\frac{2}{3}$	15 $\frac{1}{2}$
Average in 10,000th of an inch.	106	52	66	56	83	104	93	60
	40	40	40	60	100	110	70	50
Root's Measurements in 10,000th of an inch.	30	40	45	55	100	110	70	50
	20	40	50	55	90	110	70	50
	40	40	50	50	90	110	80	40
	—	—	—	—	—	—	—	—
Total	130	160	185	220	380	440	290	190
Average	33	40	46	55	95	110	73	48

THE GENERAL AVERAGE.

Beal's Average	106	52	66	56	83	104	93	60
Root's Average	33	40	46	55	95	110	73	48
	—	—	—	—	—	—	—	—
Total	139	92	112	111	178	214	166	108
General Average	70	46	56	56	89	107	83	54

In the study of these experiments attention is called to the following points:

1. In all cases except the Van Deusen there seems to have been an improvement in the foundation over that used in 1893, and in the case of the Van Deusen it is to be noted that the bees accepted only the septum, which was shown by their removing the cell walls and building instead more or less regular drone cells.

2. Most remarkable is the improvement in the foundations made by Root and by the Dadants in so far as the lightness of the septa is concerned. By a comparison with the measurements of the septa of the unworked foundation as shown in the table on this page it will be seen that the foundation has been so skillfully made that the bees have

5. In point of thinness of base of the comb produced the foundations stand in the following order: The Dadant first then in their order the Root, the Given, the Hunt and the Van Deusen.

6. The comparison by weighing places them in substantially the same order. Where there is a variance it is reasonably accounted for by the difference in the size of the cells. Thus the Van Deusen had it carried the amount of cell walls that would have been necessary for worker comb would evidently have been of considerably greater weight.

It would, of course, be of great interest to know the methods and the peculiarities of the wax used in making the foundation which seems to disclose such a decided ad-

vance over what has been made heretofore. It is to be hoped that the improvement has been made wittingly so that a knowledge of it may be perpetuated if not disseminated. In order to determine what the utmost existing skill and knowledge could produce, the several manufacturers were acquainted with the use to which the foundation was to be put when it was ordered and the question arises whether all the foundation made was of equal quality. To determine this it is apparent that future experiments should be made with foundation so procured that it cannot have been made with the express purpose of having it used for experimentation.

LAPEER, Mich., Nov. 21, 1894.



Notes From Foreign Journals.

KATHERINE M. INGLIS.

HERR Julius Stengel, in the *Bienen Vater*, argues that wax is a product by itself in the vegetable world, that it is not manufactured by the bees from honey; in fact is not produced by them, but simply reproduced. The pollen in flowers, he says, is covered with a thin coating of wax to protect it from moisture, and this wax the bee takes into its system with the pollen it needs for nourishment.

He divides bees and their relatives into two classes, those that eat honey but no pollen, and those that eat both. Those of the first class (wasps, ants, etc.) do not produce wax, while many of the second class do. Therefore, he judges that the production of wax stands in close connection with the consumption of pollen.

All insects that do not live in colonies like the bees and humble bees, cannot build wax cells. Such creatures build cylindrical cells from pieces of fresh leaves, with a close cover at each end. He, himself, once noticed in his strawberry bed that great pieces were bitten out of the leaves. He thought of a caterpillar or beetle, but could find none. One day while standing by the bed he saw a little grey bee light on a leaf, cut out a large piece in an instant, and disappear with it into a hole in the wall. When the bee came out again, he dug down and found the fin-

ished cell. In similar holes he found other cells half filled with pollen-jelly, with eggs and larvæ in them but each cell closed. Apparently the mother-bee provided her child with enough nourishment for its full development, and did not trouble herself any more about it. Such insects do not need to build wax cells, and the wax which is taken into the system leaves the body with the excrements. These creatures are the beings of a summer, bewitched into existence by the spring sunshine, and sinking back into nothingness before the autumn frosts. No thought for the future is required from them.

But the bee is different. She must, like man, carry on the struggle against hunger and cold with all the strength and cunning she possesses, and nature has richly endowed her with qualities necessary for a successful struggle. This endowment shows itself even in her digestive organs. The wax, a fat which she takes into her system with the pollen may leave the body in two different ways. If there is need of building, the bees set themselves to bring up the temperature of the hive to the degree necessary to make the wax exude through the pores which lie between rings of the body in the shape of little colorless scales. The process is very like the progress of fat through the human body. The wax exudes from glands, perhaps wax glands, as we find fat glands in birds and mammals. If there is no need of building the wax passes off in the excrements.

Herr Stengel thinks that only the young bees build. Old bees eat only honey for nourishment, but young bees need nitrogen to develop and build up their bodies. This they find in pollen, and the wax they take in with the pollen is retained in the body until their full development fourteen days after leaving the cell.

He has no use for the theory of wax from honey. Old bees cannot build new comb. They can draw out artificial comb, or work up old wax in small quantities, but they never build new combs. If wax were produced from honey or from volatile oils as Weygandt thought, old bees would build continuously. The young bees on the other hand are anxious to rid the body of the particles of wax, and this accounts for the eagerness which swarms exhibit in building in the first few days. Having once got rid of the wax they can build no more.

He closes with the repeated declaration that wax is a product of the vegetable kingdom and speaks of the fact that it abounds in the tropics, and is there obtained direct from nature without the help of the bees, and brought to Europe in great quantities as vegetable wax.

Herr Weipl mentions as remarkable the fact that last spring, from the 12th of February to the 18th of March, his apiary of 46 colonies drank 17 liter of water, about 15 quarts.

He also describes his method of strengthening weak colonies in the spring. He introduces a flat vessel of warm honey with gauze covering into a strong hive, and when it is covered with bees takes it away and places it under the hive of the weak colony. As they are for the most part young bees that are carried away, only a small part of them will return to the old hive; and by repeating the operation three or four times the weak swarm will be very much strengthened.

Herr Topitz advises all bee-keepers to keep from year to year an accurate account of the honey yield in their neighborhood.

Pastor Durr, in the *Deutsche Illustrierte Bienezeitung*, speaking of laying workers, mentions two theories advanced by textbooks in regard to them. 1, that laying workers are those which have accidentally received some royal jelly in their cells. 2, that they are bees which after hatching out were fed and brought up as queens because the pressure for a queen was great in the hive. He rejects both theories as contrary to the laws of nature in the bees, and himself advances a third theory that when for want of brood, the brood-bees cannot use the chyle as provender it rushes into the different organs of the body in excess, and develops them more than is usual. In this way the atrophied ovary is more strongly nourished, and in some bees is completely developed and brings forth eggs, an impossibility with ordinary nourishment.

Gravenhorst adds his experience in introducing queens among laying workers, by running them into a new furnished hive in which the queen has previously been placed in a cage. When this has not succeeded he has weakened the colony by running part of them into another hive, and finally by giving the a brood frame with queen cells. He concludes by agreeing with Pastor Durr that laying workers are very numerous in such a hive.

In *L'Apiculteur* for October, Dr. Paul Marchal, of the Entomological station at Paris, gives a minute account of his observations of a hive of laying workers, the result of his observations being the assurance in his own mind that laying workers exist, that they produce drones, that in such a hive, not one or a few, but the largest number, if not all the bees are laying workers. He gives, as his reasons for this observation and record, that many apiculturists and some scientists of note (he quotes Prof. Perez whom he calls the best scientific authority on bees in France) are of the opinion that laying workers do not exist, or at least that their existence has not yet been proved.

Abbe Baffert in his "Observations during the year 1894," says this has been a year of many swarms and little honey, and quotes as verified by his experience, the old proverb, "A rainy year a swarm year, a dry year a honey year."



Bro. Heddon and His Bee Journal. An Honest Effort to Clearly Define the Position, Object and Aim of the Bee-Keepers' Edition of the *Dowagiac Times*.

JAS. HEDDON.

"The dignity of a business may be known by its literature."

I SINCERELY believe it to be a duty I owe to myself, to you my Bro. publisher, and in a much broader sense, to the bee-keepers with whom and for whom I have struggled for over a quarter of a century, to now do what little one man may, in the improvement of our apicultural literature. I have been credited with making improvements in our fixtures, implements and methods; changes which have proved remunerative to those who have understood and adopted them, and I am sure that not less needed are changes in our special literature.

In replying to your editorial on pages 274-5, I desire in the beginning to correct at least one important misconception of yours. Your inference—as forcible as an assertion—that I feel hurt because some of the journals do not mention the Quarterly, is entirely wrong. So far as my interest is concerned, both as relates to my reputation and

business progress, it is no doubt better for me that the journals in question have not mentioned the Quarterly. I will never censure any one for not mentioning me or mine; I only ask that when they do, they will tell the truth and the whole truth. My reason for calling and re-calling attention to their attitude toward the "new-born," was to offer further evidence of facts I had previously stated, concerning wrongs which some of these journals had perpetrated upon me. The ignoring of the Quarterly certainly amounts to proof positive in this direction. Why should I now want them to notice the Quarterly? All the other journals have done so, and also inserted my advertisement (except the *Api*, which I supposed was dead, as I had heard so, and it didn't come to my desk.) How many subscribers have these journals that do not know of the existence of the Quarterly, after all the other journals have advertised it and I have mailed out many thousand sample copies? The course these journals have pursued, and are yet pursuing, is a course they cannot follow; one they cannot maintain. Their position, not only regarding the Quarterly, but many other things, is too untenable to stand the shot and shell of any journal which tells the truth, without the opportunity of their replying.

Gleanings may claim, as I think it has, that it did mention the Quarterly, but it did not make any formal mention, such as is usually made, and the first really editorial mention was suggested by a circular I issued, stating that the Quarterly had been rejected by the government as second class matter, and that the same matter would be mailed under the title of the *Bee-Keeper's*, extra edition of *The Dowagiac Times*. Gleanings embraced this opportunity to reiterate my first mention, but very carefully avoided the second, giving its readers the idea that the Quarterly was no more.

In answering your editorial, it becomes proper and I trust your readers will pardon me for embracing the opportunity of admitting some of your statements which seem to me to favor my side of this serious and important question; important to the success of honey producers (and inventors who do most to aid them) because it is a fact that during the past few years, while our literature has been increasing in quantity, it has fearfully degenerated in quality. I refer to your statements that each number of the

Quarterly has been better than the one preceding it; that Bro. Heddon is an unusually bright bee-keeper; that he is really what might be called brilliant; that you doubt if there is a bee-keeper in the country who can make more clear money out of honey producing, and that in the Quarterly this same Heddon is unfolding the different plans whereby he is enabled to raise honey so cheaply. For argument's sake, let us suppose these statements to be true; and certainly I know of no Bro. from whom such statements would carry more force, because we not only know that you are an excellent publisher, but a past and present practical and successful honey-producer. If what you say is true, added to what Prof. Cook and many others have said, viz., that Heddon is a good writer and thinker, don't you think, that in his cool, deliberate moments, Heddon knows what he is doing for himself and for others, in his endeavor to improve our bee literature in his own characteristic way?

You also state that it is bad "policy" to "take off our gloves" and strike straight from the shoulder at the abuses I have previously mentioned. Who, do you think, is a better judge of policy than the politician from whence he derives his name? I suppose the lawyer knows something of cause and effect; that he is somewhat of an analyzer and advocate. Do either of these classes go honey-fugling about, beating around the bush, when they endeavor to prove a fact? You are simply mistaken, Bro. Hutchinson. Abuses, must be corrected, with "gloves off." Every government on earth, acts according to this policy.

At our house, we have just been enlarging and building on a kitchen and dining room, and we had to tear down before we could rebuild, for we could not evade the rule that "chaos comes before order," and that two bodies cannot occupy the same space at the same time. The same law holds good in the metaphysical world; a man cannot harbor truth and error at the same time on the same subject, and it is just as legitimate and just as necessary, in this cleansing of our literature, that we clear out the present corruption, making room for the truth, as that you destroy the old box hive when transferring into the movable frame.

You accuse me of being sarcastic and priding myself upon handling questions with my "gloves off." While I regret the *manner* in which you did it, I sincerely thank you for

the eulogy you unintentionally bestowed upon me. Do you want me, when endeavoring to replace error with important truth, to adopt that sort of indescribable, chamelon-colored thing, "prudence," which has been so much used in our literature as a substitute for principle, and which is so nearly allied to hypocrisy that it is ever merging into it? I have seen so much of this, that I am simply disgusted with it. If I am to be censured for calling attention to, and commenting upon weaknesses in our bee literature, weaknesses of which each reader can examine and decide for himself, what does a man deserve who, without positive evidence, publishes me to the world as a criminal? Whether I had adulterated honey or not, was it anything less than both foolish and wrong to attack a well known honey producer with such a libelous charge before he possessed any evidence with which he dared to bring the matter to an issue?

I do not hate any of my Bro. publishers or bee-keepers, because the worst have some apparent good in them; but I feel sure I see, cropping out, moral and mental weaknesses which I do hate. I do not hate a man because he has the measles, but I hate the measles because it has the man.

If there ever was a time when our bee literature fearfully needed the sharpest of "criticism," it is now when so little of real worth is found in some of the oldest journals, and the ever increasing space is being filled with irrelevant, side issues. It seems strange that you haven't before found out that a vast number of bee-keepers are getting awfully sick of the twaddle found in the columns of some of the journals. Better that we had the independent, out-spoken, sarcastic times when father Langstroth was being robbed, than a sizzle-sozzle, wish-washa, mutual admiration society, that is casting back shadows over the future prosperity of honey producers.

Your belief that the inception of the Quarterly was to furnish an outlet for my pent up feelings, is not true, if you mean feelings of *personal* injuries alone. I feel that the whole bee-keeping fraternity is being deceived and wronged. My feelings may be wrought up to a point of usefulness and reform over the glaring errors and hypocritical falsehoods being foisted upon no small portion of our honest honey producers. Did you ever stop to think how a glaring falsehood, *alone*, will agitate a lover of truth?

It may be well for me to tell you now and here, that I am not spending much time in loving or endeavoring to "love my enemies;" it is not natural. I am not returning good for evil, I haven't met any person who is, and the few who have claimed it, I believe to be hypocrites, for I notice they are hardly able to treat their friends and benefactors decently. Is it possible that those enemies—lovers—spend their entire stock of love upon those who spitefully use them, leaving nothing but hatred, revenge or neglect, for their friends? If such deportment is Christian, then Christianity is a failure, for no one practices it, and not a government on earth is builded or acts upon that principle. All nations and all people return good for good and justice for evil. If we return good for evil, what shall we return for good? What have we left in stock to return for justice, virtue, benevolence, kindness, honesty and morality? I can forgive, but I cannot pay a royalty on downright meanness. Let us tell the truth, writing and talking as we *act*. Let us be honest, whether we are pious or not.

You speak of the helping hand of the mute journals. Those periodicals unwittingly extended that hand to the Quarterly, when they ignored my latest effort in bee literature. Incivility always carries the element of failure, with it.

No, Bro. H. you do not understand me, or you wouldn't have said, "alack the day when one bee-keeper cannot safely speak the honest praises of a deserving Bro." That is all right; good and just; but it is this silly stuff, that aims at nothing and looks for nothing except the success of the little ring, that needs somebody of bravery enough to hold it up to view, until it sneaks away and hides its head for shame. I had thought you had seen these things and had refrained from attacking them, fearing loss of patronage, as you infer I will receive. By your editorial it seems such is not the case. If you *do* see them and fear to attack them, for fear of losing the support which enables you to clothe and feed the ones you love and who love you, I do not blame you for keeping still. I will say as another has wisely said, "keep still and I will speak your thoughts for you; they cannot hurt me if they want to." Alack the day, in free America when a man cannot speak his honest sentiment without fearing the inquisition of gastric starvation.

I believe our American bee-keepers have the genius to wake up to a full conception of the serious harm this baby-swaddling literary degeneration, referred to in this article, must do to the future interest of the struggling masses of honey producers. I pray you to believe me when I tell you that the above are my honest sentiments, fearlessly presented, but with a "calm, dispassionate" state of mind, made as "clear and concise" as I am capable of, amid the pressure of other business crowding me on all sides.

No words can be cruel enough and none can be kind enough to change the course of the Quarterly one iota. Logical argument—that analysis which makes the truth self-evident and carries with it conviction, that which may prove the wrong to be wrong and clearly points out that which is right—always can, always will, and always must, change my course; but no honeyed words can ever gather the Quarterly into a little codfish, mutual admiration society of bee journals and pet contributors. It shall not be governed by egotistical emotions, but by reason and logic, as we understand it, as long as it is owned by the present publisher, which will be as long as bee-keepers continue to give it the present rapidly increasing support. Your criticisms carry the dignity and command the respect due to your ever present sincerity, and in so far as they impress me as appropriate and called for, they will do me good. I thank you however for them *all*, for they can do me no harm where misapplied, and they give me the opportunity of defining to your people, the position I have chosen.

If what I have written causes your readers to do some "clear, calm, concise and dispassionate" thinking for themselves, I shall feel that I have not written in vain.

DOWAGIAC, Mich.

Nov. 20, 1894.



How Mr. Heddon is Regarded by One of His Old Students.

[As I was somewhat in doubt last month in regard to the advisability of publishing what I did about Bro. Heddon and his journal (didn't know but some would think that I was meddling with what was none of my business) it has been a great pleasure to receive letters of congratulation from many of the best bee-keepers in the

country, and from even one of the editors that I criticised. One received from one of Mr. Heddon's old students voices completely the opinions of the others, and, as it gives some additional glimpses of Mr. Heddon's life, I have obtained the permission to print it. It is as follows:—
ED.]

BRECKSVILLE, Ohio, Nov. 15, 1894.

W. Z. HUTCHINSON, Flint, Mich. :—I like your editorial in the last REVIEW regarding Mr. Heddon. You said the right thing in the right place and no one else could have said the same and had it taken as well by both sides.

I wish all of the fraternity knew Mr. H. as well as I do. He seems to have an unhappy faculty of making himself misunderstood. The little incident of the Chicago convention which you gave calls to mind one of many which came under my notice while with him. It was when Father Langstroth was there visiting Mr. Heddon that he (Mr. Heddon) begged the privilege of having Father Langstroth fill the pulpit in the Congregational church one Sunday, which was granted. Mr. Heddon rarely if ever attended any church except the Universalist, but, of course, he went to hear Father L. on this occasion.

He took for his theme that beautiful part of Proverbs, the 21st, which begins "A virtuous woman who can find, for her price is far above rubies." I shall never forget that old patriarch's touching tribute to virtuous womanhood, and particularly when he eulogized his own life-partner whose death he mourned deeply. I sat where I could watch Mr. Heddon and could see the tears roll down his cheeks as he listened to the simple eloquence of that grand old man, and I know the sermon made a deep impression on him as did the character of Father L.

Mr. Heddon's love of beautiful poetry and fine descriptive prose was often shown by his sitting and reading with tears rolling down his face and dropping on the book. Oh, he has a heart like a woman's and his love of justice is pure and simple, getting right down to fundamental principles, and if his enemies could see him after one of his sleepless, nerve-racked nights and be able to realize what a bundle of nerves and brains he is, but lacking in physical stamina, I know they would have more charity for him.

I wish for his own sake, if for nothing more, that he would not be so harsh in his writing and criticism. His views on apiculture are too valuable to have any of their

orce lost by any fault in his way of advocating them. Yours very resp'y,

LEWIS B. BELL.



