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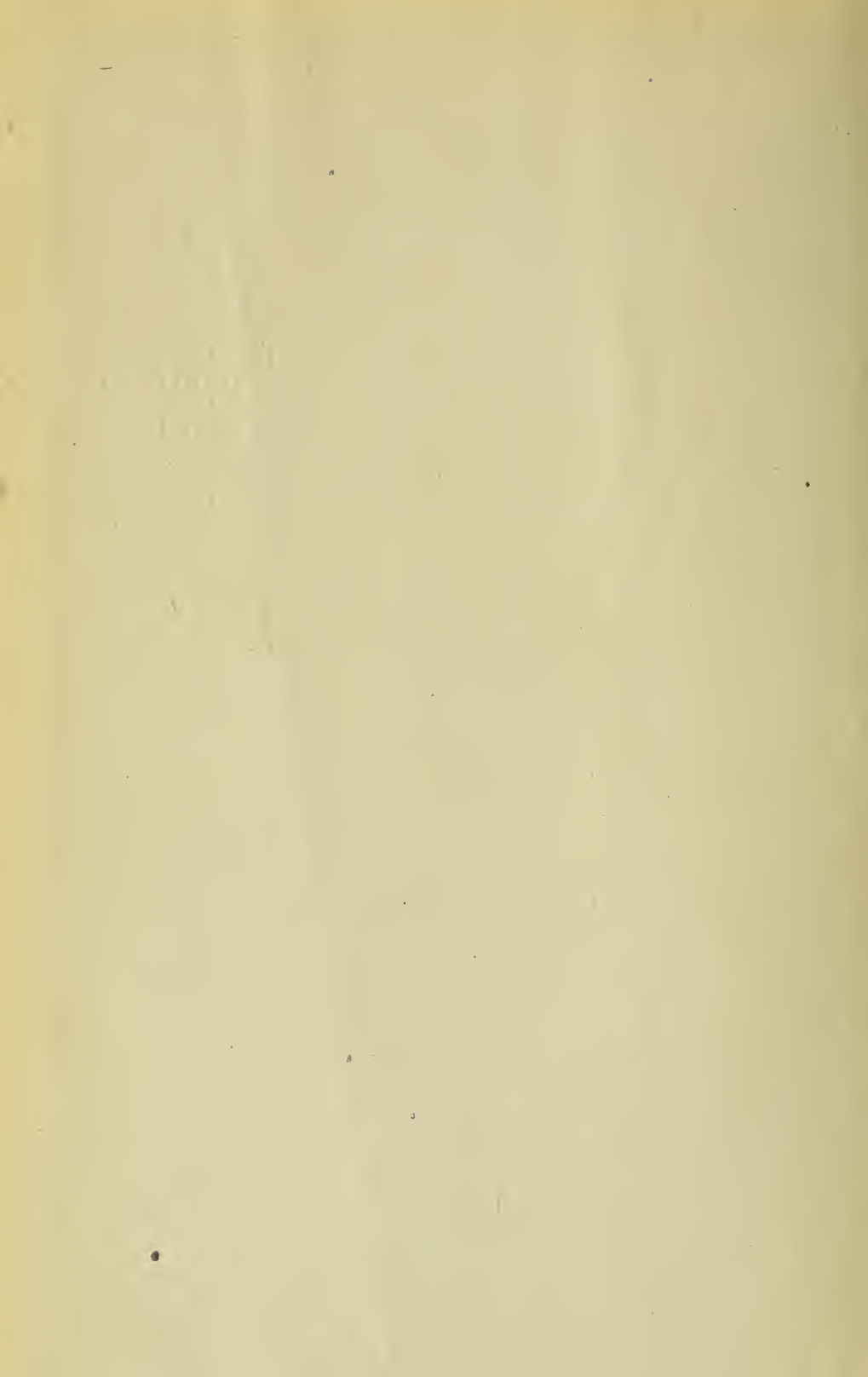
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JAN. 10, 1891.



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It begins with taking the bees from the cellar and goes over the ground briefly, clearly and concisely, until the honey is off the hives; touching upon the most important points; and especially does it teach when, where and how foundation can be used to the best advantage; when combs are preferable and when it is more profitable to allow the bees to build their own combs. It tells how to hive a swarm in an empty brood nest, and yet secure more honey than when foundation is used. Price of the book, 25 cents. For \$1.15 we will send the REVIEW one year and "The Production of Comb Honey."

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BEE KEEPERS' GUIDE

A Monthly of 32 Pages.
Devo'd to Bees & Honey

SUBSCRIPTION PRICE, 50 CENTS PER YEAR.

We manufacture Bee Hives, Sectional Honey Boxes, Honey and Wax Extractors, Comb Foundation, etc. We also breed and sell Italian Bees. Illustrated Catalogue free. A. G. HILL, Kendallville, Ind.

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TONS OF HONEY,

Try the Carniolans. Hardest to winter; pleasant to handle; best honey gatherers. Our stock is the best that can be procured, and is bred miles away from other races.

PRICES: 1 untested queen, \$1.00; 6 for \$5.00; 12 for \$9.00. 1 tested queen, \$2.50. 1 imported queen, \$3.50. THE BEE-KEEPERS' ADVANCE and an untested queen, for \$1.25.

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Poultry Journal,

EDITED BY D. A. JONES.

ED'TD BY W.C.G. PETFR.

75 cts. a Year.

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These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Samples free. Both journals on year to one address, \$1.00. Until June 1st Journal we will send Either trial trip for 6 mths 25 cts. THE D. A. JONES CO., L'd, Beeton, Ont.

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The partnership heretofore existing between Wm. W. Cary and F. M. Taintor, under the name of Wm. W. Cary & Co., has been dissolved. The business will be carried on by the senior partner, who has had thirty years experience in the manufacture of

Bee - Keepers' Supplies.

HIS NEW HIVE AND CLAMP SYSTEM beats them all. The sales in 1890 were simply enormous. All who have tried the new system seem well pleased with it. Write and see what Mr. Cary has to offer for 1891.

Wm. W. CARY, Coleraine, Mass.

2-90-12

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ELMER HUTCHINSON,
Rogersville, Genesee Co., Mich.

For Simplicity and Durability,

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3½ inch,	\$2.00
Conqueror Smoker, ...	3 "	1.75
Large Smoker,	2½ "	1.50
Extra Smoker,	2 "	1.25
Plain Smoker,	2 "	1.00
Little Wonder Smoker, 1½ "	" .....	.65
Bingham & Hetherington Knife,		1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,

Abronia, Michigan.

Before placing your order for supplies, send 75 cts. for a sample of my

DOYETAILED HIVE

in the flat. 7 per cent. discount on Dec. and Jan. orders. **JNO. G. KUNDINGER,**
Kilmanagh, Huron Co., Mich.

12-90-1f

Please mention this Review.

— Established in 1864. —

We are now running

OUR NEW FACTORY,

The most extensive steam power factory in the West, used EXCLUSIVELY for the manufacture of

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We make many articles not made by other manufacturers. Dovetailed and improved Langstroth-Simplicity hives. We can furnish, at wholesale or retail, everything of practical construction needed in the apiary, and at the **Lowest Price.** Satisfaction guaranteed. Send for our 40 page, illustrated, free catalogue.

E. KRETCHMER,

Red Oak, Iowa.