Salicylic Acid and Borax Holds Bee Paralysis in Check.—Possibly Cures It.

W. A. WEBSTER.

EDITOR REVIEW:—I note your editorial comment in September number on bee paralysis. Much has been said of late by several eminent in the profession, but the general conclusions are, I think, are erroneous. The disease, like the various fevers in the human family, exhibits different phases according to environments. The origin I believe to be as Cheshire finds it—bacillus. The starvation theory is fallacious, as has been shown in my own experience and that of others as well, and, further, it is found that the disease resides in the person of the bee and not the queen, honey, or larvæ, because I have cured cases and developed good swarms upon the identical honey and comb of dead swarms and obtained the best of results. I have lost many swarms, one entire apiary of 170 swarms in my early struggles in bee-keeping and from 20 to 40 swarms each year for several subsequent seasons.

A remedy was given me by a correspondent, whose name I have lost, which he stated was discovered by scientists in Denmark, and by its use I have never failed to cure when the work was thoroughly done. Take as follows, one teaspoonful salicylic acid and one teaspoonful powdered borax, mix thoroughly and dissolve in a small quantity of water, add this to sufficient sweetened water to make one quart of liquid, and spray over the bees and combs. Repeat once daily until the bees quit dying which is generally about the third or fourth day at the outside. Occasionally it may be necessary to repeat some weeks later, but, generally, one series of treatment is sufficient. During two successive seasons I have held things in check, while the disease has become epidemic with my neighbors. I believe it contagious in a certain degree, but if watched and taken by the forelock none need fear its ravages.

BAKERSFIELD, Calif.

Nov. 17, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

TERMS:—\$1.00 a year in advance. Two copies \$1.90; three for \$2.70; five for \$4.00; ten or more, 70 cents each. If it is desired to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing, otherwise, it will be continued

FLINT, MICHIGAN OCT. 10, 1894.

THE MORE DISCUSSION the better, if passion and personality be avoided; and discussion, even if stormy, often winnows truth from error.

HONEY EXTRACTORS stand greatly in need of improvements, so says Bro. Heddon. Tell us in what direction Bro. H. Don't say, "In every direction," but be specific.

THE PROGRESSIVE BEE-KEEPER is one of the few bee journals for which I leave letters unopened to see what it contains. It is bright, fresh, sparkling, instructive, practical, and full of life and vim.

SUBSCRIBERS sending \$1.00 for the REVIEW before Jan. 1st, can have a copy of Root's A B C of Bee Culture, latest edition, cloth bound, by sending 80 cts. additional; bound in parchment by sending 60 cts. additional. This is an opportunity that will not be likely to occur again.

POLLEN, it seems likely, is what gives the yellow color to wax. When at the St. Joseph convention I had some conversation on this point with Mr. C. F. Lane of Lexington, Mo. He said that he had often changed dark wax to a bright yellow by the addition of pollen. To do this he melted the wax and then added a comb well filled with pollen, giving the whole a good stirring, and had never failed in getting a good yellow color as the result.

OUTSIDE DIAGNOSIS is something that F. L. Thompson would like to know more about. He does not understand how we can tell that a hive needs more sections on, simply by looking at the outside. If we go into the apiary and see all of the colonies busy, while one is making but little stir, yet there may be a few bees hanging outside, and the surplus capacity on the hive is small,

the first thought would be that more room is needed. There are many things about this entrance diagnosis that cannot be told in words; experience is needed, and at last it comes to be a sort of second nature.

MICHIGAN STATE BEE-KEEPERS will hold their annual convention Wednesday and Thursday, Jan. 2nd and 3rd, 1895, in the city of Detroit, at the Perkins Hotel, corner of Cass and Grand River Avenues. Rates \$1.25 and \$1.50 per day. The former rate if two occupy one room. This will be at a time when the railroads will probably give one-half fare, and those who could not attend the North American can now attend their home convention at little expense.

THE REVIEW does not criticise without allowing a defense, hence Mr Heddon uses the space that he does this month in replying to the criticisms that appeared last month. I do not know as I have anything to retract, or to add to what I said last month. I am not prepared to prove that our literature does not need improving in the lines suggested by Bro. Heddon; in fact, I am inclined to believe that he is partly right, but in pointing out this needed reform I would avoid stinging personalities.

SWEET CLOVER.

Mr. M. M. Baldrige appears to have more faith in sweet clover than has any other Northern man with whom I am acquainted. He is getting out a series of bulletins on the subject of sweet clover showing its value as an enriching crop for the soil, its adaptability to poor soil and drought, and its value for pasture, hay and honey. The second bulletin is already out, and the next one is to be illustrated. He says that he knows of several parties that are finding it profitable to grow sweet clover, and, so great is his faith that he proposes another year to seed fifty acres to this plant.

WIDE, DEEP TOP BARS will lessen brace and burr combs, but not prevent them to that degree that will allow of dispensing with the honey board, says Bro. Heddon in his new journal. I just wonder if Bro. H. used accurate spacing with his wide and deep top bars? I fear that it will require a few years to definitely settle this problem. So many things about a bee hive work so nicely the first year or two, that there is need of cau-

tion. One thing is certain, a honey board does prevent the building of brace combs against the sections, and it is not much more expensive than frames with large top bars and fitted with some self-spacing arrangement, besides, we often need a queen excluder and this calls for a honey board.

EMERSON T. ABBOTT, in reply to an inquiry of mine as to how Missouri was induced to employ a lecturer on bees to attend the farmers' institutes, had only time to give me the following hint: "Given a man who has something to say and knows how to say it, and then let him keep everlastingly at it, and something will come of it in time. I paid my own way to the first institute and spoke for nothing, but, after awhile they were willing to pay my expenses and something besides. This year I covered the State and am paid so much a month and my expenses." Mr. Abbott has promised to write for the REVIEW an article upon the relation of bee-keepers to farmers' institutes, in which he will try and show other States how they may enjoy the advantages that Missouri now has in this line.

FEEDING AND FEEDERS.

Bro. Heddon has been experimenting the past summer with feeders arranged under the hive, but has not found them so desirable as those above the hive. A top feeder is more convenient to arrange, besides, if it leaks, it leaks into the hive. He is inclined to discourage the use of the percolator—thinks it a quicker job to make the syrup by heat in a large tank. To those who have arrangements for making syrup in large quantities, and who can make it so that it will not granulate and will be satisfactory in all ways, it may not be advisable to use the percolator method, but there are many who keep bees in a limited way, to whom the percolator may prove a great advantage. It gets the syrup just right every time. Let us not throw cold water upon percolation until we have given it a more thorough trial.

TOP BARS still furnish food for discussion and experimentation. In the last *Progressive*, S. E. Miller has the following: "It will soon be as hard to keep up with the fashion in frames as it is to follow the fashion in dress. The A. I. Root establishment turns out something different about once a year. For some time the top bars grew wider

and thicker; now they have commenced getting thinner again." I have no desire to hinder progress, but I believe that the majority of those who dropped the ordinary $\frac{3}{8}$ top bars and honey board for the wider thicker top bars accompanied with some self-spacing arrangement, will eventually pick them up again. Have I tried the wide, thick, top bars? No. Am I prejudiced? No. In the first place, I am not yet satisfied that they will do all that is claimed for them, and in the next place I want a queen excluder any way.



ASSOCIATIONS of bee-keepers do not, as a rule hold more than one meeting annually, but there have been some suggestions that the North American hold more than one meeting during the year, one man even advising the holding of *four* meetings. The reason given for wishing so many meetings is that a meeting in the West is not attended to any great extent by those in the East, hence it becomes more of a convention for the locality in which it is held, than for other parts of the country. To a certain extent this is true. I think that, as a rule, one-half of the persons present at a meeting of the North American do not travel 200 miles in going and coming. Perhaps one-third or one-fourth of those present consist of leaders, or extensive bee-keepers, who attend nearly all of the meetings, let them be held where they may. These men cannot, and will not, afford to travel from 1,000 to 2,000 miles several times a year for the sake of attending a bee convention. With these men left out, the meetings will become simply local conventions, and these any State in the Union can have if its bee-keepers so decide. When the North American attempts to hold more than one meeting annually it is doomed.



ITALIANIZING AN APIARY.

A subscriber wishes me to tell in the REVIEW the best way to Italianize an apiary of fifty colonies. He also wishes to know which is the cheapest method. That for which we pay the least money is not always the cheapest. The best is usually the cheapest in the long run. Yes, he asks one more question, and that is, if the Italians are any better than hybrids for comb honey. I think I better answer the last question first, as, if he means by hybrids a cross between the Ital-

ians and blacks, I can simply say "no," and it is done with. As I take another look at his letter I see he also wishes to know when he better do the work. This better be cleared away before attacking the main question. I would do it after the main harvest is over. If the queens are to be bought they can then be secured at the lowest price, and are probably as good as those that are reared earlier in the season. My next choice would be quite early in the season, before much honey was coming in or the brood nest had become very much extended. The greatest objection to this time of year is the extra price that must be paid for queens. From the approach of the main honey flow to its end I would not disturb the reigning queen of a colony that I was working for comb honey. Any slack in egg-laying allows the workers to take the advantage by storing honey in the brood nest, and once they get the start of the queen, the colony is ruined for comb honey purposes.

The point as to which is preferable, buying or rearing queens is something that each bee-keeper must decide for himself. If the owner of fifty colonies does not propose to do any other work during the working season except taking care of his bees, he will certainly have abundant time in which to rear his queens. If he has some other work whereby he is earning good wages, and the bees are a sort of side-issue, it will probably be cheaper and better to buy the queens in the fall.

If the queens are to be reared, how shall the work be done? I must confess that I have never been called upon to Italianize an apiary of fifty colonies, rearing my own queens, but I think that I should go at it in something this fashion: Early in the spring I should buy two tested Italian queens and introduce them to two of the colonies, allowing these colonies a great abundance of drone comb. I should then examine all of the other colonies, cutting out the drone comb and replacing it with worker comb. Of course, the bees will crowd in a few drone cells in corners, but, by using queen and drone traps any stray drones can be caught, and I would like the traps anyway to catch the queens when the bees swarm. When a hive contains a young queen nearly old enough to mate, the trap must be removed until she has flown. This will occasionally liberate a few drones, perhaps, but they will be so outnumbered by the Italian drones

that but few queens will be mismated—perhaps none.

When the honey harvest is well under way I would remove the queens from two populous colonies. In about three days I would place a nice, clean, dry, worker comb, not more than a year or two old, in the center of each of my colonies containing the Italian queens. About the time that all of the brood is sealed in the colonies deprived of their queens, the eggs will just be hatching in the combs given to the Italian queens. I would then cut out all of the queen cells that had been built in the queenless colonies, giving the combs of just hatching larvae. Cutting a few holes in the comb just where the larvae are beginning to hatch will greatly increase the number of cells built. Two or three days before the queens were ready to hatch I would start as many nuclei as there were cells. This I would do by taking a single comb of bees and brood from a colony and placing it in a hive close by the side of the hive from which it was taken, and by the side of the comb I would place an empty comb. The next day I would cut out the cells and give them to the nuclei, giving the queenless colonies another comb of eggs from which to build another batch of cells with which I would start more nuclei. If I found it necessary to start more cells I should give the cell-building colonies more bees by shaking them from the combs of other colonies, or else by taking a queen from a swarm and dividing the bees between the two colonies. When these Italian cells are the right age, any colony that swarms can have its cells cut out, and an Italian cell given it, which will settle the matter for that colony.

By this management I should expect that the end of the harvest would find me with a few Italian queens already introduced, as just explained, and by the side of each colony not thus furnished with a queen would be a nucleus containing a laying Italian queen. I would then remove the black queens, leave the colonies queenless until they had sealed over some queen cells, when I would cut out the cells and introduce the Italian queens by simply lifting the combs, bees, and queen from each nucleus and setting them into the queenless hive. Possibly the precaution of leaving the bees queenless so long is not needed, but it is a sure thing.

I should be glad of criticisms and suggestions upon the above.

EXTRACTED.

Irregular Advertising.

The REVIEW has had considerable to say in regard to advertising, more, perhaps, than some of its readers may have thought profitable. If there are any such they should remember that it is the advertiser that allows them to get the REVIEW for \$1.00 instead of twice that sum. If advertising proves profitable to the advertiser he stays with the journal, and what helps a journal is of advantage to its readers. If there is any one thing that is more calculated to bring dissatisfaction all round, than for a new advertiser to insert his ad. just once as a trial, I would like to know what it is. These thoughts are brought to my mind by the following from *Gleanings*.

“There has been a good deal written in regard to advertising, but I think there is one point which has not as yet been fully emphasized; viz., that the advertiser must not be disappointed, nor blame any one, if he gets no return from one insertion of an advertisement, especially if he is a new man. We will say that Mr. A, for instance, orders one insertion of an advertisement, offering queens. He is a new man, and is apt to expect that, within four or five days after the appearance of his card, he will get a large number of responses, but he forgets that Mr. B., a well-known queen breeder, offers queens just as cheap, just as good, and is known to be reliable. It is the most natural thing in the world for bee-keepers to buy of those who are well known. I do not mean to discourage one-insertion advertisements, but usually they do not pay unless some special inducement is offered in the way of extra quality, extra low price, or something novel, that everybody wants to see and get. But even then a plurality of insertions is far more liable to get better returns for the money invested.”

Don't Allow the Snow to Drift Over the Hives and Remain All Winter.

Almost every winter some one asks if there is any objection to allowing the hives to become covered with snow and remain so during the winter. Here is Mr. Doolittle's reply to the question as it appeared in a late number of *Gleanings*.

“The plan of having a shelter over the entrance of each hive, and letting shelter and hive drift over, I have tried several times; but with me it is not a success. Several of our best apiarists claim that this plan is a success with them, and advise the wintering of bees in this way; but I have yet to see the colony of bees, over which the snow has been

drifted three months, that has not become uneasy, gone to breeding, contracted the diarrhoea, and exhausted its vitality to an extent sufficient to cause a bad case of spring dwindling, or a loss of the colony altogether. After a process of time the bees seem to become too warm, break the cluster, commence brood rearing to replace the bees dying of exhausted vitality, run to the entrance, and fan there as in summer, the commotion thawing the snow all about the hive till a cat or small dog could run all around the lower part of the hive, thus causing them to consume their stores of honey and pollen very rapidly, which consumption brings on diarrhoea and death, unless the bees have a chance to fly about the time brood rearing commences, and even then the colony is so weakened that it is of little use the following season. Where the snow stays about the hives only a few weeks at a time, it will do no particular harm; but otherwise I would advise carrying the bees to some higher ground, where the snow does not drift, or else fix an underground cellar to winter in."

Large Colonies; Dark and Light Bees; Bee Paralysis; Foul-Broody Foundation.

Among the bright correspondents gathered together by the *Progressive*, none are brighter than one that signs himself "Observer." His contributions are in the shape of short, independent paragraphs, of which the following, culled from the last batch, are a fair sample:

"Now comes Ernest Root, and says he cannot shut his eyes to the fact that large colonies give best results. Are you paving the way to launch a new hive on us poor d—s benighted bee-keepers, Friend Ernest? Mav fate forefend.

The St. Joe convention 'sat down' on the five-banders. Say, didn't we tell you so, long ago? But the craze is not over yet awhile.

Gleanings editorially contends that yellow five-banded bees have Cyprian blood in them. Nonsense! Just watch Doolittle rise up and annihilate the suggestion.

I (or you) can take as pure an Italian queen as you can find, and from her in due course of time, by careful selection and breeding, secure dark, leather-colored or yellow, five-banded bees. Scores of bee-keepers can corroborate this, if it is disputed.

Bee paralysis is being extensively discussed lately, and is attracting attention throughout the bee-keeping fraternity. Is it really more prevalent than formerly? It may be, but I doubt it, and think in a year or two we will hear no more of it—that it will gradually disappear of itself. So mote it be.

The last REVIEW (October) takes up the cudgel in Heddon's behalf in a manly way that does credit to the editor's head and

heart, and proves himself a friend that 'sticketh closer than a brother.' Would that there were more such.

Friend Heddon is going through the experience all original thinkers have undergone since the world began, and he will come around all right in the end. 'The world does move.'

In Experimenter Taylor's trial of foul-broody wax used in making foundation, a few cells appeared—at least it appeared to be such—and he attributed it to insufficient heat used in rendering the wax and in making the foundation. He is a very careful man, but is it not more likely that the brood was infected from the colonies that had foul brood in them? I understand Friend Taylor has such in his apiary. For my part, I doubt if there ever originated a case of foul brood from the use of foundation."

Five-Banded Bees, They Can be Produced From Imported Stock, Are Good Honey Gatherers—Give Satan His Dues, Etc.

The bright yellow bees have been boomed and boomed and praised extravagantly until a reaction is setting in, and now they will have to take it. As a foretaste of what we may expect for the next few months let me copy from the *Progressive* a "round" between those old veterans, Mrs. Atchley and E. F. Quigley. It is very enjoyable and furnishes some food for thought. Mrs. Atchley assumes the aggressive as follows:—

"Bro. Quigley seems to be away off (*Progressive Bee-Keeper*, October number) where he states that yellow queens and bees cannot be produced from imported stock. I thought any well posted bee-keeper knew that Italian bees kept pure would soon become almost solid yellow, especially if the yellowest queens are selected as the generations appear, etc. I have not seen a Cyprian since 1884, that I know of, till this year, when I ordered some for a customer, and I have some as yellow bees and queens as I ever saw, and no Cyprian blood about them. I import my queens every year; besides I got two from A. I. Root last and this year, and I received one a few days ago from Root. This is done to get a stock to breed from that is no kin, as far as possible, as Root's queens and mine were from different breeders in Italy.

Now, Bro. Quigley, I must see that you 'tote fair' while you deal with five-banded bees. Where did you get those queens you speak of coming from the south? I wish to be understood that I have no axe to grind, as I can and do raise just the kind of queens customers want, *i. e.*, three or five-banded. But, dear me, I have reports on the five-banded bees this year that would knock out all other bees.

Some honey raisers buy five-banded queens by the hundred, and in the hands of *bee-keepers* they have gone away beyond the three-

banded for comb honey, and I say so, and will stand to it until it is proven beyond a doubt, that a *good* strain of five-banded bees are the *best* bees for comb honey in existence to-day, and I value them so highly for comb honey that I expect to run 100 colonies for comb honey next year. There are inferior queens among all classes, and you must remember that the five-banded bees are comparatively new. Like all new things, they are watched very closely, and their being so yellow makes them very conspicuous, and any fault is quickly caught and held up.

But five-banded bees are here to stay just the same. Bro. Q. thinks that the purchasers of five-banded queens are ruined, and that queen breeders are to blame for it. Well, Bro. Q., I think just to the reverse. Those that have bought good stock are proud of it, and I don't think any of our bee-keepers jumped right in for five-banded bees just because they were advertised, but on the contrary, I think most bee-keepers who have five-banded bees, first bought a few queens only, tested them, found them far ahead of other bees, and bought more heavily. Some of our most extensive honey raisers after trying the five-banders sufficiently, did away with all others, and I think queen breeders are just as honest as honey producers, and would not push anything upon another just to get filthy lucre. No, no, Bro. Q., you must be excited, drinking, or did not sleep any the night before you wrote that article running down queen breeders.