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Utility Bee - Hive.

Unexcelled for **SIMPL CITY, CONVENIENCE and CHEAPNESS.** Every part **INTERCHANGEABLE, REVERSIBLE and INVERTIBLE.** Adapted to interchange with the **Simplicity** and other frames and bodies. For introductory prices, etc., address **LOWRY JOHNSON,**

1-91-1f

Masontown, Pa.

Wanted: To correspond with parties having Potatoes, Cabbage, Apples or Honey for sale or to consign. Prompt returns. All correspondence promptly answered. Best of reference. **EARLE CLICKENGER,**
11-90-1f Columbus, Ohio.

Reference: Editor REVIEW.

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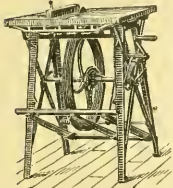


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Circulars Free.

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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.

4-90-16t

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Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills.

Pratt's Perfection Queen Cage

Is the best shipping and introducing cage in use. Only \$10.00 and \$20.00 per 1,000. Sample free to any queen breeder. It is manufactured and for sale by **C. W. COSTELLOW**,
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Comb - Foundation.

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"Langstroth on the Honey Bee, Revised." The book for beginners; the most complete text book on the subject in the English language.

Bee-Veils of Imported Material, Smokers, Sections, Honey Pails, and Bee-Keepers' Supplies.

Pamphlet on "Handling Bees" 8 cts.

Advice to beginners, circulars, samples, etc., free. Send your address on a postal card to

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BEE SUPPLIES.

CATALOGUE FREE. PUBLISHER OF GLEANINGS IN BEE CULTURE. SAMPLE COPY FREE.

OUR NEW MAGAZINE

WILL BE CALLED

The American Bee-Keeper.

The first issue will appear Jan. 1st, containing 16 pages and cover. We shall aim to make it a strictly impartial, wide-awake, common sense journal of the highest standard, and of interest to both the beginner and the expert. Its contents will be furnished by the best writers of the United States and Canada.

Subscription price 50 cents per year. Sample copy free. The W. T. FALCONER M'FG CO.,
Jamestown, N.Y.

Also send for our Catalogue of **Bee-Hives** and other **Bee-Supplies**. We now have the largest plant of the kind in the world (over two acres of floor space) and can furnish the best goods at lowest prices.

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Are you thinking of buying a queen this year?

TRY AN ALBINO.

They can't be beaten. Send for price list.

A. L. KILDOW, Sheffield, Ills.

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NEW FACTORY.

We are now building our new factory, which will be completed about Dec. 1st, 1890, when we expect to manufacture goods at the lowest possible prices. Send for price list before placing your order for supplies. Our former address was Douglas, Ohio, now it is

LEININGER BROS.,

Ft. Jennings, Putnam Co., Ohio.

12-90-1f

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Beautiful Bees ALWAYS PLEASE THE EYE.
Good Qualities ARE ALWAYS PROFITABLE.

If you wish for bees and queens that combine beauty and good qualities to a marked degree, write for descriptive circular giving low prices. No circulars sent unless asked for. Japanese buckwheat for sale. **CHAS. D. DUVAL,**
Spencerville, Md.

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Please mention the Review.

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NEW BUILDINGS VAN LEYEN & CO. 149 JEFFERSON AVE. MACH. LABELS MACHINERY.

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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. IV. FLINT, MICHIGAN, JAN. 10, 1891. NO. 1.

The special topic of this issue is

“Buildings for the Apiary.”

That of the next issue will be

“Separators.”

CORRESPONDENCE.

Cost of a Good Shop.—Buildings Usually Too Small.—A Symposium for Correspondents.

DR. C. C. MILLER.

I^HVE spent more time looking at the picture on the cover than in studying your leader. It's a gem. I mean the picture. The other isn't as good as usual. It can't always be best.

My shop was built some seven years ago, 18x24, two stories and cellar, cost \$391.70. I don't know that it is as good as it should be, but I don't know that I could better it if I had it to do over again.

My honey room is a separate affair, being an addition built to the dwelling. It's bad, so. In the course of the summer it's sure to be filled up with things that don't belong there, and if you have as good a wife as I have, you'll not like to say anything. Still, it's a pity not to have it used for something when there is no honey in it, and it is very handy to go into it without going out doors.

Wherever a honey room is, the one special thing is a floor so well supported that a train of cars can run over it. I don't think I should like a honey room in a shop. It should be on the ground floor, for it would be a big job to carry all the honey up and down stairs, and it should be near the roof, so that it can have the full benefit of the heat of the sun. So it is perhaps best to have it a one story building, and I never would think of having a shop only one story high, for the second story costs comparatively little, and is always needed to store in.

I don't know about your idea that a honey room should be warm, with non-conducting walls. It is true it would be nice to have a place where you can keep honey through the winter, still, your honey will generally be out of the way before late winter, and after it is taken from the hives it should be in a place as hot as the sun or thin walls can make it.

Estimate how much room you will need and then add fifty per cent. to it. You'll need it all.

Decidedly, put the building at one side of the apiary. If you do much, you'll want to drive up to it with a team.

My shop runs the longest way north and south. On the north end, ten feet is cut off for a work room. This has four good sized windows,—a good bit of light for a room 10x18, but it's none too light. One window does for the other room, and one for the whole of the up stairs which is all in one room. A door opens from the outside into

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the middle of the east side. Immediately as you enter, a door at the right opens into the work room, and directly in front of you is the stairs.

The ground slopes to the south, and you enter the door of the cellar at the south end, walking in on a level. An inside and an outside door nine inches apart, four feet wide. I would have it wider rather than narrower. The cellar bottom is clay. Gravel might be better. I tried a cement bottom once, and I thought I didn't like it.

If you don't want rats to undermine the cellar walls, dig a trench a foot deep under the wall, that is, the bottom of the trench will be a foot lower than the cellar bottom. Fill the trench with small stones and grout. No rat can gnaw through, and no rat knows enough to dig under it.

You've had a number telling what should be done on the part of the editor and publisher. Wouldn't it be a good idea to have at least part of a number devoted to telling what ought to be expected of correspondents? The editor could tell what he wants, and perhaps that would be all that's necessary.

I thank you for deposing the "we." The figs will be entrusted to Uncle Sam. You'll make an editor yet.

A wild idea has just struck me. If a symposium could be gotten together from all the different editors, telling what is desirable in contributors, both in matter and manner, also some of the things that most commonly annoy editors, it might be a benefit to said editors by causing improvement in contributions, and I am sure would make very interesting reading for that large class who have something to write—and that includes all who keep bees.

I like your short editorial items. Do more of it—free and easy. I like that picture on the cover *so much*. I never dreamed you could make so good a paper.

MARENGO, Ill., Dec. 17, 1890.

Have a Large Building, with Cellar Under It, at One Side of the Apiary.

IN laying out an apiary for even a few hives the thing to be considered next is to store the various "traps" as the bee keeper usually expresses it. And in our rambles among the fraternity we have found such storage in all imaginable places. The corn crib, the wood shed, the loft over the

shed, a corner in the horse barn, and the smoke house, and when the apiary increased the traps were distributed in several of these places.

In some apiaries the "traps" were truly appalling, and I opine that nearly every bee keeper has been more or less surprised at the accumulation of a useless pile of lumber. In our own apiary we have been heroically weeding out all of these accumulations, and we think bee keepers should make more of a study of this point, "How to get along with the least number of 'traps.'"

The bee keeper usually builds too small. A little tucked up building 8x10 will do very well for a dozen swarms, but when the lawn is covered with a hundred or more, storage must again be sought in the various out buildings. Our Vermont brethren set a very good example in relation to buildings. Many have erected commodious buildings nearly 30x40, and two stories high, which gives an abundance of room.

According to our idea of a building for an apiary, in our northern climate, it is not complete unless a cellar is provided for wintering, and we cannot better explain our ideas for a building than by referring to page 616, Vol. 15, *Gleanings*, where will be found a diagram of a portion of our own buildings.

Our first building was a cellar 12x18, where we stored our bees in the winter and worked in the summer. As our apiary increased two additional rooms 15x21 and 15x15 were added. Then a shop was to be added 15x25, but has not up to the present time. The modifications we would make in our house if we were to build again is the enlargement of every room except the shop, and instead of using an expensive engine, I think a Barnes foot power would be ample to do our sawing. The various supplies can now be purchased at such slight advance over the mere cost of the lumber that it will not pay to put in expensive machinery for the purpose. Another point overlooked by myself and several bee keepers, is a proper roadway to the *very doors* of the building. This can hardly be accomplished if the building is in the center of the apiary. We would, therefore, for this reason, if for no other, have our building upon the extreme edge of the apiary. Another extremely handy feature in a building is to have the main doors quite large to admit the wheeling in on a barrow of the various articles to and from the yard and house. Another conven-

ience, especially on the windows of the room for honey storage, is tight board blinds. Ours are made of $\frac{3}{8}$ inch ceiling, and our building can be closed up as dark as a cellar, which cannot be accomplished with venetian blinds. With tight blinds only one window in the entire building needs to be supplied with a bee escape.

If the building is used for rendering wax, melting candied honey, and performing several other operations where much water is required, a cistern is a very handy appendage, saving much travel to and from a distant well or spring. Where the grounds are laid out tastefully and flowers are cultivated, running water is a desideratum.

And even if we did not cultivate flowers in the yard we would cultivate a pretty vine over a door or window. To beautify with flowers of a bright color is restful to the eye. A barrel sawn in two and half of it filled with various colored geraniums in the center of our yard, was an attraction and pleasure to our eyes all summer.

One more point, what color shall we paint our house? I have found them painted all colors. Allowing me to express my opinion, a red and white is the most detestable, but an all white, or a light drab with dark trimmings, looks well with the surrounding hives if they are painted the same color.

A tasteful apiary and a pretty house adds much to the reputation of the bee keeper, and will attract trade, while the slovenish and unkempt surroundings will drive it away.

RAMBLER.

Have Only One Building, and at the Side of the Apiary.—Have Doors and Windows Slide.—Keep Up the Discussion of Special Topics.

CHAS. H. GREEN.

FRIEND Hutchinson.—In a brief notice I will endeavor to describe such a building as I prefer for use for an apiary at the home yard. I would have but one building and that large enough for work shop and store room. One building can be built cheaper than two or three small ones, and is much handier. As to size, one must be governed by the extent of the business, the same as the farmer would be in building a barn to store his crops. It should be two stories high, and, on the lower floor, I would partition off a room as large as is needed for an extracting room and place to store comb

honey. There should be one window in this room and that should have only one sash and made to slide to one side. The outside of this window should be covered by a wire screen extending above the window six or eight inches and held out bee-space by strips of wood. I would have but one door to this room and that a slide door opening into the other part of the building.

The balace of the space below may be left in one room, which is for a work shop and supply room. The room above is also used for storing supplies. I would have sliding doors wherever any doors were needed, and all windows arranged on the same plan as described above, and the building made bee and mouse proof as far as possible.

I would locate the building at one side of the apiary, and, if possible, so it would not obstruct the view from the house.

I would have this building large enough to store all supplies from out apiaries that need to be housed. In locating out apiaries I have been fortunate in having some building or shed near by where I could store a few supplies and which afforded protection in case of a storm. If a person is producing extracted honey in the out apiaries, a tent, such as is used by E. France, would suit me best, I think.

Last fall I built a bee cellar cave at one of my apiaries and I expect this to answer all purposes that a building would be used for. For a place to store extracted honey I now prefer a cellar, and I usually take it there the same day it is extracted. The casks are filled as full as it is possible to get them and sealed air tight at once. I have a good cellar under my dwelling which answers my purpose very well.

Now just one word of praise for the REVIEW in closing. While its title is perhaps somewhat misleading, the special topic feature is just what suits me; for, in the busy season, when I have but little time to read, I often find it very convenient to refer to; for, in one No., I am able to get the views of several of the most successful honey producers, on a subject which, perhaps, at that time, would be of the greatest importance to me; while, perhaps, it would be best to devote a greater part of the journal to extracts, I think I would still retain a corner where special topics may be discussed each month.

WAUKESHA, WIS.,

Jan. 1, 1891.

[The discussion of some special topic will always remain the prominent feature of the

REVIEW, so long as topics can be found that are worthy of such discussion, and it does not seem that there need be any apprehension upon this score.—Ed.]

Why Separators Increased the Yield.—Best Weight for Foundation and Widths for Sections.—Working Bees to Death.

C. W. DAYTON.

IN replying to your foot notes to my article on page 215, the reason I did not explain more in detail my experiments with foundation and separators, was because when the arrangement of the brood chamber had been explained the article was as lengthy as I care to read.

In each of my experiments care was taken to have the conditions of each colony alike; but there were numerous other things to interfere with the test besides "were the bees allowed their liberty? could they gather any honey?" etc., which you ask.

None of the colonies were confined; nor could they find honey to gather, but were arranged in darkened rooms where they must travel a long distance, on foot, to reach the open air, and the feed was placed along the route. In time these bees that had not much brood to care for remained contentedly at work and flew out very little.

There is a vast difference in the comb building and honey storing qualities of different colonies; also the disposition to work. Some colonies would not work with so little as one or two combs of brood, while another having not any brood would astonish by its work. It seemed worth while to have one colony draw foundation and another fill it with honey. Often a colony will work vigorously for a time and then utterly refuse to labor at all.

The foot notes say "these statements appear very unreasonable without a more complete explanation," as "arguments have been that separators lessen the honey yield" while, in my experiments, they increased the yield.

There are two ways to understand this point.

It is well known that bees with several combs of brood are loth to go behind partitions to work upon foundation. Having one comb of brood in the center or one on each side and the sections sandwiched between them there is so small loafing space

that the sections are always occupied. If the combs in a colony are put an inch apart, the space will be filled with comb even in a dearth of honey, and it is the same with the sections if they are arranged to occupy the center of the hive.

Separators increased the amount of honey obtained by preventing the lengthening of the honey cells after the wax in the foundation had been used.

Probably 9-foot-to-the-pound foundation is drawn into cells about one-half inch deep; this produces comb one inch thick. Heavier foundation may cause deeper cells and thicker comb, but the base also remains thicker so that 9-foot-to-the-pound produces as much "fish bone" as consumers care to buy.