Now I will tell you what let's do: You go ahead and raise just such queens as you choose, and allow others to do the same, and conclude that one party is just as honest as the other. Don't think that because you failed with five-banded bees, everybody else will, for such is not the case. I know that five-banded bees have their faults; so do all other kinds of bees for that matter. But I say we should always be willing to 'tote fair,' give Satan his dues, etc. The best way to determine these things is to allow the majority to rule. Ask all that have tried five-banded bees to report—weigh them up, and decide accordingly, and not plead the case before the witnesses are examined.

BEEVILLE, Tex.

Mrs. A.—You are the first person to say that Italians kept pure would soon breed to solid yellow, and all *well posted bee-keepers* know you are making a statement you cannot prove, and for proof I would refer you to all the older importers and breeders of Italian bees. I shall 'tote fair,' and if some of you cannot keep your heads above, you will have to sink, that's all. I kept on trying everyone's five-banded bees, who advertised them as the best, until I am thoroughly disgusted with the whole affair, and have lost hundreds of dollars. I have paid the price asked for the best breeding queens, and I had a right to expect the best, but the result has been the same in every case. There was some Acheley stock in my yard this season, though the bulk of this season's stock came from a Texas breeder who has furnished you queens when you were short. Now, Mrs. A., you get all the reports of those who have

bought five-banded queens, those who have had them *one year*. I will go on record here that there is not one in twenty that will favor them who is a practical honey producer. I will say further that these testimonials are given in a short time after the queens are received, and not one in twenty has any bearing on honey gathering qualities of the bees. I may not be a *bee keeper*, but I have been known to get a crop of honey when other bees around me did not get enough to winter on. Ten colonies in my apiary this dry year produced more than ten times as much surplus as a whole apiary of fifty colonies of five-banded bees in Texas. I never claimed queen breeders were any more dishonest than honey raisers, but some breeders are very aggressive in a business way. As to being excited, drinking, etc., I will have the six editors of the bee journals that I met in the St. Joseph convention, decide. Five-banded bees are poor comb builders—a most undesirable thing in any bee—when comb honey is the object. My experience with these bees the last five years convinced me that it was time and money thrown away to try to make a success at bee-keeping with the five-banded bees, though I did not want to admit it, for I love beautiful bees as well as anyone. Now, Mrs. A., you say, 'Don't plead the case before the witnesses are examined.' Let me inform you that the witnesses have been furnished the past three years by all prominent advertisers. They have been examined by the side of other races of bees, and have convicted themselves. The devil seems to be O. K., etc.

E. F. QUIGLEY."

The Dadants on the Foundation Question.

There is probably no firm that has made more foundation than has that of Chas. Dadant & Son. They could never have sold this amount of foundation had it not been of a superior quality, hence their views on the foundation question are worthy of consideration. E. R. Root wrote them asking for their opinion on the Taylor experiments, and C. P. Dadant replied as follows:

"FRIEND ERNEST:—It is with some reluctance that I respond to your request for my opinion on the Taylor experiments in favor of Given foundation, for I dislike any thing that looks like ax-grinding. The remarks that we had made on the Taylor experiment coincided with yours, and my father had called my attention to the fact that Taylor's tests agreed with the tests made by us long ago; that is to say, that, the heavier the foundation furnished to the bees, the more readily they fill it with honey. This is very natural. The bees are always in a hurry when the crop is good, and they find it much handier to stretch out the cells which contain a great surplus of wax than to wait on the wax secretions of the wax-builders to finish up the rudiments of cells already begun. But one result, that we all know, of

this fact, is, that the combs thus built contain too much wax to be pleasant to eat. But if we owe the heavier honey combs to the heavier foundation, does it follow that we should use heavy foundation for surplus honey? and does not the better quality of the comb honey produced on light foundation make up for the less weight? Undoubtedly, if lighter combs are produced, more of them will be filled, and this will also make up the difference.

The idea of friend Taylor, that the difference in the filling of the combs is due to the difference in quality of the wax, is not admissible. Aside from the fact that the samples on which he experimented came from experienced men, who surely know as well as he does how to render wax, the fact that the greatest difference exists among the combs built on Given foundation is sufficient to show that it is to the irregularity in the amount of wax in those sheets, and to nothing else, that the differences are due. It is evident, from this also, that the Given foundation is the least regular of all the grades tested.

Why is it so irregular? Because, instead of being rolled, it is pressed, and none of the imperfections of the sheet are laminated out. When the first praises of the Given press were published, we secured samples, and wrote over and over again to the manufacturer. Never did we see a full-sized sample that could be called fair. The lubricant used, whatever it be, must of necessity remain on the sheet, and is an objection. The sheets made are always brittle, and, unless used at once, can not be handled without breaking. The shipping of this foundation, without its being more or less broken, is out of the question. When it was first invented, the press was lauded to the skies by Heddon and others: but they did not use it long. Why? They said it was because they could not get the foundation made right. Aye, there is the rub. An amateur can make a few pounds that will prove satisfactory; but show me the man who has made it in any large quantity and has given satisfaction. Hundreds of Given presses have been sold; and to-day, in spite of the praise the Given foundation has received, you can count its friends on your fingers. C. P. DADANT."

Hamilton, Ills.

The Tiering-Up Principle of the Eight-Frame Hive; The Eight and Ten-Frame Tried Side by Side, With Results in Favor of the Former, and Why.

The discussion regarding the value of the eight-frame hives compared with those having ten frames is still "on" in *Gleanings*. The following from the pen of M. A. Gill is a good sample of the articles, and is given not so much because it defends the eight-frame hives in which I believe, as because of the excellent reasoning exhibited:

"What has become of the tiering-up principle of the movable comb bee hive? It seems to have become one of the lost arts to at least some bee-keepers, for they have forgotten that they can *tier up* and thus meet the requirements of an increasing colony, but are taking up the old 'long idea' plan, not back of the brood nest with the Adair or Gallup frame, but off sideways with the Langstroth frame.

Where one writer suggests from eight to ten, another from ten to twelve, and another suggests fourteen frames, what is it but the old 'long idea,' and that off sideways, as though they had forgotten both principles—that of tiering up, and the long idea. I have not been without both eight and ten frame Langstroth hives side by side for the past ten years; and I must say I decidedly prefer the eight-frame hive for my locality, and I live less than thirty miles from Bro. Hatch; but I am aware that our forage is somewhat different. My surplus comes from basswood, having only three times in eighteen years secured a small crop of clover honey, but nearly always enough to build up on, ready for the basswood flow.

Now, if any ten or twelve frame advocate were in my location, and would agree to use no dummies in the spring, and only one super in the harvest, I think I could convince him that his hive was too large in the spring and *too small* during the harvest. Our spring seasons are usually cold and backward, and bees do not build up fast until after May 20. That leaves us only three weeks to secure our basswood workers. Like Doolittle, I do not want them any sooner, for there is nothing for them to do but consume; and I have always noticed that a colony whose queen has exhausted herself early in the season comes up to the honey season much behind the colony that has reserved its force until the proper time; and bees in ten-frame hives are not so provident in early breeding, on account of the extra honey the hive will contain. I find that, in any size of hive containing L. frames, after bees have six or seven frames *well* filled with brood, they would *much* rather occupy two frames directly over the seven than one at each side of the seven. Heat rises, as any one can see by watching a burning brush pile. One will notice, too, that the heat will seem to come to a point at a limited distance, the outside heat being drawn to the center by its intensity. To illustrate, go out some morning when the hives are covered with frost, and look at the size of the melted spot on a one-story, two-story, and three-story hive. My bees, at least, much prefer to economize this heat for breeding purposes than to warm up more room at the side.

Candidly, it seems to me that eight frames is the 'happy medium' between too much and too little; and with that splendid feature added (tiering up), all that could be asked in a bee hive is obtained.

Right here I wish to be on record as saying that I do not consider any colony in prime condition for the basswood flow with less than 24 L. frames. Going farther, I know that the same colony will gather as

much surplus in five to six days, when given two sets of comb, as will take it eight days on one set.

Hold on! I have got to fix up the fence a little (not Dr. Miller's), or Bro. Hatch will sharpen this point I have made, and ruthlessly stick me with it by saying, 'There, Gill, you are admitting your hive is too small.' I plead guilty. It is too small when I want a large hive; but I can tier it up till I need guy ropes, if necessary; but your hive is too big when I want a small hive, and too small when I want a big hive; for you will certainly admit that it would be no fun lifting off any thing more than one super holding ten frames.

VIOLA, Wis."

A Short Method of Making Increase Without Even Finding the Queens.

Recently, in the REVIEW, I criticised the plan of artificial increase that places the old queen on the new stand. The reason given was that the queen and the workers ought to be kept together. In the last issue of his *Quarterly*, Bro. Heddon describes a method of increase that he says he has practiced extensively and satisfactorily, in which the queen is left just wherever she happens to be. Here is the method.

"In our leader, of last issue, we told you we had but one swarm from both our apiaries, and that one came from one of those six colonies worked for comb honey in the ordinary way. We have had a pretty good fall harvest, the bees bringing in honey and storing it in supers of combs, up to the present writing, September 19th, and yet not a swarm has offered to issue; although ever since the beginning of basswood bloom, we have had our colonies reduced to five or six Langstroth frames, or one case of the Heddon hive, as we used in our apiaries. It must be remembered, however, that previous to that time our bees had all the combs the queens could occupy, in which they performed double service, up to about July 1. At that time we had nearly double the amount of brood found in colonies managed in the ordinary way, and as there was no white clover, but a pretty good whitewood, or poplar yield, the several sets of combs were quite well filled with that honey. We mean, that out around the brood this honey was stored. Now, as promised in last issue, we will outline the speedy, slip-shod method we used for getting increase, and tell you in what good condition our colonies are at the present time.

We simply split the hives in two parts, each part containing about as many combs, as much brood, bees and honey, as the other. The half that we moved to a new stand was thoroughly smoked, and the hive thoroughly jarred, and a new, full set of combs placed above each half, and this time the queen excluding honey-board placed between. Now, some of you are saying 'I will bet a lot of

the bees returned to the old stand.' No, they didn't; dividing just at the swarming season of the year, will, with the precaution of smoking and jarring, cause the bees to stay just where we put them. Now, someone is asking 'what kind of queens we got by this kind of a procedure?' Our answer is, just as good and prolific as you ever saw, and only two colonies, out of over 100, turned out queenless. We took no notice of the old queen, whatever. We just divided the combs, brood, bees, and honey, as nearly equal as we could, in whole sets of combs, and didn't stop to tarry over old queens, or the handling of single combs, because we had to make these artificial colonies at the rate of 12 to 20 per hour, and we did it, and they made honey, and are in splendid condition to-day. It makes no difference what some theorist says or thinks about it, the above are the facts, a knowledge and practice of which is one of the big levers to selling honey cheaply, at a profit. We are glad to see foremost bee-keepers coming right along in this line, and supporting our practices, which were fought as 'too radical,' only a few years ago. On this line of work, of which this method of increase is no small factor, rests the salvation of bee-keepers who propose to compete with future prices, and still make a good profit on their products."

Bee Paralysis a Worse Scourge in Some Localities than Foul Brood; All Cures Tried, and All a Failure; The Only Remedy Where it is Epidemic is Complete Destruction of the Whole Colony.

In the last REVIEW was a long and valuable communication from Mr. T. S. Ford, of Miss., on the subject of bee paralysis. It is evident that Mr. Ford is a man of more than ordinary ability and education, as well as possessed of excellent observing powers, and has had abundant experience with the new scourge that promises to do more damage than foul brood, hence his views are worthy of consideration, and I am glad to be able to copy some additional remarks of his as published in a late issue of *Gleanings*; but it should not be forgotten, however, that other men, in other localities, have, apparently, cured the disease.

"The idea that we both had, of killing off the black shiny bees in the hives affected by bee paralysis, has been thoroughly tried by me this summer, and it has gone the way of the sulphur and the salt, and the requeening and the salicylic acid—the limbo of exploded remedies for this disease. I can not really believe that there is any cure of the disease, except spontaneous ones somehow worked out by nature's own processes, if it can be truthfully asserted that there are cures at all.

I have seen some of my colonies, that were decimated in the spring, apparently get well when summer came on; but the shiny bees are now beginning to reappear in them all, even among those requeened with queens from the North, which I once thought could resist the disease.

In the light of what has lately been published as to Cheshire's discovery of the bacillus Gaytoni as being the origin of the malady, it seems doubtful whether there is any hope of cure. I know the infection is borne about on the body of the bee itself, as I have seen an apparently healthy queen from an infected hive carry the disease into an apiary hitherto wholly free from the trouble; and as I have seen the malady spread from an infected hive to all those close by in a short time. Now, foul brood can, it appears, be eliminated, because the bacillus develops only in the larvæ; and when the infected honey and infected combs and hives are gotten rid of, and the bees put into clean hives and on clean combs, the bacilli are all gotten rid of, and the malady eradicated, as appears from what is said of the methods of treatment that have been reported as successful. But reasoning on principle, what is to be expected of a disease propagated by mere contact, and where, after you have transferred the bees to clean combs and clean hives, as I have done, and fed them on sugar syrup for a while and then transferred them again, yet after all there are the seeds of the disease in the shape of the bacillus lurking in the body of an infected bee or queen, that, under favorable conditions, propagates the infection anew?

It seems that we need the scientist, with his microscope, to take the matter in hand, and hunt the bacillus down thoroughly, and tell us whether the spores of this organism are preserved in the honey, and thus carried into the stomachs of the larvæ; also to let us know whether it lurks in the combs and on the walls of the hives. Then, and not till then, can the disease be treated scientifically.

But, after all, for one I utterly despair of any means that will exterminate the disease. Beyond all doubt it is infectious. My own experiments have satisfied me that it is infectious, and that the contagion is carried on the body of the insect. Now, granting that it is infectious, how can we get rid of the bacillus by any method short of destruction of the individual that carries it about, and perhaps of the hive, honey, and combs, if they too contain spores of the bacillus?

Our doctors stop the spread of yellow fever by drawing a cordon of quarantine around the infected city. This being done, they do not physic the whole city at once, nor do they administer remedies to kill the yellow fever germ in the sick person, because they know that any remedy that will kill the germ will kill the patient. May not this be true in the economy of the hive? We can not quarantine the infected bee against his fellows, of course, nor can we quarantine the infected colony against the robbers from other colonies, which, just at the time when the disease is most virulent, and has overpowered

the sick community, rush in and sweep away the poison into their own homes.

The two articles of Mr. Getaz, of Tennessee, published in the *American Bee Journal* this year, and lately reproduced in the BEE-KEEPERS' REVIEW, have been read with great interest by me, as showing that bee paralysis has become endemic in the neighborhood where he lives, doubtless by the very process above indicated. The same thing has happened, it appears, in California, I believe in San Bernardino Co., where it has destroyed thousands of colonies, according to the statement of Rambler, in *Gleanings*. Whatever may be the result of bee paralysis in the North, it is in this climate a disease that is destructive to all prospects of honey production for profit; and it is my conviction that the only method of dealing with it is to promptly destroy every colony that shows infection, and thus stamp it out.

For the benefit of those who buy queens, I think that the note of warning should be sounded, and that often, against buying of any breeder who has this disease in his apiary. How are the inexperienced to be protected against this danger?

COLUMBIA, MISS., Oct. 27.

The editor of *Gleanings* remarks as follows:

[Mr. Ford has been having a very large, not to say trying, experience with this trouble. I have had considerable correspondence with him, suggesting every thing that might in the least abate the malady. J. A. Golden, as well as Mr. Henry Alley, both felt sanguine that the salt remedy, if properly applied, would effect a cure, and at one time I was in hopes it would help him out; but if any one has tried salt faithfully, and found it wanting, I am sure Mr. Ford has. Nothing is able to stay its progress among his bees; but it should not be forgotten that the virulence of the disease is largely a matter of locality. While it was fearfully destructive—far more so than foul brood—in Mr. Ford's locality, in parts of California and other warm climates, it is as nothing in the North or colder climates. But its very insignificance in the North makes it insidious and dangerous for the South. Why? The Northern queen breeder, I am afraid, does not always realize how dangerous a mild case of palsied or swelled bees may be when the queen of said bees is sent to the South. No queen breeder, at least who advertises and sells queens, should allow a case of bee paralysis to remain in his yard one day after its discovery. The bees ought to be entirely destroyed, even though the case will apparently cure itself, which in many cases it will do in his own yard.

It is positively settled now, that the queen can and does transmit the disease; yes, she can carry it several thousand miles, from a locality where it can do no harm, to one where it will do fearful mischief in an apiary.

Dr. Howard, the one who wrote that admirable work on foul brood, and a scientist of no mean order, and a microscopist, is about to turn his attention to it. I shall await his investigations with interest.—ED.]”

A Condensed View of Current Bee Writings.

E. E. HASTY.

PERCOLATION is the word. What a lot of bees will go into the winter this time on percolated syrup. And before the dust settles just let me shoot off my mouth at random—kind o' naughty like. I don't like the idea of filtering syrups through bed clothing. (Old bachelor's whim!) Yes, but I wouldn't give a cent for the man who has no whims—that is to say for the bloodless creature who thinks that *sentiment* should have no hearing at all. Man has, and ought to have, a sentimental side to his nature. If he had more of it he'd be less of a brute. Let's have our filters not only decent but, like Cesar's wife, above suspicion and snuffing. Just the right amount of boiling and sal-soda, or some other laundry treatment, will doubtless put the right kind of new flannel into the right kind of texture and condition for a filter. It seems that raw, new flannel sometimes fails: and perhaps the wrong kind would always fail. The current treatment of the woolen duds that absorb the excretions of our bodies is never to boil them at all; consequently, I fear, they are seldom or never really clean, even from a whimsless biologist's point of view. (Getting ready to hit me with the mop now.) Get mad, if you like; but I reckon it's so—and one excellent reason for wearing cotton under-clothing instead of woolen.

Once again, I don't like filters made by punching rags into cracks. Too hap-hazard. If we mean business let us have proper arrangements for our business, not bungled up utensils that can't do anything else than go wrong half the time. Otherwise let us stand back till some one else tests the matter and reaches the conclusion.

"When I've killed the queen of a cross colony I've noticed that I didn't have to wait till there was time for all the bees to be changed, but that the bees were good-natured before the new generation came on the stage—at least it seemed that way." Dr. Miller in *Gleanings*, 793.

The habit of pitching at everybody in range, was it not really only the outward sign of an inward vim and go that made the colony one of the very best? Perchance the death of the queen blunted forever the keen edge and zest of their energy, their pugnacity and their working qualities delcining to-

gether, and at once. I do not affirm the above as a certainty, but I suspect it. Hard to have the very best bees, and to have them very gentle too. The colony that "holds the record" for surplus in my apiary was the crosslest I ever had.

In *Gleanings*, 764, Mr. Doolittle treats with ability the important subject of drones for late service. He confesses frequent total failure after the middle of August. Yet, to hear some of the boys talk, you would think getting late drones was as simple a matter as popping corn. This year when a heart of a colony was pretty well filled with drone comb, and feeding kept up, a surprising number of workers reared in drone cells was the result. About the best thing that can be done, according to Mr. Doolittle, is to seize the last of the drone brood in all the desirable colonies and put it in a big queenless hive. Then feed, give frequent brood, and boom the establishment generally. Even when you get late drones they are *useless*, unless well fed and kindly treated. Then he advises hand picking the drones, at the cost of many hours of work on cool, cloudy days. Just right, perchance—yet I suspect that none of the *really inferior* drones killed would ever succeed in securing a queen, if let alone. What Demosthenes wanted of an orator was "action, action, action:" what we want from the drone is, vim, vim, vim. And the chaps that lack the vim are pretty sure to all get left any way in nature's processes; and the lusty ones that get ready quickly will get the queens. (Theory, to be taken for what it is worth.)