The most economical width of sections is that which, when the foundation has been drawn and filled with honey, will be full enough to cap, and the combs are not capped until they approach within a bee space of each other or there comes a dearth of honey. My experiments point toward a trifle less than 7-to-the-foot sections with separators, and 9-to-the-foot sections without separators, and I prefer separators because it renders the section a better protection to the comb.

In the case of thick combs considerable quantity of wax is literally piled upon the short cells next to the wood which is not the case with the lighter comb.

Some of my deductions were made from feeding honey of different kinds and colors; the amount required to draw out the foundation; to fill the same with honey; and how much to have the comb extended and filled with honey; and how much to cap; and the periods of building were measured lineally by the different color of honey or comb.

It took about $1\frac{1}{2}$ pounds of feed to get $\frac{3}{4}$ pound of honey in sections with separators. Where the separators were left off it took more than $2\frac{1}{2}$ pounds of feed for $1\frac{1}{4}$ pounds of honey in the sections. There was thirty per cent margin in the first case but none in the last.

The experiment was tried to find a way to work to death the great force of bees rather than brimstone them in the fall.

We had no honey in my locality, consequently the hosts of brood and bees which had been raised became idlers and consumers if a way was not found to utilize them.

CLINTON, Wis.,

Dec. 29, 1890.

[If I understand the matter, the use of separators enabled friend Dayton to place

the sections in the center of the hive, where work was performed more expeditiously and better results secured.—Ed.]

A Good Building Saves One-Half the Labor.

—How One was Built.

E. P. OIBBS.

NOW to build a building for use at an apiary, is a subject that has given me no small amount of thought; and, because I did not feel able to build such a one as I thought I would like, I did not build any for a long time after I saw the need of one, but used a part of a barn for a shop and stored and scraped honey in the dwelling, but it was very inconvenient and caused a large amount of extra labor. I got along in this way until the fall of 1889, when I concluded if I could not build one as I wanted it I would build something; and, as I have been largely benefited in the past by the experience of others given in the bee journals, I will give you my ideas in regard to a house for the apiary.

My apiary is situated about fifteen rods back from the road, and back of my other buildings, and the honey house is situated in one corner of the apiary. This location I think preferable for several reasons. First, I can take in at one view the whole apiary; next, I can drive to the building at any time with a team for the purpose of unloading supplies or taking them away or loading honey from the house for the purpose of marketing it.

The building is 12x24 with 14-foot posts. The roof is given a pitch between $\frac{1}{3}$ and $\frac{1}{2}$, and the collar beams are run up on the rafters so that we have nine feet in the clear in the center of the room up stairs, and this we use as store room for hives, supplies, or anything we wish to put up there. The space below is eight feet in the clear and divided into two rooms; the larger one is 12x14, used for a shop. The smaller is used for a store room for honey or for putting together sections, and is 10x12 less the stairway, which is three feet, and we get what room there is under the stairs to store things in. The larger room has three windows and one door and the smaller room two windows and one door. Up stairs we have one window in each end and two frieze windows on the south side. All windows and doors are provided with screens and bee escapes.

The frame of the building is what is called balloon, studded up and down with 2x4 studding. Sheeting is put upon these and paper on the sheeting, and the whole is covered with drop siding, which makes it almost frost proof. It is lathed and plastered two coats on inside, and painted two coats of lead paint on outside. The chimney comes down into the lower rooms at the partition, and there is a flue for stovepipe in each room, also one up stairs. There is no cellar, but the building is underpinned with stone.

Now this does first rate, and it seems as though it lessened our work for the apiary one-half.

But now you say, if you were to build again, how would you change it? Well, in the first place, if I were certain that I could make a cellar that would not freeze, I would put a cellar under the whole of the building. Next, I would make it fourteen feet wide, and if I had plenty of money, sixteen feet wide, and then I think I would give the roof $\frac{1}{2}$ pitch, and get a little more room under the rafters. It is hardly possible to have too much room to store hives, frames, cases, etc.

LYNDON, Ill.,

Dec. 23, 1890.

Buildings for the Apiary.—A Few Odd Points Concerning Them.

JAMES HEDDON.

KNOWING full well that the kind of buildings and the way I should arrange them would likely be different in different climates and different localities, and in the production of different kinds of honey; that is, comb or extracted, I will leave to others, if they wish, the outlining of details of everything, and only attempt to mention a few points, which are dear to me, having been used by me during about a quarter of a century's experience in honey production.

In the first place, build all of your buildings about double the capacity you expect to need. Put your honey house and shop, whether they be two separate buildings or both in one, at the *side* of your apiary, never in the center. Then you or your help can watch the swarms much easier. The south side of your apiary is best, so that, in overlooking your bees you will have the northern sky for a back-ground. It will also be shady on the apiary side of your building. Make

your honey house mouse-tight, and make a good building if you are able. Mine is lined on the inside with tightly matched basswood and painted pure white. This aids us greatly as regards light. The outside weatherboarding is what is called drop-siding, it being all $\frac{3}{8}$ of an inch thick, and this wall is filled with dry sawdust, solid full clear up to the second story and shoved back as far as we could between the ceiling and floor of the upper room. Build two stories if you can, if not, at least $1\frac{1}{2}$ stories, for this room up stairs will be ever so handy for storing away stuff. Ours is full nearly all the time, and kept in perfect order. My honey house is 18x30, two stories, with an eight-foot-deep stone cellar under the entire building. In this cellar I have a stove in one end, partitioned off with a board partition, which serves the double purpose of warming up the bee repository in winter, and of melting honey. I have a coil of inch gas pipe in the top of it which runs three and one-half times around on the inside of the stove, one end running up through the floor on one side, and the other the same on the other side of the stove, both being tightly connected with a large galvanized pan, or tank, which sets on the floor in the honey house. Over this I have a box. I can raise the lid of this box and place fourteen 58-pound cans of honey in the tank of water, and this water goes down through the pipe $3\frac{1}{2}$ times around in the stove, and back up again, in a constant, slow current. I can build a fire in the stove in the cellar, when it gets well going throw in a chunk of wood, close the stove tight, and come back the next day and find my candied honey all beautifully liquified, with no frothing, no discoloration and no change of flavor. The whole arrangement cost me about \$25 or \$30, and it is worth more than that to me every season, for reliquifying honey, alone.

I have four quite large windows in the honey house, each in one sash, and the sash is hung on center pivots at the center of the top and bottom, so that the window will revolve around horizontally. Outside is a wire cloth bay, in which the outer half of the window revolves. This keeps out all bees, and if any do get in, I can revolve them right into the bay, which has a pencil hole in the top, and the bees soon leave and none ever get back. We can have all the ventilation we want without any trouble from bees or flies.

All my door and pad-locks are spring locks. We never have time to stop to lock a door. It takes time enough to unlock it. That is another little thing that will save its cost in a single season's operations. We keep a high board fence with two strands of barbed wire around the top, around both of our apiaries, because we do not propose to tempt sneak thieves. I consider it a moral duty to keep everything securely out of the reach of the morally weak. Of course we have wire screen doors at each end of the honey house with an automatic arrangement to open and shut them, without touching them when we are passing through with a load.

These are all the points I think of just at present, and probably quite enough from one correspondent.

DOWAGIAC, Mich.,

Dec. 24, 1890.

Full Sheets of Foundation Preferable.