Last year I had some very late drones in a fertile worker colony that were so lusty that they would pop open when caught. As one colony had a young queen become fertile quite late, I credit her to these parthenogenetic drones, and am watching her performance with interest accordingly. This year the storing of that colony was well up to the head, but not the very first. Possibly the incident furnishes a pointer both in regard to late drones and in regard to the improvement of stock. I don't incline to think the bothersome fertile worker business wholly a mere blunder of nature. Some utility in some direction is more likely.

HEDDON'S QUARTERLY.

In strict speech the name of this is "*The Dowagiac Times*, bee-keeper's edition;" but that name was rather adopted per-force,

as the best practical way to slip out of reach of Uncle Sam's baby-killing Herods; and Mr. H. will not take umbrage to the title given above.

Well, what is it like? Our only bee journal in newspaper form. Some grumble at the form; but this reviewer says, Let alone there! Let the baby wear such clothes as most convenient. When you make it 10,000 subscribers the clothes can be remodded if desired. Of much more significance is the authorship of the *Quarterly*. Mr. Heddon goes Mr. Alley one better, in that he makes a journal which is more completely a one-man journal than the *Apiculturist*. All right—only for such a journal the one man wants to be "powerful" and tactful, and strong, and wise. Mr. Heddon's personal opinions prune him down considerably (either for good or for evil) in his qualifications for being a lone hand editor. He is death on side-issues, and non-bee-keeping departments—and incineration to those outlying departments of bee-keeping itself which are merely interesting and curious, without offering any direct harvest of dollars and cents. 'Specks that a few years' experience, in such a restricted field as he has marked out for himself, will of itself incline him to broaden out a bit, as a relief to his own mind. At any rate he has had large success in getting big crops of honey, and knows a thing or two about it.

Hello! big mistake already. That was Heddon before he became an editor. Heddon the editor doubts whether he can fill all his columns with bee matter which shall be up to his standard; and in that case he actually proposes to fill up with family reading. Well, well! What will become then of his protest against "Our Homes" in *Gleanings*?

You see I am just reading the *Quarterly* for the first time. He thought he was sending it to me regularly; and I felt a little spunky because he didn't send me a sample copy, and held off. At length I sent on my quarter, and he promptly sent it right back with a good natured apology. H'm, how often sand instead of grease gets into the wheels of life without any human design about it!

The editor of the *Quarterly* prefers to assume the manners of a boxer, rather than those which would become a nurse for babies. And in his boxing he lays some of the heaviest cuffs at the mutual admiration

spirit he finds prevailing. And about half right he is, too. It is a virtue to speak as well as we can occasionally of those we are tempted to speak ill of; but certain other persons are so situated that it is our obvious interest to favor them. Too constant exchange of compliments between such persons gets to be slightly disgusting after awhile. Husband and wife should kiss each other, but not on the street corners as a general thing.

Of late Mr. Heddon has developed the rather unexpected merit of not spending a great deal of space in arguing about adulteration. He *does*, however, one thing which is in the nature of a knock-down argument—offers honey at a special and very low price to bee-keepers who happen to have more market than crop. If we suppose that he reserves two or three cents a pound profit for himself (not a wild supposition concerning a man who is not in apiculture for the fun of it) there then remains no margin of profit to pay for the risks of wrong doing and law breaking. At least his argument, it is cheaper to produce and sell genuine honey than to adulterate, seems pretty well supported by his conduct. If he is *now* selling glucose right straight along, a Union formed to fight adulteration should halt him or confess impotence, one would say.

In his salutatory Mr. Heddon says he has made bee-keeping pay better than his other pursuits, even in recent bad years. And his newspaper office, worth some \$5,000, he bought with the earnings of his apiaries. Tell you how to do the same for 25 cts.—for, quoth he:

"This paper like a book, will not be stronger or weaker than its author."

Let us proceed to extract some of these bits of experience. In column 4 we learn that in all but quite severe winters he finds that his out-door bees get through in better order than the cellar wintered ones. But even Heddon can't tell us when the extra severe winter is going to come. In column 5 we are taught to have the hive white, to throw off the summer's heat, and the packing box dark red, to absorb all possible of the winter's sun heat. The packing is to be of sawdust, and not too thick—in fact much thinner than the usual practice, in order that the winter sunshine may not be altogether lost in it. He finds that with five winters' test thin packing surpasses thick packing by fifteen per cent. In column 5 he *warns*

against letting bees build between two finished combs, and declares that they usually do bad work in that way. Our mentors told us to do that way, and I never thought to put on my doubting cap before; but it kind 'o seems as if such building has often been poor with me. Perhaps there are conditions to be looked to, after which all will be well. Glad to hear him say, in column 8, that wide frames are better than the T super—'cause I've got a lot of them, and "keep all on" using them. With my strain of bees double tier wide frames are all right enough. With bees that are reluctant to go above such frames might perhaps cause serious loss.

Proverbs seems to have been having quite a revival of late, and Heddon gets off a striking one occasionally. Witness this: "One may be a poet without being a pauper." Alas, alas! Proverbs are not always the truth any more than other forms of speech. And how's this for aphorism? "Fallacy and carefully studied oiliness * * twin sisters." And I hope Mr. H. will not take it amiss if I advise lots of home consumption of the following good one:

"Let us 'hew to the line, letting the chips fall where they may;' but let us be quite sure we see the line plainly before we begin to hew."

Buy when the price is low, and other people want to sell; sell when the price is high, and other people want to buy. Mr. Heddon says it is because he is confident of the wisdom of this that he is starting a journal and making new investments in honey production just now.

Here's one that is not a proverb, but perhaps true enough to be one:

"The colony which develops the swarming mania and then by some contrivance is foiled in the attempt to divide, never does the good work of one in which the swarming tendency has been prevented." No. 2, Col. 1

He advises prevention of drone rearing; yet candidly admits that colonies pushed to rear excess of drones do not swarm. I think the way of the matter is this. If bees *coluntarily* refrain from drone rearing it is a good indication that they are not yet contemplating a swarm; but if you wrestle with them in any way to keep them from drone rearing, you'll be pretty sure to start their contrariness, and bring about the very opposite of what you intend.

Lots of foundation fasteners, but never one equal to the Parker. Me too.

"Upward ventilation in winter or summer, has been superseded by lower ventilation." No. 2, Col. 19.

Probably true in the fraternity at large, but not of every individual, I got there many years ago—and have been traveling in the other direction recently.

At swarming time, and with very abundant smoking and jarring, Mr. H. had good success with off-hand dividing, letting queens go without finding, and the whole job at the rate of 12 colonies per hour. No. 3, Col. 1. Small boys at A B C may look a little out.

In No. 3, column 7, he indorses R. L. Taylor, and proposes to have feeding for only two purposes, security against famine, and finishing up sections. Here I am inclined to buy two stoves and save *all* the wood—almost at the point of saying I would never feed for any purpose. The section finishing I doubt whether it pays often enough to be generally recommended. Then, having a location which is specially strong on the fall yield, I can afford to put warm honey in the combs myself, and hang it in the hive, in the few cases where it is urgently needed.

But brother Heddon saves all the wood in another case in which I don't believe I could—as per No. 3, Col. 8.

"We have rows of hives in our apiary, containing strong colonies of bees, which we haven't opened—never taken off the honey board—for all of five years. We haven't opened them because they haven't needed it, and we have been readily able to determine inside conditions from outside appearances."

I suppose I must grant that (as far as he can) the busy man who has fully learned his trade is to be commended for judging from the outside.

He says tansy does drive off ants. I thought it a hum, and never tried it. What fools we are by being too much afraid of folly!

Percolated syrup is well bespoken; but for himself he proposes to stick to the old thick syrup made with heat—sugar 10, water 3, honey 4, and a teaspoonful of tartaric acid.

In No. 3, Col. 19, we have a good word for drone sized section honey as a shade prettier than other kind.

In the next column a fox is "dugged out of burrows." If a swarm with the parent colony does make more honey than the non-swarming colony, it still remains true that, if the bees could only be got to refrain, one

could run more apiaries, and so produce much more honey with less labor.

And now before letting him go I must hit him a tremendous slap to grow ou—condemn him to peas in his shoes for one quarter, for the naughty sentence below :

"Now we [Heddon] never read a bee journal for pleasure. We never read any trade journal for other than profit." No. 3, Col. 9.

Men go to a store for bargains, not for politeness; yet the merchant who scoffs at politeness and banishes it from his store is not likely to succeed—costs little, and helps on a good deal. Even so folks may read for profit rather than for pleasure; but the pleasure should not be ostentatiously scouted. If he makes a journal that no one reads with pleasure there'll be a funeral not far ahead, and a scarcity of tears at it. There now!

RICHARDS, Lucas Co., Ohio, Nov. 14, '94.

ADVERTISEMENTS

Convention Photographs.

In the account of the St. Joseph convention will be found the description of a photograph that I had taken of the members. This picture will give you a peep at the leading bee-keepers of the country, particularly those of the West, and will also show you seven editors all standing in a line. If you would like to see the picture with a view to its purchase, all you have to do is to send me a postal card saying that you would like to receive a picture on approval, and one will be sent. If it suits you, the price (75 cts.) may be sent in postage stamps. If you don't care to keep it, simply send it back, and no harm will be done.

W. Z. HUTCHINSON, Flint, Mich.



THE STRATTON American GUITARS and MANDOLINES

ARE HANDED BY ALL THE LEADING MUSIC STORES

Oak, ash, Birdseye Maple, Mahogany and Rosewood.

JOHN F. STRATTON & SON.

Manufacturers of and Wholesale Dealers in all kinds of

Musical Merchandise.

43 & 45 Walker St.

NEW YORK.

GOLDEN ITALIAN QUEENS

Now ready for \$1.00 each. Do not order your supplies until you see our circular for 1894. For the price, we have the best spraying outfit made. Send \$1.50 and get one. Wm. H. BRIGHT, 1-94-12t Mazeppa, Minn.

Please mention the Review.

By Return Mail. FINE ITALIAN QUEENS. Bred for Business, Beauty and Gentleness. Untested in June, \$1 00; July to October 75c each; 6 for \$4.25. Safe arrival and satisfaction guaranteed. Send for free circular to

Theo. Bender,

6.94.tf

Canton, Ohio.

Please mention the Review

Headless Queens.

I only mean that in my yard all queens become "headless" unless their bees prove to be gentle, beautiful and great honey gatherers. I have both the three and five-banded varieties, bred in separate yards, twelve miles apart. Warranted queens only 60 cts. each; tested, 90 cts. Strong, two-frame nuclei, \$1.90 each. Three-frame, \$2.35; four-frame, \$2.80. Safe arrival guaranteed.

1-94-12t. J. H. GOOD, Nappanee, Ind.

Please mention the Review.

— If you wish the best, low-priced —

TYPE - WRITER.

Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars or to correspond with any one thinking of buying such a machine.

TELL YOUR READERS

To order queens of J. N. COLWICK, Norse, Texas, where they can get a nice tested **ITALIAN QUEEN** (reared in 1893) for \$1.25. Untested queens in April or May at \$1.00 each or \$9.00 per dozen. Safe arrival guaranteed. Orders may be booked now for bees, queens, drones, etc., and they will be shipped when wanted.

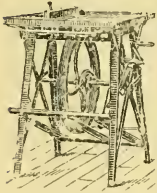
2-94-tf J. N. COLWICK, Norse, Texas.

BEE SUPPLIES!

Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address **T. G. Newman, 147 So. Western Ave., Chicago.**

Please mention the Review.

Barnes' Foot and Hand Power Machinery.



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

3-94-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills.

IF YOU WANT THE

BEE BOOK

That covers the whole apicultural field more completely than any other published, send \$1.25 to Prof. A J. Cook, Claremont, California for his

Bee-Keepers' Guide.

Liberal Discounts to the Trade.

Please mention the Review.

HUSTLERS!

Read what one of the largest bee-keepers of this country says. "The queens (two doz.) came promptly. They are an extra fine lot. The bees are finely marked, gentle, and HUSTLERS when it comes to honey. I have no trouble in picking them out now from over 600 colonies," W. L. COGGSHALL, West Groton, N. Y., October 17, 1893.

Prices for queens bred for business from the above strain, 5 - BANDED, are \$1.00 for single queen; six for \$4.00; one dozen, \$7.50. Single queens WARRANTED purely mated. 1 *Guarantee* all queens to arrive safely and to be GOOD RELIABLE queens. Send for free circular. Draw M. O. on, and address

J. B. CASE, Port Orange,

11-93-tf

Vol. Co., Florida.

Names of Bee - Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States) and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00. W. Z. HUTCHINSON, Flint, Mich.

FALCON SECTIONS

Are acknowledged to be

The Very Best on the Market.

They are the original "Polished Sections."

—:—

Hives and Winter Cases.

ALL STYLES. LOWEST PRICES.

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BEE SUPPLIES

Of all kinds cheap.

—:—

Five per cent. discount on all prices in our catalogue (excepting shipping cases) until December 1st. Four per cent. in December. Three per cent. in January. Two per cent. in February.

CATALOGUE and copy of the AMERICAN BEE-KEEPER free. Address

THE W. T. FALCONER MFG. CO.,

Jamestown, N. Y.



THE IDEAL BEE FOUND AT LAST!

A Superior Strain of Golden Italians

The result of thirteen years' careful breeding and selection. They are gentle, industrious, good comb builders, enter the sections readily, cap their honey the whitest, are not inclined to swarm, and are second to none in beauty; a strain of bees that,

by practical test, has excelled all competitors in storing honey. Price of young queens, warranted purely mated, in April and May, \$1.25 each; six for \$6.00. In June, \$1.00 each; six for \$5.00. From July to Nov., \$1.00 each or six for \$4.50. The price of tested queens, bees by the pound, nuclei and full colonies given upon application. Safe arrival and satisfaction guaranteed or money refunded.

SECTIONS, \$2.00 per 1,000. Lovetailed Hives at bottom prices. For full particulars, send for descriptive catalogue. 1-94-tf

C. D. DUVALL, Spencerville, Mont. Co., Maryland.



ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

Clubbing List.

I will send the REVIEW with—		
Gleanings.....	(\$1.00).....	\$1.75.
American Bee Journal....	(1.00).....	1.75.
Canadian Bee Journal....	(1.00).....	1.75.
American Bee Keeper....	(.50).....	1.40.
Progressive Bee Keeper....	(.50).....	1.30.
Apiculturist.....	(.75).....	1.65.

Honey Quotations.

The following rules for grading honey were adopted by the North American Bee-Keepers' Association, at its last meeting, and, so far as possible, quotations are made according to these rules:

FANCY.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb unsoiled by travel-stain, or otherwise; all the cells sealed except the row of cells next the wood.

No. 1.—All sections well filled, but combs uneven or crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise.

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.

MINNEAPOLIS, Minn.—There is a good demand for strictly fancy white clover and the supply is light. Arrivals are meeting with ready sale, but it is evident that any very heavy shipments would overload the market and lower the price one cent per pound. We quote as follows: fancy white, 17 to 18; No. 1 white, 16 to 17; fancy amber, 15; No. 1 amber, 13; fancy dark, 11; No. 1 dark, 10; white extracted, 8; amber, 6; dark, 5; beeswax, 25 to 28.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Oct. 31.

CHICAGO, Ill.—We have sold thus far this season over 1,000 cases of comb honey, ranging in price from 15 to 16 cts., in a small way, while we wholesale it at 14 cts. We can dispose of all our receipts promptly, and advise shipments to market early. We will make liberal advances on consignments. Extracted honey is selling at 6 cts. We are trying hard to crowd the market to 7 cts. for new crop of clover and basswood Beeswax, 28 cts.

S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

KANSAS CITY, Mo.—We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 12 to 14; No. 1 dark, 10 to 12; white, extracted, 6 to 7; amber, extracted, 5 to 6; dark, extracted, 4 to 5. Beeswax, 22 to 25.

CLEMONS-MASON CO.,
Nov. 28. 521 Walnut St. Kansas City Mo.

NEW YORK, N. Y.—The demand for comb honey is very light, and the supply heavy. The stock is accumulating and prices point to a downward tendency. We quote as follows: Fancy white, 13 to 14; fancy amber, 11 to 12; fancy dark 9 to 10; white, extracted, 5¾ to 6; amber, extracted, 5 to 5½; dark, extracted, 50 cts. per gal. Beeswax, 30 to 31.

HILDRETH BROS. & SEGELKEN,
Nov. 28 28 & 30 West Broadway New York.

BUFFALO, N. Y.—Market is steady on fancy and No. 1 clover. Other grades are dull and move slowly. We quote as follows: Fancy white, 14; No. 1 white, 12 to 13; fancy amber, 12 to 13; No. 1 amber, 10 to 11; fancy dark 9 to 10; No. 1 dark, 8 to 8½; white, extracted, 6 to 7; dark, extracted, 5 to 5½. Beeswax, 28 to 30.

BATTERSON & CO.,
Nov. 27. 167 & 169 Scott St., Buffalo, N. Y.

ALBANY, N. Y.—Honey market 'is quiet as weather is colder. Stocks are not large, but the trade from now on will be a "piecing out" demand. Demand for extracted honey is improving, Beeswax scarce. We quote as follows: Fancy white, 14 to 15; No. 1 white, 13 to 14; fancy amber, 12 to 13; No. 1 amber, 10 to 11; fancy dark, 10 to 11; No. 1 dark, 9 to 10; white, extracted, 6½ to 7; amber, extracted, 6 to 6½; dark, extracted, 5 to 5½.

H. R. WRIGHT,
Dec. 1. Cor. Broadway and Hamilton Sts.

CHICAGO, Ill.—Shipments of comb honey should be made now or not until the latter part of January, as, after the Christmas time, honey is of slow sale for some weeks. We quote as follows: Fancy white, 15; No. 1 white, 13 to 14; fancy amber, 11 to 12; fancy dark, 9 to 10; No. 1 dark, 8 to 9; white, extracted, 6¾ to 7; amber, extracted, 6 to 6½; dark, extracted, 5. Beeswax, 27 to 28.

R. A. BURNETT & CO.,
Dec. 1. 163 So. Water St., Chicago, Ill.

Wanted Single Man, With good experience to take charge of the La. Bee-Keeper's Supply Manufactory. Must also understand the care of bees. Having met with sudden accident, am compelled to have an experienced man to take charge of my business at once.
Respectfully,
LOUIS V. ESNEAULT,
Donaldsonville, La.

P. O. B. No. 54.

Capital Bee, Stock AND Poultry Farm,

W. D. SOPER & SON, Props.,

Breeders of Pure Italian Bees, Toulon Geese Pekin Ducks, Golden Wyandottes, Poland China Swine, Bared Plymouth Rocks, S. C. Brown Leghorns, Etc.

Stock for sale cheap. Send for prices Chick and Duck Eggs, 5c. Geese Eggs, 15c.

W. D. SOPER & SON,
Farm Range, Box 1473, Jackson, Mich.
11-94-ff.

DADANT'S FOUNDATION

Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. **CHAS. DADANT & SON, Hamilton, Ills.**

4-94-12t

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Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

Please mention the Review.



Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and 5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS,** Lavaca, Ark.

5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. 2-94-tf

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BINGHAM PERFECT
BEE SMOKER
Pat'd 1878, 1882, & 1892.

Cheapest & Best on Earth.

Send Card for Circular to
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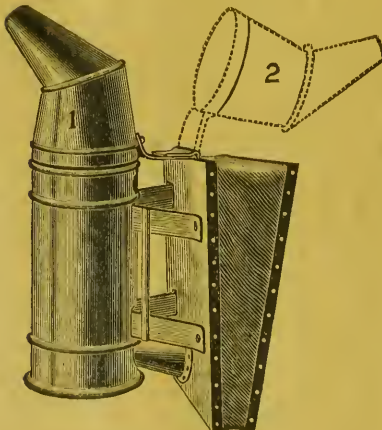
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HONEY JARS, Beautiful, Accurate and Cheap. The trade supplied. Bee Supplies; Root's goods at Root's prices and the best shipping point in the country. Write for prices.

WALTER S. POWDER,
1 84 12t Indianapolis, Ind.

Please mention the Review.



ALL BEE-KEEPERS Want a Good Bee Smoker.

The Higginsville Smoker is designed to supply this want at a reasonable price.

The Higginsville Smoker is a "daisy," has a 3 inch fire box, a hinged curved nozzle that will turn back out of the way while loading, and has a bar of folded tin running horizontally with the fire box to keep the hand from coming in contact with the hot fire box.

We claim the following points for this smoker: Cheapness, Excellence, Strong blast, Heavy volume of smoke and no burnt fingers.

Price, 60c. each; 6 for \$3.00; \$5.00 per doz. 20 cents extra by mail. Special prices to dealers.

If you will send us your name plainly written on a postal card we will mail you our catalogue of Bee-keepers' supplies, also a copy of the Progressive Bee Keeper, a journal devoted to Bees and Honey.

Address:

LEAHY M'F'G. CO., Higginsville, Mo.

DEC., 1894.



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

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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.

CHICAGO, Ill.—With the approach of cold weather the demand for comb honey is restricted; however, we can obtain for fancy white comb in small packages, 14 cents; off grades of comb honey not wanted. We have some two pound sections which we are selling at from 10 to 12 cents per pound. Market is well cleaned up on extracted honey, our receipts selling at from 6 to 7 cents per pound. Beeswax, quick sale at 28 cents. Liberal advances on consignments.

Dec. 13. S. T. FISH & Co.,
189 So. Water St., Chicago, Ill.

ALBANY, N. Y.—Honey market is quiet as weather is colder. Stocks are not large, but the trade from now on will be a "piecing out" demand. Demand for extracted honey is improving. Beeswax scarce. We quote as follows: Fancy white, 14 to 15; No. 1 white, 13 to 14; fancy amber, 12 to 13; No. 1 amber, 10 to 11; fancy dark, 10 to 11; No. 1 dark, 9 to 10; white, extracted, 6½ to 7; amber, extracted, 6 to 6½; dark, extracted, 5 to 5½.

H. R. WRIGHT,
Dec. 1. Cor. Broadway and Hamilton Sts.

KANSAS CITY, Mo.—We quote as follows: No. 1 white, 14 to 15; No. 1 amber, 12 to 14; No. 1 dark, 10 to 12; white, extracted, 6 to 7; amber, extracted, 5 to 6; dark, extracted, 4 to 5. Beeswax, 22 to 25.

CLEMONS-MASON CO.,
Nov. 28. 521 Walnut St. Kansas City Mo.

CHICAGO Ill.—Sales on honey of all grades have been very slow the last week and will continue so we expect until the middle of January. We quote as follows: Fancy white, 15; No. 1 white, 14; fancy amber, 13 to 14; No. 1 amber, 13; white, extracted, 7. Beeswax, 27.

J. A. LAMON.
Dec. 24. 43 So. Water St., Chicago, Ill.

BUFFALO, N. Y.—There is a moderate demand for honey and the stock in the market is liberal. We quote as follows: Fancy white, 13 to 14; No. 1 white, 11 to 12; fancy dark, 8 to 9; No. 1 dark, 8; white, extracted, 6 to 7; dark, extracted, 5. Beeswax, 25 to 30.

BATTERSON & CO.
Dec. 24. 167 & 169 Scott St., Buffalo, N. Y.

NEW YORK, N. Y.—The demand for comb honey is very light, and the supply heavy. The stock is accumulating and prices point to a downward tendency. We quote as follows: Fancy white, 13 to 14; fancy amber, 11 to 12; fancy dark 9 to 10; white, extracted, 5¾ to 6; amber, extracted, 5 to 5½; dark, extracted, 50 cts. per gal. Beeswax, 30 to 31.

HILDRETH BROS. & SEGELKEN,
Nov. 28 28 & 30 West Broadway New York.

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R. A. BURNETT & CO.,
Dec. 1. 163 So. Water St., Chicago, Ill.

MINNEAPOLIS, Minn.—There are very few shipments coming to this market. Most of the receipts are in a small way, and, as a rule, a poor quality of honey. A carload of strictly fancy white honey could be disposed of here very readily to good advantage. We quote as follows: fancy white, 18; No. 1 white, 16; fancy amber, 15; No. 1 amber, 14; fancy dark, 13; No. 1 dark, 12; white extracted, 8¾ to 9; amber, extracted, 7; dark, extracted, 6½. Beeswax, 22 to 24.

J. A. SHEA & CO.,
116 First Ave., North, Minneapolis, Minn.
Dec. 6.

Capital Bee, Stock AND Poultry Farm,

W. D. SOPER & SON, Props.,
Breeders of Pure Italian Bees, Toulou Geese Pekin Ducks, Golden Wyandottes, Poland China Swine, Bared Plymouth Rocks, S. C. Brown Leghorns, Etc.
Stock for sale cheap. Send for prices. Chick and Duck Eggs, 5c. Geese Eggs, 15c.

W. D. SOPER & SON,
Farm Range. Box 1473. Jackson, Mich.
11-94-ft.

WINTER LOSSES

Are not always the result of the same cause. They may come from starvation; from poor food; from improper preparations; from imperfect protection; from a cold, wet, or, possibly, a poorly ventilated cellar; etc., etc. Successful wintering comes from a proper combination of different conditions. For clear, concise, comprehensive conclusions upon these all-important points, consult "ADVANCED BEE CULTURE." Five of its thirty-two chapters treat as many different phases of the wintering problem.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

I have several hundred

QUEEN CAGES

of different styles and sizes, made by C. W. Costellow, and I should be pleased to send samples and prices to any intending to buy cages.

W. Z. HUTCHINSON, Flint, Mich.

—If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

Muth's HONEY EXTRACTOR PERFECTION Cold-Blast Smokers

Square Glass Honey Jars, Etc.

For Circulars, apply to CHAS. F. MUTH & SON
Cor. Freeman & Central Aves., Cincinnati, O.
Send **10c.** for Practical Hints to Bee-Keepers.

1-94-tf.

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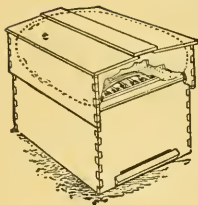
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W. Z. HUTCHINSON, Editor and Proprietor.

VOL. VII. FLINT, MICHIGAN, DEC. 10, 1894. NO. 12.

Work at Michigan's Experimental Apiary.

R. L. TAYLOR, APIARIST.

FEEDING BACK.



Feeding back honey to the bees, to enable them to completely fill and cap over those sections upon which work was arrested midway on account of the interruption of the honey flow leaving them un-

fit for market in their then present shape and of considerably less value than honey to be extracted from brood combs on account of the undue proportion of work to extract them, is a practice which, while it is not likely to become by any means universal among producers of comb honey, is yet likely to be adhered to to no inconsiderable extent by such as have once had experience with it, especially if the locality is one where from lack of nectar producing flowers in August the bees are likely to cease the rearing of brood so early in the season as to make the prosperity of the colony the fol-

lowing spring altogether problematical on account of the fact that its population is too aged to be relied upon with certainty to successfully undergo the vicissitudes of spring work. It has therefore been thought of sufficient importance to warrant the continuance of the experiments which were instituted last year touching this subject.

By the adoption of this practice of feeding there are important gains outside of the completion of the unfinished sections. I find the most important of these as uniformly shown in each of the individual colonies employed in the experiment both this year and last to be the improvement which takes place in the condition of the colonies both in numerical strength as well as in the much greater proportion of young bees which are points of prime importance in the successful wintering of bees in this latitude, particularly if they are the result of feeding continued well along through the month of August. Another gain of no mean importance in an extensive apiary is the avoidance of the tedious fussy labor of extracting the honey from unfinished sections. This labor to be sure is rendered comparatively easy if performed at once on the early removal of the sections from the hives, a course which is not considered desirable if the highest condition of the salable sections is had in view, and is, besides, not always possible practically unless the apiary is a small one and other work slack.

It is admitted that something may be said on the other side but in my estimation nothing formidable. The strongest point is the fact that the honey thus produced is more liable to the change denominated candying. But that it is inevitable is not very material, for the consumption of this honey, as it is but a small proportion of the whole crop, can easily be secured by a little care on the part of the apiarist before the danger of that change begins and before it is desirable to move the main crop. But it is not certain that the candying process need necessarily follow. Experiments indicate that by proper methods of feeding and proper handling of the honey when removed from the hive, that difficulty may be avoided. The labor of feeding of course amounts to something but to no more perhaps than that of extracting the honey from the sections to be completed by the feeding. On the whole it is safe to say that the advantages to be derived from the course suggested, leaving out of view the increased value of the product, easily compensate for the necessary labor and other drawbacks and leave the increase in value clear profit, which is found by actual trial to amount to from 30 to 60 per cent., according

to the degree of advancement to which the sections have arrived when devoted to this purpose. Of course the less the work which has been done on the sections when taken to have them completed by feeding, the less would be the per cent. of profit.

Net wt. of sections adjusted.	Amount fed.	Amount of finished product.	Net gain.	Gain per cent.	Pounds fed for one lb. gain.
41	106 $\frac{3}{4}$	110 $\frac{3}{4}$	69 $\frac{3}{4}$	65.3	1.53
28 $\frac{3}{4}$	112	94 $\frac{1}{4}$	65 $\frac{1}{2}$	58.4	1.70
69 $\frac{3}{4}$	218 $\frac{3}{4}$	205	135 $\frac{1}{4}$	61.8	1.61

As to feeders, either for this kind of feeding or for feeding for winter stores, the Heddon or Miller feeder is the most convenient, as the work of feeding can be done without any interference from the bees of the colony at all, but, on the whole I have the best satisfaction from the use of common milk pans: the bees take the honey more rapidly from these and there is not the danger of the comb honey getting a twang from the inclination of the dampness in the wood of the other feeder to induce incipient fermentation.

To use the milk pan feeder, place it on the open top of the colony to be fed, after the surface of the honey be covered—it is more important that the cloth is so placed that it will fall as fast as the honey is taken out. A new cloth is best—a very old one, that is, one that has been much used and washed, will, particularly if a little damp, settle at once to the bottom of the pan.

Owing to the extremely unpropitious character of the honey season the amount of material was small so that the experiment made was not an extensive one—only two colonies being used in it. They were not excessively strong ones as each had passed the entire season in a single section of the new Heddon hive. The extracted honey used was diluted after weighing at the time of feeding by the addition of from 15 to 20 per cent. of hot water and was fed as rapidly as the bees would take it. Each colony was given two cases of sections with foundation

sections to be completed are adjusted, with an empty hive or other bee proof surrounding it, the hive cover to be placed securely over all when the feeding has been done. Care must be taken that no opening for the entrance of robber bees be left or trouble may be anticipated. There must be provided for each pan a piece of cotton cloth at least three or four inches larger each way than the diameter of the top of the pan, and when the pan is filled the cloth must be so placed over it as to permit the bees to take up the honey without getting into it, or if any get into it so as to enable them to regain a foothold on the cloth. The best way I have discovered to adjust the cloth is this: Take the cloth and dip one corner three or four inches into the honey then place the cloth on one edge of the pan so that the sweetened part hangs over so as to touch the section case on which the pan stands, thus forming a bridge for the ascent of the bees, then fold under loosely the further parts of the cloth so that it will drop inside the pan and settle with the honey. There is the most danger of the bees getting drowned at the first feeding when they are greedy. It is not necessary to be careful that all parts of the

surface of the honey be covered—it is more important that the cloth is so placed that it will fall as fast as the honey is taken out. A new cloth is best—a very old one, that is, one that has been much used and washed, will, particularly if a little damp, settle at once to the bottom of the pan.

only and one three cases and the other two cases of partially filled sections, and were fed till the same were filled and capped which required nearly four weeks time on the average.

The accompanying table shows in brief the particulars of the experiment and the results.

By a simple process of calculation, taking the value of the material used and the market value of the product, it will be seen that the profit is more than 50 per cent. and this would have been considerably increased had all the sections been partially filled at the beginning of the experiment.

LAFEEER, Mich.

Dec. 15, 1894.



Twenty-Five Years of Experiments in Bee-keeping and What I Have Learned by It.

B. TAYLOR.



I HAVE spent forty five years working with bees for the purpose of raising surplus honey for market, and think I have learned many of the secrets of the trade by this long experience, and I write this series of articles with the object and hope of

benefitting those who may adopt bee-keeping as a leading pursuit.

Apiarists as a rule are not of the stuff that makes millionaires. In my experience I have found them, as a rule, to be persons of noble sentiments and kindly hearts, and such persons are not noted for excessive material wealth. To guide such in securing a fair supply of bread and butter is to me a great privilege. This world is full of people with ideas on religion and government, as well as practical affairs in field and shop, that are founded on nothing better than mere tradition and prejudice, and the ideas and methods of such, when tested by the rules of science, are found lacking in those qualities that lead to best results. Bee-keepers are not an exception to this charge, most of them believing for thousands of years that the rattling of pans and the ringing of

bells caused bees to alight when swarming. This one case proves that the mere fact of the great age of an idea or practice is no evidence of its truth. It is for these reasons that I have been for years testing old and new practices in the bee yard, that I might prove all things and hold fast to the things that were good. These experiments brought no reward in money and I would no doubt now be much better off in that respect if I had never made them; yes, I would no doubt have made more money had I done as did a wealthy bee-keeper whom a bee journal held up approvingly some time since, saying that he 'wasted no time fooling with experiments but just adopted the Quinby hive and system and went right along making big crops of honey.' But, dear friends, suppose Mr. Quinby and others had been like this excellent man, how would the case stand? Sections of hollow trees for hives, and ringing bells to settle swarms. I have been, for the last year or two, burning and clearing up the mountain of waste that naturally accumulated in twenty-five years of testing on a considerable scale nearly every hive and fixture brought into notice. In the different styles of movable frames alone I burned enough to fill a good sized ware room, but I have for my reward a consciousness of *knowing* things instead of *believing* them, that more than balances all costs, I shall now cease from general experimenting and confine my efforts to producing extra fine honey, comb and extracted, and marketing it among my neighbors and friends. In this branch of the business I shall still experiment, and put all my mind and strength into the work.

And now to the task of relating some of the useful facts I have learned from experience, and one of the first and greatest is the fact that where there is a home to build and a family to provide for, bee-keeping alone is not safe to rely upon for an income, and should be connected with some other pursuit; for there are seasons when no skill of the apiarist, even with his hundreds of colonies, and all the requisite material, can secure a honey crop, for when the flowers fail to secrete nectar, skill is of no avail. Those old stagers, C. C. Miller and the Dandants, reporting a total failure in the past season is a case in proof.

I have always had some other means than bee-keeping to help out my income, but I am now going to attempt to make a nice,

safe living in a special way that will, I believe, be available to nearly every bee-keeper; and to tell what I am going to do myself, what my experience has led me to believe will enable me to safely and surely supply my wants, is the best advice I can give to others.

I have long believed that nearly the entire food for a comfortable living for a family of several persons, could be raised on one acre of land, and I am now going to try the experiment, not necessarily for my own support, but as a means of the highest pleasure from day to day. I cannot explain all I expect to do on this acre, but will say that I expect to put a large amount of work upon it. Horace Greeley used to say that the man

blackberries, raspberries, currants and gooseberries. I shall plant half a dozen apple trees along the north border and some trees of plum, pear, cherry, and other trees on the border east and west, but nothing on the south to make shade from that direction, but strawberries will be the main fruit. I shall plant choice kinds, that do best here, in rows four feet apart, plants 16 inches apart in the rows. Will clip all runners and keep the plants in hills. Will plant a new bed each spring, cultivate in the highest manner, pinching off all blossoms the first year, mulch with clean old straw that contains no foul seeds. In the spring I will pull the mulch from the plants into the spaces between the rows, cover against late frosts



APIARY AND WORKSHOP OF B. TAYLOR, FORESTVILLE, MINN.

who owned one acre of land need never be idle for want of profitable work, there being no end to the possibilities on even so small a piece of ground. My acre is very rich clay, and I shall keep the fertility up to the highest standard by the yearly application of suitable fertilizers. A suitable part of it will be planted to a variety of the food supplying vegetables, potatoes, sweet and Irish, corn, beans, squashes, salsify, mellons, peas, beets, and other vegetables of the useful order, but no space will be allowed to other than strength giving foods. The fruit department will consist of all the finer fruits that flourish in this climate: strawberries,

if need be, and thus, by the aid of artificial watering, raise a great crop of enormous berries almost as certain as the seasons come. After supplying our own table with all the fine berries we can eat the remainder will be sold at a big price to friends who will gladly pay for them. In this way I will pay for flour and other bread stuffs and, with plenty of honey, the choice fruits and vegetables, milk and butter from the Jersey cow and eggs and poultry from the small but choice flock of black Spanish or Leghorn hens, O my, how we will feast! Just think of a dinner of roasted chicken, baked sweet potatoes or hubbard squash, hot graham

gems with golden butter and clover honey, and a nice dish of strawberries and cream, and all these topped off with blackberry pie and a cup of scalded Jersey milk. But this is the way a poor bee-keeper may fare by industry and wise management. This may seem an extravagant statement, but you must remember that in the common way of raising fine foods, and selling them in the regular markets, the various sharks that occupy every foot of the road between producer and consumer take at least half of every thing for their share, and then charge the consumer the full price for all. But when a man raises all these good things and then consumes them upon his own table, he gets the entire value of his labor. I have pursued this policy for many years and know it is a great thing. The only danger is that when President Cleveland finds us faring so well, he will send the regular army and have the thing stopped.

Now, in all this, I have said nothing about what is to be done with the money that we are to get for our honey crop, which, in good years, may amount to many hundreds or even thousands of dollars. Of course, in the start, we will have to live in a cheap house and have but few good and handy out buildings. Well, when we have raised nearly every thing we eat, which is the greatest item of expense in a family, and having no big rent bills to pay, we will need to spend but a small part of our income from the bees for family expenses, and can invest a large part of it each year in buying material for the nice new house and other buildings we will make in due time; but there is no need to be in too big a hurry about it. Before beginning the new house we better live in the little old one until we have plenty of material ready for building the new one, which need not be a very costly one but must be neat and comfortable and thoroughly substantial. Bee-keepers are nearly always of a mechanical turn and many can do their own carpenter work. Material can now be bought very cheaply all dressed and nearly ready to put together and a handy man with a few tools can make a neat house if he will get a good plan arranged before he begins. It is best to have a regular carpenter help do this. At the Forestville apiary there are a number of neat but not large or costly buildings. With the neat, clean surroundings, there is such an air of comfort that hungry travellers are constantly stopping to ask for

dinner, only to find the place a bachelor's hall; and this place has been built up in exactly the way outlined in this article, the proprietor digging the cellar, laying the stone walls and then turning carpenter and painter and finally washer-woman and cook; and while doing this work, labor ceased to be a burden and become a joyful pastime. This very fall, although 65 years old, I have been building a new stable for my two fine bay, high bred roadster colts, making it warmer than most dwellings, and where every thing is so handy that I need not waste a single step in caring for the animals, and while doing it I have been so interested and happy that I could not take time to write a letter or scarcely eat my meals.