R. L. TAYLOR.

I CANNOT as yet accept the notion that more honey can be produced by allowing starters only, in the brood chamber. I do not mean by that that I question the correctness of the accounts of the few experiments that have been made in this direction, but I am unable to accept their sufficiency as final proof on the point. The experiments are too few to establish a conclusion, and reason points all the other way. I think no one will deny that in years of scarcity, like the last, swarms put on full sheets of foundation make very much more progress than those compelled to build their own comb. But it may be said that such years are exceptional, and that in ordinary seasons the wax necessary to make the brood combs is involuntarily produced and in the absence of empty brood frames is wasted. So far as I have been able to observe, all the indications tend to show that this notion is without foundation, and that a lack of empty combs for the storage of honey and not a good honey flow alone is the chief reason for an abundant wax secretion. It is not an unusual thing to see the bottom boards of hives into which swarms have been put on empty frames nearly covered with the unused wax scales wasted on account of the too rapid production induced by the haste of the bees to provide comb room. I have never seen this phenomenon in the case of hives filled with foundation. Then the festoons of quiet bees so familiar to all old bee keepers seen

wherever wax production is undertaken largely are seen to a very limited extent if at all in hives fully supplied with foundation. These facts and their corollaries which each one can deduce for himself, lead me to continue to hold for the present that more honey will be produced when frames and sections are filled with foundation.

But granting that the experiments referred to disclose the truth in the matter with respect to the advantages of using starters only in brood frames, there are other facts upon which at present I feel safe in resting a conclusion to use full sheets of foundation. Some of these are the following: Combs built from starters are not uniformly all worker, even under the most favorable conditions; nor are they uniformly straight, and they always lack more of filling the frames than do those built from full sheets of foundation.

These facts might not be very serious if the combs were to be used only for the year, but they are to be used indefinitely, and the question presents itself what will be the effect on the honey harvest, the following year, of the smaller combs and the increased quantity of drone comb? Will not the disadvantage here more than offset every supposed previous advantage? Some one may say cut out the drone comb. But every one knows who has tried it that in ninety-nine cases in one hundred if left in the same hive it will be replaced by the same kind of comb. Of course the more defective combs may be replaced by good ones, but in that case the disadvantage will be learned to the serious discomfort of the manipulator. A crooked comb is in itself no great disadvantage so long as all the others in the hive accommodate themselves to it by crooking in like manner, but a rub comes when it is attempted to change places with the combs either in the same hive or from different hives.

I tried the plan of using starters one season extensively and know whereof I speak, at least so far as my own bees are concerned. It is no small labor to sort and straighten such combs, and it is generally so inconvenient to do it when it ought to be done that it is more than likely to be neglected.

I do not wish to be understood as intimating that a very large quantity of drone comb is to be looked for in each hive, but enough to be troublesome in from two to four combs amounting in all to a piece from the size of the hand to one and a half new Heddon

frames, nor that many of the combs will be found very crooked, but that few will be entirely straight, and that very many will be such that unless they are straightened they must always be kept in the order in which they were built to prevent interference.

Again, granting the advantage claimed in using starters only, it is to be remembered that that advantage is to be had only once in a quarter of a century, *i. e.*, the combs thus produced are to be used thereafter for twenty-five years. Will it pay, for the sake of the temporary advantage, to be compelled to straighten and perfect the combs, or be put to the inconvenience of using imperfect and often practically non-interchangeable combs for so long a period when it is remembered that at best they can hardly be made first class? It requires but a short time comparatively for the apiarist who produces honey, not bees, for sale, to secure as many colonies as he desires; when no more bees are wanted no more combs are required. It needs but a small profit from each of the succeeding twenty-five years to wipe out that which is supposed to accrue from using starters in the first. If one counts time, labor, the greater number of workers and the less number of drones, will he not easily secure it? From the standpoint of my own experience I do not hesitate to say that perfect combs secured only from full sheets of foundation will yield the required amount of increase in profit besides solid satisfaction and convenience.

LAPEER, Mich.,

Dec. 3, 1890.

**Advantages of Foundation.—If Used Light
no Wax Secretion is Wasted.—Some
Very Practical Ideas.**

J. A. GREEN.

FRIEND H.—When you first brought before the public your theory that there was an advantage in allowing or compelling bees to build their brood combs without foundation, except in the shape of a narrow starter, it seemed quite plausible to me. I had noticed that at times the production of wax seemed to be greater than was required for the combs being built, and thought perhaps you were right and that we had been overdoing the matter of assisting the bees in their labors.

Surely, if I could save the cost of the foundation I had been using in the brood

chamber, and at the same time increase my crop of marketable honey, it was worth trying.

So I filled a number of frames with half inch starters and prepared to take advantage of the new departure.

Somehow, though, it didn't seem to work as it ought to, and before long I found myself scraping out these narrow starters from the remnant of that lot of frames and putting full sheets of foundation on wires in their place. I was led thus to return to my old practice by several considerations.

Granting that bees sometimes seem to work with greater zeal when allowed to build their own combs (though this is not by any means always the case), it does not necessarily follow that it is always profitable to allow them to do so.

When all the products of the colony are counted up it may turn out that a gain in one direction is counterbalanced by a loss in another.

I consider combs one of the most valuable products of the apiary. I have never had more than I could use profitably, and for several years I have been obliged to get along with a much less number than I would like. Considering them in the light of an important part of my working capital—almost in the light of tools—I think it profitable to have them of the best quality. A sheet of all-worker comb, straight and flat as a board, filling a well braced wired frame clear to the bottom and corners, is much more valuable than the average comb which the bees build for themselves. I use frames at fixed distances, with narrow spacing, therefore I want my combs straight. For a variety of reasons I want my combs built on wire, and this is not practicable without full sheets of foundation. I do not want the top bars to sag, giving room for unnecessary and vexatious brace combs, and as I want thin top bars, I must wire and brace them.

I do not want any bees to raise a lot of useless consumers, and I want to have some control over the drones raised for breeding. Last season I bought a lot of brood combs from one of the principal advocates of letting the bees build their own combs, and the majority of them contained more or less drone comb—some so much as to unfit them for use in the brood chamber.

Above all, I want to be able to hive a swarm with the full assurance that without any further looking after the hive will be

speedily filled with straight, strong, all worker combs.

I do not think it profitable to use very heavy foundation. The foundation I use in the brood chamber is very light—not much heavier than that used in the sections. To complete it the bees are obliged to add a great deal of their own wax. In the sections, of course, only the thinnest foundation is used, and in building out the combs and capping them I think the bees find use for all the wax they will produce under ordinary conditions.

If bees during a honey flow produce wax whether they have any use for it or not, one would suppose that colonies run for extracted honey where they have no use for wax except in capping cells, would be the ones to show most the plethora of wax, but this is not the case. If given plenty of room they actually seem to begrudge the time and wax required to cap the honey. Some successful producers do not allow the honey to be capped at all, but the bees do not seem to be troubled with surplus wax. It is only when bees have more honey than they can readily find room for, that they secrete wax to any extent. If it is a "physical necessity" for bees to secrete wax when gathering honey, it ought to be a physical necessity for a cow or other mammal to secrete milk when well fed. We know that this is not so. The secretion begins only when nature requires it, and the secretion of wax by the bee is probably only as required.