Now friends, I have been giving you a picture of sumptuous feasts, but let me say that many of my own meals consist of new fresh milk, scalded, and crackers, at a cost not to exceed four cents, and I enjoy it better than the greatest feast that Delmonico can cook, for, with such food, I not only feel strong to work but feel good all the time, which is more than the eaters of rich costly foods can say.

Now, brother bee-keepers, I wish you all to be happy, and to be so you must have a good home and be secure from the anxiety occasioned by the horrors of poverty, and I have given you what I believe to be a good plan to escape that end. I have secured my present comfortable surroundings by working on the plan outlined in this article. I have told you what to do and if you will enter into the spirit of it in the right way you will enjoy the work as I have done. Of course, it takes more than a home to make us truly happy, for happiness is in what we *are* rather than in what we have. To be real comfortable we will have to be *good*, then let us all resolve to bear our own burdens and not try to live by making good bargains with our weak and unfortunate fellows. Good bargains, when boiled down, consist in getting valuable things that we don't have to pay for. Let us, then, resolve to pay 100 cents upon the dollar's worth of service we receive from even our dumb animals, for no good man can feel satisfied with himself by reaping where he has not sown; so, get a good location, and, at least, a little land, and begin the work of making the only practical place in this world in which the people who *earn* their living can be real happy in, a good home. I often leave home a few days to visit es-

teemed friends, and always have a good time, but the best moment of all is when, on my return, I catch sight of my own big pines; and now, in my 65th year, I am enjoying the most satisfactory period of my life.

Let me say, before concluding, that when you get once located, *stick to it*, and don't keep "swarming out" in the hope of finding a better place in some other quarter. One of the worst mistakes I feel to have made in my material affairs was in making two or three moves from one good place to another. Life is too fleeting for such things; for, when we get interested in life's work, old age comes on at railroad speed.

In this article I have been laying the warp for the fabric of life; in the next I will give some of the woof in the form of the things I have learned by my experiments in practical honey production.

FORESTVILLE, MINN.

Nov. 24, 1894.



A Conventional Feature that May Prove Very Profitable.

F. A. GEMMILL.



THE discussion of special topics, was, as I understand, what you had in mind, when the publication of the REVIEW was first undertaken, and, up to the present time, you have, to all intents and purposes, so conducted it. I have observed, however,

that you have occasionally digressed from that course, in the way of publishing some selected articles. Now, I make no claim on this communication, either from a special or selected standpoint, beyond the fact that it is to treat of a special *feat re* which, it is expected, will be carried out at the coming convention of the Ontario B. K. Asso., on January 22nd, 23rd and 24th, 1895, and it occurred to me you might be willing to give it to your readers, I therefore concluded to forward an outline of it.

I am a great believer in conventions, and am confident they have done much good in the past, and at the same time, I also believe

in addition to imparting information to bee-keepers themselves, that a benefit will undoubtedly result by instructing and educating the general public as to the great importance of honey as a good wholesome food for the human family, and that outside of what has, and still may be done, through the press.

You no doubt are also aware, that a social entertainment, in connection with the usual sessions, has been attempted on one or two occasions, but they have not come up to my *beau ideal* of what I advocated or desired that they should be, and I am now endeavoring to have my original plan carried out.

In order to be brief, I would state that I favor a special entertainment for the benefit of the outside public to be given on one of the evenings while the convention is in progress. For want of a more appropriate name, it can be termed a "Honey Bee Concert," or an "Educational Entertainment," and is to consist of choice vocal and instrumental music, an address by one or more bee-keepers, and a lecture accompanied or assisted by a magic lantern exhibition, illustrating the manner in which the insects secrete wax scales, build comb, gather and ripen the nectar into the honey of commerce as well as their usefulness in fertilizing flowers, and their *modus operandi* of so doing, as well as the gathering and storing of pollen, etc., and last but not least the sting will in a like manner be touched upon, and directions given how to prevent being stung as well as how to behave when stung.

From the progress and encouragement I have so far met with, I am confident that should the editor of the REVIEW or any of his, or our, American friends honor our convention with their presence, they will go away favorably impressed that Canadian bee-keepers have made another step in the right direction.

STRATFORD, Ont.

Dec. 14, 1894.



The Germs of Bee Paralysis Seem to be in the Honey, and the Disease Confined to the Nurse Bees.

L. AUG'S ASPINWALL.

OF late my attention has been called by numerous articles in our bee journals regarding bee paralysis. Conspicuously are those contributed by T. S. Ford, Adrian

Getaz, Prof. A. J. Cook, C. W. Dayton and O. O. Poppleton.

The rapidity with which the disease has spread throughout the entire United States within a few years is truly alarming. I believe its ravages have become more wide spread within a given time than foul brood.

I did not intend to give my limited experience with it until a positive remedy had been deduced therefrom, but, owing to the demands naturally growing out of the extremely grave situation, I concluded to do so from a sense of duty; hoping a clue to the disease may be discovered, and a remedy applied.

In my experience I have endeavored to locate the disease, which would naturally lead to the cause, and finally to a remedy or preventive.

Although not altogether exhaustive, my experiments have led to the following conclusions: 1st. That the disease is confined to the nurse bees exclusively, with the exception of the queen, which I shall hereinafter consider separately.

My method of proving the above is to supersede the queen of a diseased colony by one of another color. If blacks are affected, give them a yellow queen. If Italians, give them a dark queen. By this test the progeny of the new queens will show no disease until the expiration of eighteen or twenty days. This will explain why a temporary benefit is found in requeening, as set forth in Mr. Ford's article, page 240 of the REVIEW.

It will be observed that the domestic period ends here; furthermore, these bees never become fielders—no old bees with ragged wings are ever seen with the infection. Also, self-cure apparently takes place when all breeding ceases, particularly at the end of the season. The interval of none but sealed brood after swarming is rather short to exempt the nurse bees sufficiently long for more than a partial cure. These facts would lead the observer to consider the disease exceedingly erratic, as mentioned by Mr. Poppleton, second paragraph, page 267, REVIEW. As to further evidence relative to the apparent erratic tendency, I shall speak of that in another paragraph.

2nd. As to the queen, we can readily understand how constant feeding by the nurse bees during the height of egg laying, would transmit the disease. An objection may be raised; why do not the larvæ also become infected? That the nurse bees do not become

infected to an appreciable extent until the expiration of the nurse period, might explain it. Again, the queen may be fed by nurse bees of that age exclusively; if so, we can readily see how the queen could receive the contagion and the larvæ escape. Young queens introduced into infected colonies often suddenly disappear. See article by Adrian Getaz, *American Bee Journal*, page 240, first paragraph. I had a beautiful Italian queen superseded in less than four weeks, notwithstanding she was large and prolific; furthermore, out of the five cells of supersedure, two of them contained dead larvæ.

3rd. The foregoing observations have led me to believe one cause of the disease lies in the food, and may be transmitted by nurse bees feeding with each other; also, during their flights they may mistake the entrance, and so carry the infection to other colonies. Another fact that came under my observation was, that a first swarm from a diseased colony showed no signs of the infection after being hived one week, and remained healthy throughout the season. In the mean time the parent colony continued to grow worse, and withal sulphur was frequently applied.

If the cause is contained in the food it explains just why Prof. Cook's experiments in feeding were a partial cure, bringing about the apparent erratic tendency referred to in Mr. Poppleton's article. The various honey plants succeeding each other, yielding a supply which is pure, in lieu of the old germ laden honey at the bottom of the cells, would certainly tend to abate the disease. On the contrary an exhausted supply would produce the opposite result.

4th. I believe that the disease is hereditary through the queen, or rather that her progeny become more susceptible to the contagion; through a tendency to inherit the disease, each succeeding generation becoming more susceptible to it, I can see how the entire force of nurse bees becoming infected would even cause starvation of the brood, as in California.

Just how the food happens to contain germs is the question which remains to be solved. At one time I thought they might possibly be transported through the pollen. During our continued dry and consequently dusty seasons of late, I found the pollen contained large quantities of foul matter plainly visible with a $\frac{2}{3}$ objective of my microscope. It was evidently dust from our thoroughfares borne by winds to the honey fields.

Pollen from buckwheat was exceptionally foul. Having examined and found pollen from all my colonies equally foul while the disease was exceptional, I concluded the cause was not there. Mr. Getaz refers to Cheshire's discovery of the *Bacillus Gaytoni*. I have made several attempts to discover this germ, but failed, as my highest magnifier is but a one-sixth objective. Although Mr. Cheshire had no real experience with this disease I have no doubt as to a germ—and I take this opportunity to express my great admiration for his work, also my deep regret upon reading of his death.

I am also inclined to believe that the disease is closely allied to spring dwindling. My experience with that disease is also conclusive as to its being confined to the nurse bees; the symptoms are alike with the exception of the bloated condition of the latter, which is undoubtedly due to cold, while its origin lies in the food. Last spring I removed a comb of honey from a colony suffering from spring dwindling. Sometime during the month of June it was placed in the brood nest of a healthy colony, and as a result diseased nurse bees were found.

I agree with Mr. Ford (last paragraph, page 872 *Gleanings*) that the name "paralysis seems rather a misnomer." My observations show no paralyzed condition, except by reason of cold, which, under conditions more severe would also affect healthy bees.

JACKSON, Mich.

Dec. 15, 1894.



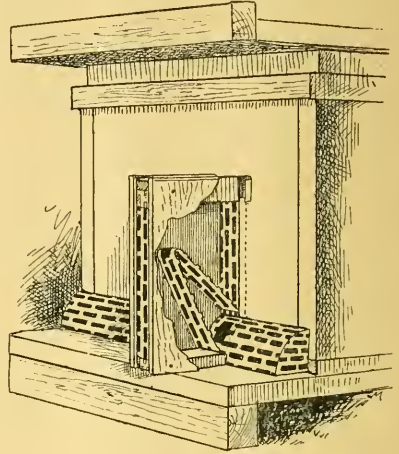
The Dayton Queen and Drone Trap.

C. W. DAYTON.



and return without passing through the trap proper. The method of attachment gives the greatest extent of ventilation possible

and allows the bees to alight upon the hive front and proceed down to the entrance through a small but exceedingly capacious entrance guard. In short, the bees find no more difficulty in passing this trap the first hour than after a week's adjustment.



C. W. DAYTON'S DRONE TRAP.

The size mailed you is about three-fifth quart capacity and is sufficient where the drone comb is properly excluded. If the hive contains several frames of drone comb, then the trap is enlarged by wider sheets of zinc. I was about to have an illustration made for my own use but perhaps it may be worth while to show the same in the REVIEW (unless, perchance, it would savor too much of that "Admiration Society") by which plan I may obtain the same.

The trap sent is put together with small nails to allow its being taken apart with a knife. The entrance guard is bound upon the side of trap. You will probably understand the construction and adjustment without further explanation.

I used about a dozen this season and am now making 150 for next season's use. The one I mail you is for your hive, (supposing that you use the dovetailed, Langstroth, or any hive having a forward projecting alighting board.) My auger hole entrance requires the entrance guard to the trap to include seven rows of perforations and be a half cylinder in shape and a slightly different attachment to the body of trap. In the trap sent the entrance guard is $\frac{1}{4}$ cylinder in shape, or five rows of perforations.

FLORENCE, Calif.

Nov. 5, 1894.

FRIEND H.—By the present mail I hand you a Drone and Queen Trap. By this form of trap there is gained the privilege of manufacture, simplicity of construction and economy of space before the entrance; allowing the bees to depart

Farmers' Institutes and Their Relation to Apiculture.

E. T. ABBOTT.

INSTITUTES have already become in some States a prominent factor in the promotion of a certain kind of knowledge, and they will grow in number, and increase in influence all over the country as the general public becomes better acquainted with the manner in which they are conducted, and the great good they may accomplish. Missouri held forty institutes this year, and I am informed that Illinois has made an appropriation of \$50 for each institute and is to hold one in each county in the State. Other States are sure to follow in the footsteps of those already holding such meetings, just as soon as they realize how much benefit they are to the general public. In fact, a large number of the States are now holding such institutes every year.

There can be no question but what these institutes offer an excellent opportunity for the promulgation of a general knowledge of apiculture. From my standpoint there is no better opportunity than they offer for reaching the people of the small towns and rural districts. I may remark in passing that I am not a very strong advocate of bee-keeping as an independent industry, especially in some localities. Take a State like Missouri for an example, and I am inclined to think that the future of apiculture rests with the farmers and the fruit growers. In other words, I am confident that the sooner this industry is recognized as a legitimate branch of agriculture the better it will be. If one takes this view of bee-keeping, then surely there is no better place to talk bees and advanced apiculture than among the farmers. Institutes, however, are not made up entirely of farmers, as the towns and small villages are generally well represented, especially at the evening meetings. Here, then, is an excellent opportunity for the man who believes in bee-keeping as a specialty to so educate the people with regard to the nature and value of honey as a food as to largely increase its consumption.

Perhaps it may be well before I go any further to explain the nature of institutes and how they are conducted, as all of your readers may not understand this fully. I will assume that they are conducted in the same way and along similar lines in all of

the States, and take Missouri for my example, as I am better acquainted with the method of procedure in this State than I am with any other.

These institutes are held under the auspices of the State Board of Agriculture. This Board, in our State, is made up of one member from each Congressional district, appointed by the Governor for a term of three years. The Governor, the Superintendent of Public Schools, and the Dean of the Agricultural College are ex-officio members. The Board appoints a Secretary who, under its direction, conducts most of the business of the Board, and has all to say about holding institutes, and the speakers to be employed. Each fall the secretary gives notice through the agricultural press that a certain number of institutes will be held in the State. From the applications he receives he selects such places as are the most accessible by public conveyance, and can be reached without too much loss of time by the speakers, and arranges for institutes in these localities, announcing the dates in advance. All expenses are paid by the State except that the local community is expected to furnish the hall in which the meetings are held. Sometimes they go to the further expense of furnishing music, and in some communities they offer quite liberal premiums on household and farm products. The State furnishes at its own expense speakers who are to open the discussions in their particular lines, and then a general discussion of the subject follows. Of course, the speaker is supposed to understand thoroughly the branch of agriculture which he represents, and the audience is permitted to ask as many questions as it desires, he being expected to answer them. This part of the meeting is very helpful and sometimes very interesting; and, I may remark, would satisfy the most cranky crank on the question-box.

Now, surely, no one will fail to see that here is the bee-keeper's opportunity to sow good seed, if the right man can be secured to represent the industry at these institutes. How, then, are we to secure a hearing? First, it may be brought about in this way: Let bee-keepers in each community see their local member of the Board of Agriculture and show up to him the importance of the industry, and thus a friendly feeling may be created for apiculture among the members, which may prove an entering wedge toward the securing of some good man to represent

the industry at all of the institutes of the State. Failing to bring it about in this way, then let bee-keepers see the secretary, who, as I said above, generally employs the speakers, and get him interested in apiculture, and then the rest of the work will be comparatively easy. If he cannot be prevailed upon to employ a bee-keeper as one of the regular speakers, then let local bee-keepers in each community where institutes are held attend all of the meetings, and when an opportunity offers, talk bees the best he or she knows. Where there is a will, there will be found a way. Of course, no cranks on special lines, nor vendors of patent hives should be permitted to represent the industry, for if they are, the institute people will soon shut down on the whole business. If the bee-keeper can talk poultry, as I have at the institutes in Missouri this year, or any other branch of agriculture, he will be that much more likely to get a hearing and be employed by the State. The secretaries, or those who engage the speakers, are always looking out for good men, and one may be assured, if he has something of value to say, and knows how to say it, and when to stop—a *very* important point—he will not want for a chance to tell what he knows. T. B. Terry spends all of his time during the winter in this kind of work, and is in constant demand, simply because he has something to tell of real value to the farmer, and the States are glad to pay him for telling it.

I may say further, that it will be better if the man who talks bees at a farmers' institute does so from the standpoint of apiculture on the farm, and not as a specialty. If he does not believe that the farmer and horticulturist should keep bees, he would better stay away from the institutes, in my opinion.

If all these plans fail in securing a hearing, then I think it would pay the State Societies of each State to employ a man at their own expense and send him to all of the institutes held in the State. But if we can make the members of the various Boards of Agriculture feel that bee-keeping is an industry of some importance to the farmer, and that we as bee-keepers are ready to cooperate with them under all circumstances, then I do not think there will be any trouble to get a hearing.

ST. JOSEPH, Mo.

Dec. 17, 1894.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor and Proprietor.

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FLINT, MICHIGAN, DEC. 10, 1894.

THE PREVENTION OF SWARMING, as described by Mr. Heddon is not new; so writes Mr. C. Spaeth, of Berne, Mich. He says that Mr. Gravenhorst of Germany reported success with this same plan two or three years ago.

THE CLASPS worn by wheelmen to save their trousers from being soiled by their wheels may be worn to keep the bees from running up inside your trousers, says S. M. Keeler in the *American Bee-Keeper*. Remember this next season.

ONTARIO BEE-KEEPERS will hold their annual convention at Stratford, Jan. 22, 23, and 24. The editor of the REVIEW expects to be present and read a paper entitled "Will the Bee-Keeping of the Future Differ From that of the Past?"

FEEDING in the spring before the queen commences laying, or in the fall after she has stopped laying will induce the bees to ball her, so writes J. W. Tefft, of Buffalo, N. Y. Has any one else noticed this? As a rule, but little feeding is done at such times, and it ought not to be either.

APICULTURAL LITERATURE bobs up for discussion about once in so often, and, as Mr. Heddon has lately given the subject an upward tendency, I thought it might be interesting if he would lead in its discussion at the coming convention of Michigan bee-keepers. In reply to my request for his attendance and an essay on the subject he wrote as follows:

"Of course, I am not perfectly sure that my health and business will both admit of my going to the convention, but I shall *try* it *very* hard and consequently will be glad to have you put me down for the topic you sug-

gest. I shall not come with any essay, nor give the subject any thought until the day I take the train. Then I will fill my pocket with REVIEWS and *Quarterlys*, and things, together with pencil and paper, and during the long hours on the train I will arrange my thoughts under cues, and then when the little blood I possess is lifted to the cerebrum, my ideas will roll out just as freely as shot off a shingle."

If you think that Bro. Heddon holds erroneous views on this subject, come to the convention and set him right. If you agree with him, then come and help him in his defense, and if you don't know whether he is right or not, then come and hear the debate that is sure to follow.

MICHIGAN STATE BEE-KEEPERS' CONVENTION.

The Michigan State Bee-Keepers' Association will hold its 29th annual meeting Wednesday and Thursday, Jan. 2nd and 3rd, at the Perkins Hotel, corner of Cass and Grand River Avenues, Detroit, Mich. As there will be half-fare going on the 1st, but not on the 2nd, and half-fare returning on the 3rd, it is suggested that as many as possible reach Detroit by the evening of the 1st, and thus have a social time before the beginning of the regular convention work. The programme is as follows:

FIRST DAY—MORNING SESSION.

10:00 a. m.—"Apicultural Work at Experiment Stations," R. L. Taylor, Lapeer, Mich.

FIRST DAY—AFTERNOON SESSION.

1:30 p. m.—President's Address—M. H. Hunt, Bell Branch, Mich.

3:00 p. m.—"Influence of Patents on Improvements," T. F. Bingham, Abrouia, Mich.

FIRST DAY—EVENING SESSION.

7:00 p. m.—"Marketing Honey," L. H. Ayers, of the firm of Ayers & Reynolds, commission men, Detroit, Mich.

SECOND DAY—MORNING SESSION.

9:00 a. m.—"Non-Swarming Hives," L. A. Aspinnall, Jackson, Mich.

10:30 a. m.—"Wintering of Bees," A. B. Mason, Toledo, Ohio.

SECOND DAY—AFTERNOON SESSION.

1:30 p. m.—"Apicultural Literature," James Heddon, Dowagiac, Mich.

Plenty of time has been given for discussion and for the introduction of the question box
W. Z. HUTCHINSON, Sec.

THE REVIEW FOR 1895.

I believe it is considered the proper thing for publishers to make announcements at the end of the year regarding what they expect to do the coming year. I have usually done this, but my not being able last year to realize all my expectations makes me a lit-

tle wary in this respect. Perhaps it would be safe to say that no effort will be spared in making the REVIEW what it has been in the past and improving it as much as possible. It might not be amiss to say that aside from the features already possessed by the REVIEW, Mr. B. Taylor of Forestville, Minnesota, will contribute a series of articles running through the entire year. These articles will deal with the various experiments that he has made during the past twenty-five years of bee-keeping. The one appearing in this issue is a sort of introductory to those that are to follow, and, by the way, although this one has but little to say about bees, there are but few beekeepers who will not read it with profit and pleasure. There is also an extensive beekeeper in the East who is to write a series of articles that will run through the year. I should be glad to say now who he is, but I could secure his services only by allowing him to use a *non de plume*. I presume, however, that I may be allowed to say that I have had correspondence with him for several years, and know that he began beekeeping eighteen years ago with two colonies that were bought on credit. Since then he has reared and sold hundreds of colonies, established out-apiaries, and raised tons of honey each year. The present year he shipped thirty-eight barrels of honey to this State. After considerable urging he has consented to tell the story of his apicultural life, detailing the methods employed by him in thus making a success of honey production. It is to such men as this that we can afford to listen.

EXTRACTED.

The Establishment and Management of Out-Apiaries.

In securing the highest success in apiculture as a specialty, out-apiaries are a great help. They enable one to keep more colonies so that when a good year does come an enormous crop is secured. Then, again, it often happens that localities only a few miles apart vary greatly in the amount of surplus afforded, and with several apiaries there is a greater chance that something of a crop will be secured even in a poor year. There are few, if any, who have had more

experience in out-apiaries than has Mr. E. France, of Platteville, Wis., and, as he has written a long article for *Gleanings*, giving his experience in establishing and managing out-apiaries, I take great pleasure in copying the most of it into the REVIEW.

"First, let us locate the apiary. Now look sharp, for very much depends on the location; in fact, more than half of the success of the apiary rests on this one point. See that the place has good pasture for the bees. We in this north country would want plenty of white clover and basswood timber, and river bottom land with fall flowers. Any way, be sure of good bee pasturage. Then I want a good natural windbreak—hills or timber, or something to break the north and west winds.

Now, if we have found all this, is the right kind of man or family living on it? If the family are all right, what are the neighbors? Are they of a class that will steal, or make you trouble?

If the people are all right we will look the place over. Is the place where we want to put the bees too near the house or barn or stack-yards, where they have to come with teams to stack and thrash the grain? It won't do at all to have horses very near the apiary when unloading grain or hay, or thrashing, or any thing of that kind. A bee in the ear of a horse makes it wild. Most horses are afraid of bees. Our apiaries are from 15 to 30 rods away from house or barn or stack-yards, and all the out-yards are from 30 to 100 rods from a public road. Most of them are in pastureland, free to all kinds of stock. Stock don't do any damage to our large quadruple hives, but keep down the grass. It saves us the trouble of mowing. Locate your apiaries three or four miles apart; farther would be better. Of course, other folks' bees must be taken into consideration. Don't overstock the pasture. Better go two or three miles further than accept a poor location, for we have to go with a team; and when on the road, two or three miles further is soon traveled. We go eight miles to some of ours.

One more thing: If you are likely to get a load of bees or honey, it is handy to load up right in the apiary. After we have worked the apiary all over, the bees will be cross. We can not take the team to the wagon where it is in the apiary, to hitch on. We must have a down grade, away from the apiary. It should be 15 to 20 rods or more, then the wagon can be moved by hand to a place where it will be safe to come with a team.

Now, if we have found the location that will answer our purpose, we shall see what terms we can make with the owner. All our out-apiaries are planted on the same conditions. We give 25 cents a year for each colony we have on the ground, spring count, counting them about the last of May, or at a time when we are sure there won't be a less number. The land-owner has nothing to do with the bees, except, if any thing happens that requires our attention, he is to let us know, and we look after them. There is no

watching for swarms, and no swarms to hive.

We work all our out-yards for extracted honey. We think it is less work for the money we get out of the business.

If I were starting new in the bee business I would use the L. frame, standard size. I would use a quadruple hive, chaff-lined, three stories in summer and two in winter, and winter on the summer stands.

What kind or race of bees? My candid opinion is, there is not much difference. With good location and good management, any of them will give lots of honey. But my choice is the gray Carniolans. They will gather as much honey as any; are very prolific, and do less stinging.

Now, having located the apiary, made terms with the land-owner, and having bees on the ground, we will proceed to run the apiary for extracted honey. We will begin with the fruit-blossoms. If there is any considerable amount of bloom we can open hives without danger of robbers. We will suppose the bees are in L. hives, two stories high. Take out all the combs and clean out the hive; clip the queen's wing one side. You will find that all or nearly all the brood is now in the second story. Put all the brood down in the lower story. If there is not enough combs with brood in them to fill the lower story, perhaps some other colony may have more than enough to fill the lower story. In that case, give the surplus to the weaker ones. Put the honey combs in the second story. If there are empty combs, and the lower stories are full of brood, put the empty combs above. *Caution.*—If the bees average weak, and there are not combs with brood in them enough to fill the lower story, then I would wait until they have enough, as the upper story is warmer, and a weak colony will build up faster with the brood above. But, clip your queen at this time. We can now leave the yard for ten days; then, if there were no queen cells left when here before, it is not possible for a swarm to have gone off; and here in this country it is not likely that a swarm has been out. Dandelions will be in bloom here then.

We will now look the yard over again. If there are any weak colonies, they should be strengthened by giving them brood from the strong. If there is more brood in the yard than to fill all the lower stories, then the surplus can be used to make new colonies. In making new colonies, be sure to leave the old queen in the old hive. Fill up a lower story with combs of brood, with some honey. Put the honey at the back of the hive; take some bees with the combs—enough to make a good strong colony. In fact, give them more live bees than you want to stay there, because the old bees will go back to the old hive. We can take these combs and bees from several colonies. They won't quarrel or fight at all. We make one, two, or several new colonies at this time—it depends on the strength of the apiary. Those new colonies have no queen; they won't swarm under 12 days. The old ones won't swarm, because we have taken away their surplus strength. We will now leave them ten days;

but before we leave, be sure that there are no queen cells coming on in any colony. I would leave those new colonies one story high. We use a solid honey board. Lay that on top of the one story, and cover over that.

In ten days we are back again. Now, if there is more honey coming in than enough to keep the bees, we will extract all we can get. This extracting will be dark, and the bees will soon be gathering white honey. For that reason we want to clear the combs of dark honey; and while doing it we will do as we did before—keep the lower story full of brood; and if there is more brood, we will make new colonies as we did when here before. Now we will put on the third stories, filled with empty combs, if we have them. If we have no combs, put in frames filled with foundation; leave no queen cells in the old colonies; the new colonies made ten days before will now want the second set of combs, or foundation, and their queen cells removed, except one, that we will leave to hatch; also, give these colonies one egg-comb from the old stocks, and what new colonies are made this time can be supplied with a queen cell from those new ones made ten days before. After this, if honey pasturage is good, extract once a week while the season lasts, working all up to three stories high. Keep the brood in the lower stories, and extract from the two upper ones. Watch the harvest, and give the bees time to fill the upper story solid full of honey to winter on. All they get more than that you can take in September.

We don't get any honey here after the basswood, about the middle of July. We let them fill up well on basswood, and then let them alone until the middle of September; then I take off the third stories and pack them away in the storeroom. At this time I see that the second story is full of honey; take out of the second stories all combs not full of honey, and fill it out from the third; see that all have that much, and pack away in the house the surplus; fill the top chamber with straw, and you are ready for winter.

The next spring, when there are warm days in March or April, look into each colony and see if they have plenty of honey. If they are short, take out empty combs and put in full combs of honey from those stored away in the fall. Be sure they have plenty; they will use up honey pretty fast now, as they should be raising brood fast.

I omitted to build an extracting-house. You want one in every yard. We use a tent, just 10 feet square, outside measure. Put up a frame in each yard; get four posts, 10 feet long; set them three feet in the ground, 10 feet square, outside measure. Now nail on at the bottom a ten-foot board on each side, a foot wide, then nail around the top four more boards a foot wide, 10 feet long; that will leave a space of five feet between the upper and lower boards. Get 80 feet of thin cotton cloth, a yard wide; sew two breadths together, 40 feet long; that will just go around your house for siding, between the upper and lower boards. Sew on both upper and lower edge some strips three or four inches apart—leather—to tack through in

putting on the siding. For top cover we use eight-ounce duck that will shed rain if we have a shower while we are there. Put up a gable-end roof, raised three feet in the middle. To do that you want two boards a foot wide, 10 feet long; set one up at each end, and nail to top and bottom board, and slant off the low corner to fit the pitch of the roof; then nail in at the top a 2x4 scantling, 10 feet long; chamfer off the upper edges to fit the pitch. Nail on to the end boards some strips of boards to make a ladder to climb up when you put on the top cover. Make the cover to fit your frame, and sew on to the bottom edge some strips of leather to tack through when you put it up. You want a frame in every yard; but the cloth part you can take down every night and put it in a sack and take it home. One cover and siding is enough for all the yards. Each yard must have a frame. With us it takes just five minutes to put on the cloth. For a door, we can leave one end of siding loose at the bottom, or can put in a screen-door.

Platteville, Wis.

[There are no bee-keepers in the whole United States who have their work better systematized than E. France & Son; and this applies not only to their bees but to their fruit growing. When I visited them this past summer I could readily see one secret of their success—the evidence of a liberal use of good brains to lessen the labor of the hands. I am sure no bee-keeper can afford to fail to read carefully what Mr. France has to say, even though he may not now or ever expect to have out apiaries. I can not refrain from saying that the senior France not only recommends, after having tried other frames, the Langstroth, but the eight-frame size of the hive. No deep frame is adapted for tiering up, and hence the Langstroth, if for no other reason, should have the preference.—Ed.]”

The Philosophy of Percolation.

This is not the time of the year when we are making syrup or feeding bees, but, if we wait until the time does come there is but little chance for discussion, hence, we may improve the winter in discussing methods that are to be used in the working season. The making of syrup by percolation is a new idea to bee-keepers, and may prove valuable, and should be examined in all its bearings, for this reason I copy the following, which is written by Dr. Miller and published in *Gleanings*.

“Sitting on a load of bees, on the way home from the Hastings apiary. I said to my assistant, ‘Suppose a vessel filled with sugar and water, with a hole in the bottom so small that a grain of sugar could not get through, would that act the same as one of our percolating feeders?’

She answered, ‘If there were a sufficient number of small holes it might; but with a

single hole it couldn't get through fast enough.

'But,' I said, 'suppose the hole large enough so that the syrup came through just as fast as it comes through a percolating feeder. Would the syrup be just the same?'

She promptly said it would not; and when I came to get the matter formulated in words, I found she held the opinion that something in the line of filtration was necessary, and that the liquid must find its way by a somewhat devious passage through the meshes of a cloth or a mass of cotton. The same idea had been in my mind, and I think it quite likely that you, Mr. Editor, had the same thing in mind when you were in search of that colored individual in the fence. And when you struck upon old flannel instead of new, you felt sure you had found 'the nigger.'

Let me tell you about some experiments I have been making. Although made in the main too late in the season to feed bees, no actual feeding was necessary, for the removal of the syrup by the bees has nothing to do with the points I was after.

I took a baking-powder can, holding about a pint, and made a small hole in the bottom, of such size that cold water would pass through at the rate of about seven drops per minute. Hot water would pass through much more rapidly. I put sugar and water, equal parts, in the can. A few drops came through very slowly, then it stopped altogether. A grain of sugar may have stopped the hole. I tried holes of larger size, but it seemed that any hole so small that it would not allow a grain of sugar to pass through was small enough to be entirely stopped by one of the grains.

Then I drove through the hole a two-inch wire nail. Of course, this would let grains of sugar through. To prevent that I covered the hole with a single thickness of thin cotton cloth that was new. Putting in equal quantities of sugar and water, it came through all right in good time. With twice as much sugar as water it made, of course, heavier syrup, but it took four or five days to get through. But I found that, the longer it was used, the slower it went through, perhaps from the felling of the cloth. Very fine wire cloth, such as is used in milk-strainers, might be more uniform in action. Possibly, however, it may be that there is some other trouble.

Two months ago or more I put an equal quantity of sugar and water in a tumbler, and let it stand. In the course of a few days the water on top was a weak syrup, and the amount of sugar in the tumbler was perceptibly less, but after that time the change was slow; and the longer it stood, the slower the sugar seemed to dissolve. At this writing there is half an inch or so of sugar in the bottom of the tumbler, and a tolerably thick syrup over it. This shows that time is an important element in dissolving the sugar.

Now I'll tell you the conclusions at which I have arrived, although I don't feel that there is no possibility of mistake. When sugar and water are put together, there is a slow mixing; and in a little time the crevices

between the grains of sugar are filled with a solution of sugar. Allowed to stand in that way, the water above is prevented from mixing with the sugar—at least, it does so very slowly, the upper part of the sugar gradually combining with the water above it. That was plainly shown in the last experiment mentioned, where it took weeks to dissolve the sugar.

Suppose, however, that, by some means, we remove all the syrup that fills the crevices between the grains of sugar. Water will come down afresh to fill the crevices, and in its turn will dissolve a fresh portion of the sugar. Now, that's exactly the principle we work upon in all of our percolating. We allow the syrup to pass out from below, through some sort of sieve that will allow only syrup and no grains to pass, and we manage so that it shall go through so slowly that the sugar at the bottom will have *time* to dissolve before the syrup passes through. I think that's all there is to it, and it isn't a question of cotton or wool, old cloth or new cloth. Old flannel isn't a whit better than new flannel, providing the space of new flannel is enough less so that the syrup goes as fast through one as the other. The only point is, to have your feeder or your crock emptied in the same space of time.

Six or eight thicknesses of cheese-cloth worked better than two or three. Why? Because the rim of the crock was uneven; and, when placed on the plate, a single thickness of cloth would do little toward filling the crack where it was largest; whereas, six thicknesses would fill it. If the rim of the crock were perfectly true and smooth, the case would be different. I filled a tumbler with sugar and water, put a single thickness of thin cotton cloth over it, then inverted it over a smooth tin dish. How fast do you suppose the syrup came through? Not a drop came, and I don't think it would if it had stood a year. If you tie a single thickness of cheese-cloth over a crock, then invert it over a plate, it will work all right providing the rim of the crock be just even enough and uneven enough. In general, it would let the water out too fast without giving the sugar time to dissolve; but in that case, if you put enough beeswax under the edge of the crock to make the syrup come out slow enough, I think you'd find it all right.

You said, Ernest, that sugar adhered to the proper bottom of the crock. What made you let it do that? Just give the whole thing a few shakes *after* inverting. In using the crock feeder, the cloth under the sugar plays no part, only that part that comes in actual contact with both crock and plate, and it would work all the same if the middle part of the cloth were all cut away.

It is quite possible that there is a double advantage in having the syrup come through slowly; and we who have been priding ourselves on having a feeder with which we could give 25 lbs. in as many hours may yet change our views. It may be that the bees need longer time to put the right amount of formic acid into their feed.

Marengo, Ills.

The editor of *Gleanings* replies as follows:

[For the percolating feeders on the hive, it is immaterial whether cheese-cloth, old flannel or new flannel be used. We get good results with all of them; but it does make a big difference, when percolating syrup by the B. Taylor plan, described in *Gleanings* recently (p. 803). As there explained, old flannel is decidedly better than new.

Regarding the crocks, we found that they were better than inverted sap-pails, because of the very fact that their (the crocks') tops would be more or less irregular, while the pails would fit so closely as to make the feeding very slow. We got better results by discarding even the plates, and using boards; and if they are warped a little, all the better. On these the pails would give as good results as the crocks.

Yes, the sugar did adhere to the bottom of the crocks; but shaking, or, rather, a good thorough stirring, did not seem to prevent the slight residue of sugar entirely, although it tended greatly to reduce the amount.

Some have asked what was the principle upon which the percolating feeders work. I think you have given the philosophy of it, so that every one may understand it; but it may be well to add, that the percolators work on the atmospheric principle. In that respect they are similar to the Hains and E. France, or what is sometimes called, incorrectly, the Hill feeder.—Ed.]

A Condensed View of Current Bee Writings.

E. E. HASTY.

HOPOLOBAMPO. A place located in the romance land of Jules Verne, or Rider Haggard? No, its on terra firma all correct. An American colony where all the mistakes which government and civilization (and perhaps religion also) have made are to be corrected. Place where bees may get some honey any day in the year, and surplus for nine months. Place where honey sells readily at 25 cts. for extracted and 30 or 40 for comb. Place where 7 colonies increase to 37 in one season and store surplus too. Let's all of us pigs rush into the Topolo bampo parlor, and see what a nice parlor we can make of it. Only 200 miles from Uncle Sam's south line, on the east shore of the Gulf of California. See *Gleanings*, 842, as related by W. F. Bragg (of ominous name.)

One head, even if a good one, seldom thinks of all the aspects of a question. It seemed as if Mr. Hutchinson was unanswerable when he condemned long essays on bee-

keeping in foreign lands at a national convention. (*American Bee Journal*, 561.) The net time at a convention may cost a fellow several dollars an hour; and he objects to paying it for what he could just as well read at the home fireside. But president Abbott, in *Gleanings*, 896, gets back at him to the effect that those same essays doubled the space which the daily papers gave to the convention. To impress and enlighten the general public is doubtless one legitimate object of a national convention. Newspaper reporters generally don't know enough of bees to report off-hand proceedings properly; and they can dish up a well written essay, with the copy before them.