We cannot afford to dispense with foundation in the sections and it must be in *full sheets*, too. If of proper thinness, not one in a hundred could tell the difference between it and natural comb. In fact, some of the thickest and toughest comb I ever ate was made entirely by the bees. At one time I followed the plan of having full sheets of foundation drawn out in the brood chamber, then cut up and put into sections. I thought it was drawn out somewhat thinner than when the foundation was placed directly in the sections, thus permitting the use of heavier foundation, and this freshly drawn foundation sometimes had a wonderful effect in getting the bees at work in the sections and facilitating their labors. There is too much work about this plan for the professional or for anyone with more than a few colonies, and I doubt if the extra labor is profitable, anyhow, unless with a few sections in each hive. If I wanted to get the

largest possible yield of comb honey from a single hive, I would have another colony draw out all its foundation. This would perhaps be hardly fair, as it would put the colony a long way toward the position of one storing honey in empty combs for extracting. Do you say, "Why not have the foundation drawn out in advance of the regular harvest by feeding, or during dull times in the summer and kept over?" Well, just because the process needs to be a continuous one to secure anything like the best results with it. If there is an interval of only a week or two between the drawing out and filling with honey these starters are little if any better than fresh foundation, and if they are kept for several months they are not nearly as good. It is possible that the system can be made profitable just in advance of the honey harvest, but the man with his hundreds of colonies would find it a gigantic undertaking to attempt to supply all with such starters, though a few for "baits" in the first super would not be very hard to supply, and they are the best things for the purpose.


In regard to Alley's "fact" on which you comment in "Extracted," isn't he the one that claims that there is no danger of races intermixing if they are kept half a mile (perhaps he said a mile) apart? Of course under such conditions Italians will turn black in a black neighborhood and Carniolans yellow in an Italian neighborhood. Perhaps I haven't given the subject the "study and serious thought" that the editor of the *Api* has, but I know that the races will intermix if kept four miles apart.

DAYTON, Ill.,

Dec. 4, 1890.

Criticisms of Mr. Hasty's Experiment.—How and When Wax is Secreted.

CHAS. DADANT.

HEN, in 1885, I read in *Gleanings* the article of Mr. Hasty, in which he tried to prove that a pound of beeswax cost the bees less than three pounds of honey, my first thought was to demonstrate the flaw in his experiments; but, after reflection, I was hindered by the idea that, as I am in the foundation business some would think that my answer was dictated by selfishness. Our revision of the Langstroth book had not been published yet. But now, as in this book, page 431, paragraphs 753 to 756, we advise the beginners to

produce extracted honey instead of comb honey, and, as this advice is opposed to our own interests, since the combs used to produce extracted honey can be used indefinitely, while the wax of comb honey is destroyed and must be replaced, I feel free to criticize these experiments without incurring the accusation of supporting "a venerable falsehood" for our "self interest."

I desire to say to Mr. Hasty that I am not one of the "wise men" who wrote in the American bee books that beeswax costs the bees twenty pounds of honey, since he can read in our Langstroth revised, page 101, paragraph 223, that, from the experiments made by Mr. Viallon, in the U. S., and Mr. DeLayens, in France, it seems that, in good circumstances, bees use only seven pounds of honey to produce a pound of wax.

Mr. Hasty says: "In fact I am not sure that thick honey declines in weight any more in being transformed into wax than molasses in being transformed into candy. Why should it?"

Such a sentence shows in my opponent very little knowledge of the science of chemistry, for, while such candy is but dried molasses, beeswax is no more honey than the fat of a hog is corn; both having been chemically transformed by the digestion.

Honey is not as dry as corn, yet Mr. Hasty has never seen the weight of a pig increased 100 lbs. after the pig had eaten 100 or even 300 lbs. of corn; the chemical transformation performed in the stomach being impossible without waste.

Now I will examine the experiments, which seem to you, Mr. Editor, the most satisfactory.

Mr. Hasty weighed the hive containing a swarm every morning before the exit of bees, and every night after their return from the field. It was in July, when the days last sixteen hours and the nights eight hours only, and he concludes that the difference in weight gives the weight of the honey used in building combs.

But he forgets to notice that a bee that starts from the hive in the morning, and comes back as soon as her sack is filled, being unable to find empty cells in the empty hive, remained idle for twelve or fifteen hours, digesting her honey, getting rid of the water contained in it and of the excrements after digestion.

Then, if bees consume $2\frac{1}{2}$ ozs. of honey during the eight hours of a July night, as

their stomachs work during twenty-four hours, they consume really three times $2\frac{1}{4}$ ozs. or $7\frac{1}{2}$ ozs. in the twenty-four hours. Then the experiments of Mr. Hasty confirm those of Messrs. Viallon and De Layens, who found about 7 lbs., instead of contradicting them.

In your article of Nov. 10 you quote Mr. Heddon, who wrote: "A clear understanding of the works of evolution, must, I think, convince one that, where, for ages, comb building has, from necessity, gone hand in hand with honey gathering, the secretion of wax has become a 'physical necessity,' and, if we do not give room and opportunity for comb building, material for that purpose is wasted," yet, for fifteen years or more, we have not given our bees either room or opportunity for comb building, and, like Dr. Miller, we have never seen this material wasted. Our bees seem to have enough room and opportunity in lengthening and capping the cells of the combs used to get our extracted honey.

Such a result can be easily explained. Nobody can contest that beeswax is a fatty substance, produced as the fat of animals, although it serves for another purpose, and that this fat is produced by conditions about identical: viz., plenty of food, warmth and rest.

When we hive a swarm in an empty box the bees conglomerate in groups, to keep warm, and digest the contents of their honey sacs to produce wax.

You write also: "When feeding back honey to secure the completion of unfinished sections, we have noticed that the bees of a colony that has been fed lavishly for a week or two show an abundance of large wax scales, and that they soon begin to daub the wax upon the wood-work of the sections and cases, and upon the inside of the feeder. We have seen the latter completely beplastered with wax."

This fact shows not only that bees do not get rid of their scales of wax by throwing them away, but it proves also my theory, not yours. The bees thus "lavishly" fed were able to get honey without any work to do. They were in the same conditions as animals fattened in the stable.

But it is not the same when bees go over the fields to gather honey. They do not make any more wax than a horse, well fed, working every day in the field, accumulates fat on his ribs. Of course, bees working

from flower to flower do not need to make wax as long as they find room in the combs; but as soon as all the combs are full, the workers are compelled to wait, they remain idle, digesting the honey accumulated in their sacs, and this surplus of food is changed into wax, as the food given to animals destined for the butcher is changed into fat.

As to the bee keepers having gone "foundation crazy." When Father Langstroth invented his hive the more progressive bee keepers sent their old box hives to the wood pile, while the old conservatives criticised the hive and its admirers. Please tell me which of them was the most "crazy?" It is the same with comb foundation. You give a swarm a hive full of foundation, at an expense of thirty or forty cents, since the wax, of which the foundation is made, is not destroyed. If the next day gives honey your swarm will gather several times enough to pay for the expense. Besides, all your combs will be straight, and the bees will not build drone combs.

The demand for foundation is increasing, (we know it, since our sales from 59,000 lbs. in 1889 have reached 84,500 in 1890), and this demand proves that those who are "crazy" about foundation are of the same stock as those who were called "crazy" by the too conservative bee keepers thirty years ago.

HAMILTON, Ill.,

Dec. 27, 1890.

Early Experiments with Foundation.—Advantages of Wires.—Hiving Swarms on Starters.—Value of a Review.