Well, "the blood of the martyrs is the seed of the church;" but can we depend on martyrs to voluntarily assemble and be martyred? Might need an officer to fetch 'em to the block. The fact seems to be that the main object of *assembling* is to put people into a proper condition of mind and feeling to be taught and benefitted. Man is apt to meet instruction as a cabbage leaf meets rain—shed it all off. But when people meet together for a definite good purpose, when the gathering is properly engineered, and things work just right, a curious and indefinable something comes down and takes possession of all hearts. Folks are different creatures then. Enthusiasm and open-mindedness make everything good strike in. It is in hope of this influence (which cannot be transferred to print, nor sent by mail) that conventions are held; I take it. Now this desirable afflatus may be prevented, or after it has sprung up may be deadened, by the wrong kind of essays, or by formal speeches, or by a quarrel, or even by excessive pop-gun practice at stale jokes. Whatever the wet blanket is it is an awful nuisance. But this reviewer thinks that the right kind of essays properly used may help instead of hinder. The main thing is to have the right man in the chair; and *not to have his hands tied* by too many iron rules, and too rigid a program. With good leadership no program at all is better than an iron-clad one.

NEBRASKA BEE-KEEPER.

Brother Stilson has been getting very full of national convention; and the idea that any brother should think slightly of the affair almost riles him up—

"Some good friend suggests that it was a meeting of the 'mutual admiration society.' Well, why shouldn't it be? as there were some grand

men and women there to be admired; and the man with soul so small as to cast such an imputation on that gathering, was unworthy of a place among them." N. B. K., 169.

Seems to make a heap of difference in our valuation of a company of people whether we ourselves are members of the crowd, or merely look on from the outside.

"It is true that if left to itself this plant (sweet clover) will run out sand burrs, wild sunflower and ragweed." E. Whitcomb, N. B. K., 170.

L. L. Allspaugh, N. B. K., 172, thinks it pays him to put colored labels on sections of honey exposed for sale in a show case.

Mrs. Hallenbeck says that this year the only planting for honey that will furnish bees with their winter stores is planting dollars and cents in the grocers' money box. N. B. K., 173.

And here is the editor again on stimulative feeding.

"A tablespoonful of syrup at the right time, and in the right manner, is worth more than a teacupful given improperly, and at the improper time." N. B. K., 174.

He says a teacupful is his largest feed for stimulative purposes—seldom giving so much as that. The adverse result of R. L. Taylor's experiment with spring stimulation he lays to a great deal too much being fed. Perhaps this is worth thinking of.

J. B. Case, of Port Orange, Florida, says the first artificial queen-cups he ever used were put empty in a colony preparing to swarm; and the queen laid in nearly every one of them. He also warns us that the evils of in-breeding are brought on much more rapidly when we get excited about using best queens, and best drones, and frequent requeening—unless we look quite a little out, I suppose. N. B. K., 175.

"Our practice for the past five years has been to pack for winter on six and seven frames, and have never had one starve yet." The editor; N. B. K., 137.

"Pliny alone, of classical authors, says that he has heard that in distant lands the juice of the bamboo [cane] was used instead of honey." F. L. Mahaffy, N. B. K., 140.

My, what a difference it would make in our market if we could only turn the wheels of civilization backward till we reached the point where no one knew anything about any other sweet than honey!

THE GENERAL ROUND - UP.

Like the good lady who tried to mop up the rising tide from the floor of her sea-side shanty, and had to give it up at last, so am I. The tide of *A. B. Js* four times a month, and *Gleanings-es* twice a month has swamped me; and a whole lot of available things

must be abandoned, to get down somewhere near to the present date. Sorry; but so it has got to be.

This skips the great debate of few frames versus many frames in the brood chamber. I guess that debate has left things about as it found them—many of the brethren still sure that to put in more frames would sacrifice a heavy percentage of their surplus; and quite a few many-frame users still sure that reducing the number of frames would add little or nothing to their surplus, and work mischief in other directions.

Quite a bit ago a little bug was put in my ear, to the effect that *Gleanings* had discontinued its Tobacco Column. My eyes had not been filed sufficiently sharp to notice it. I was quite crestfallen: but thought the news too old to tell at that date—and, lo, Sept. 15th, the column bobs up again, looking just as natural as if it had never been missing.

John Handel, dealing with wintering bees in dug-outs, gives his experience that drainage must be perfect for good results—sure to be spotting their hives before spring if surface water gets in. And ventilators, either sub-earth or direct, only work in windy weather, when they do more harm than good. *Gleanings*, 902.

Most of us thought that percolation (in making syrup) was a sort of filtering process, or at least something akin to that; but quite lately Dr. Miller is level in his conclusions that very slow *movement* of the water among the little grains of sugar, giving plenty of time and repeated contacts for perfecting the saturation, is all there is of it. If a tube a mile long could be filled with sugar, and laid so nearly level the fluid part of the contents would move slowly, and only slowly, no sponge or flannel or muslin would be needed probably. See *Gleanings*, 903.

Vogel, one of the leader of beeology in Germany, thinks that there are only two distinct varieties of bee, the German and the Egyptian; and that Italians, Cyprians, Carniolans and all others, are but old and established crosses of various degree. *Gleanings*, 906. Is it not still more probable that the yellow bee that served as prime factor in those crosses is at present extinct? This would make the Egyptian also a cross. I suppose Vogel would say that his success in reconstructing apparent Italians out of German and Egyptian was against my theory.

But if the real make-up of the Egyptian were something like—

German 1

Yellow X 3

then the reconstruction might work well enough.

Ernest's chat and series of pictures at C. C. Miller's—how different an air it carries from the way such a thing would have been set out a few decades ago. How pathetically and relentlessly true the kodak can be sometimes! tell all the truth and more than the truth. Hardly probable that the good Dr. is such a semi-Methuselah as he appears in that series of pictures. *Gleanings*, 906.

To assure himself that Italian queens would not be affected by the royal jelly given them by the hybrid nurses which he wished to use, Mr. Doolittle has experimented in the reverse direction also—made the yellowst of nurses feed pure black queens. No visible results whatever appeared; and he is inclined to challenge skeptics to keep still, else bring some proof. *Gleanings*, 910. Got not any to "bling." All'ee same keep'ee sneaking notion there's something in him. How singular that that sum of all excellences the Italian bee should be so poor a nurse that the breeders, to a great extent, want to use something else!

The same article notes that the development of young queens can be retarded to a much greater extent than it can be hastened. Half a day is about the utmost that the most favorable circumstances can hurry them up; while very cold weather, or that general lethargy that takes possession of the hive late in the fall may delay them as much as four days. And the earliest moment to begin rearing queens in spring is when the sealed drone brood are beginning to change, as to their eyes, from white to purple.

It is well known that virgin queens behave very differently from fertile queens. In *Gleanings*, 830. Ellery Krum (whoever he may be) reports seeing a virgin queen assist a young worker in emerging to life from the cell. Quite curious.

First flight of bees at six days old. Doolittle, *Gleanings*, 839.

It seems the five-banded stock began about 24 years ago, H. A. King and J. M. Brooks breeding. G. M. Loolittle drew from both, and imparted to L. L. Hearn. In later years the two latter have been pushing forward the thing, and exchanging with each other. *Gleanings*, 840.

Say, that Florida plan of H. W. Mitchell's, given in *Gleanings*, 860, is splendid when there is honey flow enough to make it run. Three story hive—take out only the frames of the upper story for extracting—fill with empty frames—lift the second story and put the third under, till next time round, when the same thing is done again.

Just at what point in the honey record we shall stop off, and refuse to believe any further, is a nice matter. Some, perhaps, stop off at 100 lbs., many more at 500, and most of us before arriving at Mt. Thousand. The record at present (providing you don't stop off before arriving there) is 750 lbs. each for an apiary of 63 colonies; 48,000 lbs. in all. Holder is H. Peterson, Wattle Flat, New South Wales, Australia. Holds single colony record also at 1,200 lbs. And one of the bothers of it is that the discarded "long idea" method struts under these flaunting figures. *Gleanings*, 866. Wonder how a ship would sail in honey? Guess the wind might blow as hard as it chose, and still the waves would not rise very high—But the record might rise so high as to dash the ship all to pieces. But though we fail to have faith sufficient for 1,200 lbs. in one year, most of us could go 100 lbs. in one month. Then if there were 12 such months in one year it would fetch it.

In *Gleanings*, 871, it is claimed for oil of sasaparilla that bees do not dislike it; while ants, and most worms and insects hold it in abomination, and leave its vicinity quickly. The bark of the root can be used to some extent. Important if true.

Dr. Howard is going to pitch into that bee disease which is now desolating the South and California at such a rate. May he find some weapon with which it can be "held up."

"Its very insignificance in the North makes it insidious and dangerous for the South. Why? The northern queen breeder, I am afraid, does not always realize how dangerous a mild case of palsied or swelled bees may be when the queen of said bees is sent to the South. Ernest Root, *Gleanings*, 872.

Another idea. John S. Callbreath suggests in *Gleanings*, 875, that the principal value of foundation may be that it furnishes every bee with standing room to work, in times of special haste, when otherwise they would have to wait for a few, comparatively, to get a septum started. Quite possible, and worth testing.

Germans air their apicultural dignity by claiming that their Dr. Dzierzon invented

movable frames—because he taught his countrymen to use bars. Frank Benton, as reported in the *American Bee Journal*, 723, rather scorches them. Dzierzon is still living, and pictures of hives with bars appear in French books more than 150 years old. Beuton himself found the bar system in use among ignorant Greek peasants, in an out-of-the-way region where apiculture has flowed unchanged for centuries. And some of these Greeks made increase by taking out part of the combs to found a new colony.

John M'Arthur has had two queens fertilized by fertile worker drones on his island in Lake Ontario. This was done late this fall if I take him correctly. He owes it to apiculture to have the performance of those

queens next year recorded. *American Bee Journal*, 719. Brick by brick the wall of positive knowledge is built. A few repetitions of the above will squelch forever the opinion of those brethren who held fertile worker drones to be impotent. Next we want evidence whether they are better than other drones or not. Quite possibly they may be.

M'Arthur also contributes the fact that drones on the hunt for queens sometimes seize hold of each other and fall nearly to the ground, where they let go and rise again. He considers this fighting; but after all it may, perchance, be only the frenzy of wanton play. *A. B. J.*, 718.

RICHARDS, Lucas Co., Ohio, Dec. 18, '94.

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Convention Photographs.

In the account of the St. Joseph convention will be found the description of a photograph that I had taken of the members. This picture will give you a peep at the leading bee-keepers of the country, particularly those of the West, and will also show you seven editors all standing in a line. If you would like to see the picture with a view to its purchase, all you have to do is to send me a postal card saying that you would like to receive a picture on approval, and one will be sent. If it suits you, the price (75 cts.) may be sent in postage stamps. If you don't care to keep it, simply send it back, and no harm will be done.

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Manufacturers of and Wholesale Dealers in all kinds of
Musical Merchandise.
23 & 40 Walker St. NEW YORK.

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GOLDEN ITALIAN QUEENS

Now ready for \$1.00 each. Do not order your supplies until you see our circular for 1894. For the price, we have the best spraying outfit made. Send \$1.50 and get one. Wm. H. BRIGHT, 1-94-12t
Mazeppa, Minn.

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By Return Mail. FINE ITALIAN QUEENS. Bred for Business, Beauty and Gentleness. Untested in June, \$1 00; July to October 75c each; 6 for \$4.25. Safe arrival and satisfaction guaranteed. Send for free circular to

Theo. Bender,

6.94.tt
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I only mean that in my yard all queens become "headless" unless their bees prove to be gentle, beautiful and great honey gatherers. I have both the three and five-banded varieties, bred in separate yards, twelve miles apart. Warranted queens only 60 cts. each; tested, 90 cts. Strong, two-frame nuclei, \$1 90 each. Three-frame, \$2.35; four-frame, \$2.80. Safe arrival guaranteed.

1-94-12t. J. H. GOOD, Nappanee, Ind.

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— If you wish the best, low-priced —

TYPE - WRITER.

Write to the editor of the REVIEW. He has an Odell, taken in payment for advertising, and he would be pleased to send descriptive circulars or to correspond with any one thinking of buying such a machine.

TELL YOUR READERS

To order queens of J. N. COLWICK, Norse, Texas, where they can get a nice tested **ITALIAN QUEEN** (reared in 1893) for \$1.25. Untested queens in April or May at \$1.00 each or \$9.00 per dozen. Safe arrival guaranteed. Orders may be booked now for bees, queens, drones, etc., and they will be shipped when wanted.

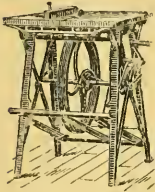
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Send for free copy of **ILLUSTRATED CATALOGUE**—describing everything useful to a **BEE-KEEPER**. Address **T. G. Newman, 147 So. Western Ave., Chicago.**

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Barnes' Foot and Hand Power Machinery.



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

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That covers the whole apicultural field more completely than any other published, send \$1.25 to Prof. A. J. Cook, Claremont, California for his

Bee-Keepers' Guide.

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420 Lbs. Average.

420 lbs. average is what my bees gave that I moved to the mangrove; those at home, 300 lbs. each.

Five-Banded Bees

too. Queens bred for business from this stock will be sent out in season of '95 for \$1.00 each until May, per dozen, \$8.00 Circular free.

J. B. CASE,

Port Orange, Fla.

12-94-tf.

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Names of Bee-Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States) and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00. W. Z. HUTCHINSON, Flint, Mich.

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Are acknowledged to be

The Very Best on the Market.

They are the original "Polished Sections."

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Hives and Winter Cases.

ALL STYLES. LOWEST PRICES.

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BEE SUPPLIES

Of all kinds cheap.

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Five per cent. discount on all prices in our catalogue (excepting shipping cases) until December 1st. Four per cent. in December. Three per cent. in January. Two per cent. in February.

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THE W. T. FALCONER MFG. CO.,

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THE IDEAL BEE FOUND AT LAST!

A Superior Strain of Golden Italians

The result of thirteen years' careful breeding and selection. They are gentle, industrious, good comb builders, enter the sections readily, cap their honey the whitest, are not inclined to swarm, and are second to none in beauty; a strain of bees that,

by practical test, has excelled all competitors in storing honey. Price of young queens, warranted purely mated, in April and May, \$1.25 each; six for \$6.00. In June, \$1.00 each; six for \$5.00. From July to Nov., \$1.00 each or six for \$4.50. The price of tested queens, bees by the pound, nuclei and full colonies given upon application. Safe arrival and satisfaction guaranteed or money refunded.

SECTIONS, \$2.00 per 1,000. Lovetailed Hives at bottom prices. For full particulars, send for descriptive catalogue.

C. D. DUVALL, Spencerville, Mont. Co., Maryland.



Office of
THE Bee-Keeper's Review,
Flint, Michigan.

My Bee-Keeping Friend-

If I am correct, your subscription expires with this issue. Having learned that the majority of readers prefer to have their periodicals continued until ordered stopped, I shall, unless I receive orders to the contrary, continue to send the REVIEW right along, believing that such a course will meet your approval. For your convenience in remitting, I enclose an order-sheet and envelope. Should it not be convenient for you to send a remittance just at present, yet you desire the REVIEW continued, fill out the order-sheet for the time that you wish the REVIEW to run, and say when you *can* pay, and it will be all right.

But if you wish the REVIEW discontinued, please return the order-sheet, with a statement to that effect, *immediately*, and your wish shall be complied with. Now, please bear in mind that, *if I do not hear* from you immediately, I shall infer that you wish the REVIEW continued, and that you will shortly return the envelope with a remittance.

Whether your decision favors my efforts or not, I most sincerely thank you for past patronage.

As ever yours,

W. Z. HUTCHINSON.

P. S.—If you prefer to have the REVIEW stopped at the expiration of the time paid for, please say so when renewing, and your wish shall be complied with.

If you are not using the

New Heddon Hive

It may seem incredible that it would enable you to obtain the same results with considerable less labor and much more comfort than with other styles of hives, but a fair and impartial consideration of the reasons, as set forth in my circular, will show that this statement is not overdrawn, and the circular is yours for the asking. 11-93-tf A. E. HOSHAL, Beamsville, Ont.

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OH, FOR CANADA.

For 1895 I will handle the G. B. LEWIS Co., SNOW WHITE SECTIONS—the best in the world. Samples free. I will make Dovetailed Hives of the finest lumber. I shall also rear and sell Five-Banded Queens. Last year I sold 1,887, and only two were lost in the mail. Send for my new circular and price list that will be out January 1st.

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Tilbury Center, Ont., Canada.
Lock Box A.

11-94-tf.

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ITALIAN QUEENS AND SUPPLIES FOR 1894.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf.

Augusta, Georgia.

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With the **MODEL**
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Simple, Perfect, Self-Regulating. Thousands in successful operation. Guaranteed to hatch a larger percentage of fertile eggs at less cost than any other Hatcher. Lowest priced first-class Hatcher made. **GEO. H. STAHL,**
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Circulars free. Send 6c. for Illus. Catalogue.

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WRITE US

Before ordering your sections and we will give you **BOTTOM PRICES** on the

"BOSS" ONE-PIECE SECTION,



Also D. T. HIVES, SHIPPING CRATES and other Supplies.

We have everything in tip top order, and can fill orders on short notice. Let us hear from you for prices.

J. FORNCROOK & CO.,

Jan. 1st, 1894.

Watertown, Wis.

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Local Supply Dealers, I have gotten out a circular that is of special interest to you. Send me your address and I will send you one. Never mind if you only supply your neighbors with supplies, you are the man to whom I wish to talk—to unfold a plan that will be to our mutual benefit.

W. Z. HUTCHINSON, Flint, Mich.

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Has no superior because it is made in the best possible manner, upon the best machines, and from the best wax—that from which all foreign substances, such as pollen, bee glue, dirt, iron from boilers, burnt wax and soot have been removed; and that, too, without the use of acids. These foreign matters make the foundation offensive to the bees and decrease its tenacity. Every inch of foundation is guaranteed to be equal to the sample which will be sent upon application.

LANGSTROTH ON THE HONEY BEE, Revised, Smokers, Sections, Tin Pails, and other Supplies. Send for Circular. **CHAS. DADANT & SON, Hamilton, Ills.**

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MY Queens rank with the best in the world. I rear none except the best Italians bred for business, beauty and all good qualities. I strive to excel, and have shipped to every State and to foreign countries, and if I have a dissatisfied customer, I don't know it. A large number of queens on hand. Breeders 4 and 5 band, \$2.00; straight 5 band, \$3.00. Untested, \$1.00. Reference, A. I. Root. **W. H. LAWS,** Lavaca, Ark.

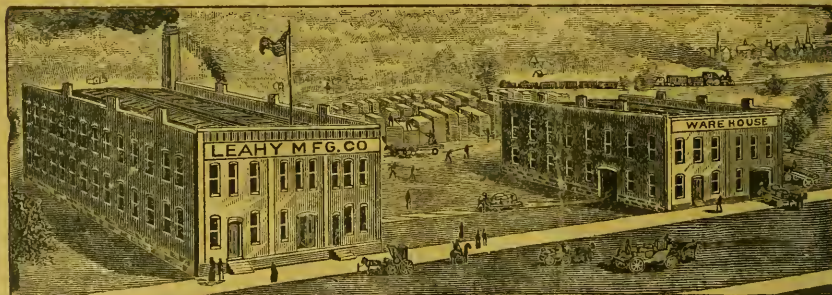
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HONEY JARS, Beautiful, Accurate and Cheap. The trade supplied. Bee Supplies; Root's goods at Root's prices and the best shipping point in the country. Write for prices.

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