JAMES HEDDON.



AT one time, C. O. Perrine, well remembered by our older honey producers, owned the first made and only practical comb foundation machine in this country. While in his hands and while he was anxiously experimenting with its product, he loaded his satchel with it and came to my apiary here, and stayed five days to watch the work of the bees upon it, and when reluctantly compelled to return to his home in Chicago, left the matter in my charge, and from that day until the present time has the comb foundation problem been one of great interest to me. The next season I put the use of foundation, both as guides and full sheets, into practical use in both of my apiaries, but soon abandoned its use in full sheets in brood frames, because

of no method known at that time by which we could hold the sheets straight and in the center of the frames while the bees were drawing out the cells. Quite a number of other bee keepers had "no difficulty in getting perfect combs" without the use of wires (not then thought of) by simply hanging the foundation from the top bars. We couldn't do it, and for some very mysterious reason no one claims nor tries to do it now. It was likely all a question of what we considered "perfect" combs. But finally one of our New York brothers (I think it was) devised the use of wires to hold full sheets in true position while the bees transformed foundation into combs, and then we were all right—the use of full sheets saving the bees so much expense and hard work would add greatly to our annual profits. But, somehow, it didn't add. We could plainly feel the added expense, but we could not count with any certainty on realizing the added profit.

From what we knew of the laws of evolution, we hatched up the theory as stated by our editor in his leader in the November REVIEW. Still, for a long time, we could not let go of our former devotion to full sheets, and really, we have never used other than full combs or full sheets of foundation, except for experiment, up to the present time. The reason is that we have always had one or the other on hand, made several years ago. We now have at least 125 sets of reversible frames (eight to the set) filled complete with full sheets of Given comb foundation, made and pressed into the wires right in the frames; and, right here, in relation to age deteriorating foundation, let me say that I consider these frames of foundation worth just as much as the day they were made, but when I use them it will be in supers for the extractor. Of course I would not use them at all if I had not them on hand, for you know I much prefer another style of frame and super. For super use I consider these frames of foundation practically frames of comb. In forty-eight hours, at a time when honey is coming in very slowly, at that, when the time of the bees is of no special value to me, these frames will be transformed into perfectly straight, all worker combs.

But to return to the use of full sheets of foundation for the brood chamber, upon which to hive swarms. I am now in accord with the theory put forward in your valuable little book, "Production of Comb Honey."

All who wish to get down to the bottom of this subject, should carefully read that book. I find your experiments unique and conclusive. The subject is a most important one, as it aims directly at our dollar and cent success. During all that time that I believed full sheets of foundation to be a wise investment to place in brood chambers, in which to hive swarms, I always did maintain, and do still, that for use as guides, in the brood frames, and sections as well, it is worth \$5.00 per lb. We couldn't do without it, that is all.

Just here I wish to say that when we abandon its use as a material, and retain it for a guide, the narrower pieces we use the better. The reason is obvious—the narrower the piece the better it will stay in position while the bees are at work upon it. I would rather have a strip in my brood frames three or four cells wide, than two or three inches wide, at the same price. Well I have said enough for one essayist, and will leave some other points to be better said by others.

I have just read what Dr. C. C. Miller says about the REVIEW reviewing. I am glad he hit you. That is just what I contemplated when I expected to start the REVIEW. Make the paper \$1.00 or \$5.00, but give us the wheat separated from the chaff of all the bundles and shooks of the entire preceding month. That is what I call a review. If you will do this you will save me ten dollars worth of labor every year. I could then keep up with the times whether I took any other bee journal or not. Yes, as Dr. Miller says, you are a good reviewer, not only because you have the literary ability as the Doctor intimates, but have proven yourself a money making honey producer. That is the main point, in my estimation.

DOWAGIAC, Mich.,

Dec. 4, 1890.

Where the Review Circulates.—How Journals can Lead Their Readers.—

Impartial Editors.

SAMUEL CUSHMAN.

FRIEND Hutchinson:—The REVIEW received and its contents read. I will not say what I think of it; I fear to do so, thinking there may be a great deal of truth in what you say in your explanations on page 218 about "How a journal will improve after you begin corresponding for it." If my article appearing in it has had such an effect upon my appreciation of its con-

tents and appearance. I think I have never fully understood myself. But there is another reason why I fear to do so. I think the humblest and *most self esteem lacking* of all editors would get a little conceited if everybody sent him such complimentary letters. Not that I object to conceit, by any means. The more a man has the better, and the greater his chances of success, if he can succeed in not showing it to others, but there's the difficulty.

I must take exceptions to a part of your explanations. I did not say that you had taken especial pains to secure correspondents whose ideas were in accord with your own, and did not intend to give that idea. I intended to say that men differing in some of their ideas with those "who stand by the Review and help make it what it is," do not care to send in their views on the other side and be in the minority, and then after the discussion, and upon the dismissal of the topic, see the weight of the editor's opinion given against them. In other words, no one likes to stand up when they are sure to be knocked down. Further discussion has seemed to be out of order in the next number as the space is needed for the next topic. This has a strong tendency to shut up all who do not think the same as these regular contributors previously mentioned. Right here I would say that I somewhat doubt the advisability of giving your own decision, after all is in, unless you wish to keep the subject open in future numbers.

Do I understand you to say in the last paragraph that the Review is a local journal and seeks for its principal support from subscribers in the central and northern parts of the U. S. and in Canada, and therefore the views of some of the most extensive and experienced producers in the world, those in New York State, as well as a few in Vermont and those in the South and on the Pacific Coast are not therefore as valuable to your readers?

If so, then I must admit that part of my article is settled, but I hope you don't mean that, and would remark that Mr. Ernest Root has of late realized more than ever that New York men know considerable, though many years have passed since the ideas recently adopted by him were new. To make it clear I repeat, I think that not only do bee keepers in the East, South and West, but those in the Central Northern States, who, on many subjects, have differ-

ent views from you and those of the majority of your regular contributors feel in spite of your cordial invitations, that it is wisdom for them to keep out.

As to the one-sidedness of contributions, I can attribute much of this to the reaction caused by other bee editors in the past having gone so far the other way. If I had favored the closed-end frame hive for the past ten years and read a certain journal meanwhile, and several years ago had started a bee journal, I should at once have called out all the closed end frame writers possible, not because I wanted to be unfair or push that frame and not give any other a fair chance, but to help counteract the one-sided writings and teachings that had thus far appeared before the majority of the bee keepers of the country. All these years the most extensive producers that used hanging frames have opposed the bevel joints or edges, and other features of a much advertised hive, that only beginners that knew no better would as a rule use.

The journal that pushed it had the largest circulation, and perhaps the majority of its readers looked upon the bee keeping world through no other source. It almost had a monopoly.

It could lead the ideas of the bulk of its subscribers and start beginners with what was decided upon, no matter what the leading apiarists thought. We know that an editor whose paper has a large circulation can start the hive fashions, boom any new fixture, overwhelm its readers with attractively written and illustrated articles in favor of them, and follow one with another in such quick succession that the average bee keeper is carried away in spite of himself. Or the opposite may be done: articles not in favor of certain things may be laid on the shelf so long that they lose interest, or may be used separately one by one, and without plain illustrations, and thus give no strong impression.

After the editor of a certain journal decided to come over in favor of the closed end frame hive we saw how quickly its influence was felt among bee keepers.

I have used the Hoffman frame since 1879, and from an idea received from Mr. Alley I widened my top bars in 1885 to $1\frac{1}{4}$ inches wide. It makes a grand frame but somehow it has not yet been shown up or illustrated in any journal in a way to suit me. Now if I were to become the editor of a new journal

I naturally would make a special call to all using the Hoffman frame to write for it, and would illustrate it in the very best manner. I should do all I could that bee keepers might have a chance to appreciate it. This would be the natural reaction. Then some one might say I was all Hoffman frame, and that no other had a chance. So you see I can make an allowance if you seem to be running ideas in a particular direction.

Some editors are not always impartial. I don't say intentionally so, but it is human nature to look out for one's own interests. It may be we fear using an article because some person of influence or some friend may be shown in error by it. Or we may use an article from such a person or give them more license in writing that which is personal, because we do not wish to offend them. This as I said is natural, but to say nothing about right, is not wise. If editors had been more broad and liberal we should not now have so many bee journals it seems to me. To the credit of the *Canadian Journal* I would say that in this respect, as far as I can see, it has always been impartial and has shown no fear or favor. Articles are used on their merits and all writers and hives have an equal chance, if the firm does sell special patterns. Though the *C. B. J.* has been rather slim in contents at times, on the whole, as it has been managed, I would have given up all other bee journals before I would that. Why? Well, I am pretty certain that if a really good article or idea comes out in the *REVIEW*, *Gleanings*, *Guide*, or *Api.*, it will also appear very soon in the *C. B. J.* I feel more sure of getting the current news and do not fear that some things will be withheld or passed unnoticed for reasons best known to the editor.

Though, when I find fault I expect to get it in return. I hope no one will get the impression that I think I am capable of pointing out just what are the errors and fallacious ideas that appear in the *REVIEW* or its management, to say nothing of those of our current apicultural literature.

I was much gratified by reading the articles from the pen of E. E. Hasty, in last *REVIEW*.
KINGSTON, R. I., Dec. 18, 1890.

[It is true that there may be a disposition not to write upon a subject, after it has been closed up in one number, but it sometimes seems as though better articles might be, and often are, written after one number devoted to the subject has been published.

Bee keepers become *aroused* upon the subject. Lack of room *has* prevented a continuance of the discussion; but now that the *REVIEW* has been enlarged, there is no necessity of considering a subject closed for discussion so long as anybody has anything of value to offer.

Let those who hesitate about entering the columns of the *REVIEW* bring "knock down" arguments with them, and then there will be but little danger of their being "flooded."

It is true that an editor can, to a certain extent, "lead" his readers, particularly so if they are inexperienced; and this is one reason why I think it better that an editor have no financial interest in any hive or implement.

Perhaps I did not make my meaning clear in regard to where the *REVIEW* finds its readers. It is in Canada and the United States; but there are few subscribers in the Southern States, or west of the Mississippi valley.—ED.]

How Mr. Hearn Raises His Bright Yellow Bees.—Some Testimonials.—A Reply to Mr. Alley.

L. L. HEARN.

AS to in-breeding, if Mr. Alley calls it such, I select one of my best queens to raise queens from, and usually two queens to raise drones from, the latter queens about three years old, the former from one to two years old. These are the best queens to be found in from fifty to seventy colonies, and as little akin as possible. Now if you call that in-breeding, that is just what I do.

In the *REVIEW* for September I said I had not practiced in-breeding more than was necessary to keep in view four distinct characteristics, viz., honey gathering, prolificness, gentleness and color. How I have succeeded in these respects hundreds of testimonials are on file to show.

To which Mr. Alley replies in the *Api.* for November, that he does not believe I can show a testimonial from any one to whom I have sold my five banded bees, that says they are good honey gatherers; and adds, "Trot 'em out, Bro. H." Now, I don't like to attempt to monopolize the pages of a bee journal in giving testimonials. It looks too much like advertising without paying for it, but by the permission of the *REVIEW* I will "trot in a few of 'em:"

"The two Italian queens you sent me arrived all O. K., and were introduced on the 28th of June. It now looks as if my bees were at least three-fourths Italians. Besides being very prolific they are perfect beauties. The bees are gentle and quiet and show no disposition to fight. I have had the pleasure of examining your bees in the apiary by the side of queens costing from \$2 to \$7.50, and for beauty, size, color, etc., yours surpass them all. Your bees embody all the fine traits that the fancy raiser can boast of, and any one can purchase them for practical and profitable bee raising and have all the fancy points thrown in."

T. K. MASSIE,
Concord Church, W. Va.

This testimonial alone covers all the points referred to. Call the next witness, Bro. Hutchinson.

C. M. Goodspeed, of Skaneateles, N. Y., under date Nov. 27th, 1890, writes as follows: "For the last three years I have been buying queens of you, and for several years before that my yard was well supplied with the same strain. I have done this because after repeated trials I have found them superior to anything I could get. The colony that did the best in honey this season had a queen from you put in last fall. I am not ashamed to put my name behind such a strain of bees."

C. M. GOODSPEED.

[Mr. Hearn also sends testimonials from J. H. Done, of Vinzee, Me.; W. L. Ewing, of Vincennes, Ind.; and E. C. Eaglesfield, of Berlin, Wis.; but, as they are in the same strain as those given, I hope Mr. Hearn will pardon me for omitting them, as there are so many things that will be crowded out of this issue.—Ed.]

So, Mr. Alley, you see your boasting about killing us comes too soon. Remember the old bible advice: "Let him boast who taketh off the harness," etc.

You garble my proposition in your reply, and twist out of it by saying how bad you would feel when you should reach out your hand to "scoop it in, (the \$200.00). If you can "scoop" in my money, Mr. Alley, on this proposition, all right, you are welcome to it, but I think you are more afraid of losing \$200.00 than you have scruples about "scooping it in."

Then you add, "How foolish to propose such a way of settling an important question like this."

How can it be settled, Mr. Alley, except by actual tests? But you desire your "thousands of customers to decide the matter." Would that be fair? Perhaps your "thousands of customers" have never tried my strain of bees. Certainly your method of settling this question is unreasonably foolish, but let us take another witness who has tried both your bees and mine side by side, and see what he says:

G. S. Wheeler, of New Ipswich, N. H. under date of Aug. 27th, 1890, writes: "The queen you sent me is doing well. Her bees are the most yellow I ever saw. They are great workers." Again, under date of Sept. 10th, 1890, he says: "Mr. Alley says he can show handsomer bees from his yellow Carniolans than those Western fellows can of their five banded Italians, and that they are not produced by in-breeding as in their case. If in-breeding produces such workers as the workers are from the queen you sent me, then I say breed them that way. Alley's work well, but yours are a long ways ahead. Under date Sept. 29th, 1890 he further says: "The bees from the first queen you sent me are very fine in color and about as gentle as flies, and fine workers." Here, Mr. Alley, is where the "fly" proposition comes in, instead of in honey gathering. If you want any further testimonials and will publish them in the *Api*, I shall be pleased to send them. FRENCHVILLE, W. Va., Dec. 8, 1890.

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. The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, JANUARY 10, 1891

TWO OR THREE excellent articles on honey houses are necessarily laid over until next month.

Gleanings has a new department, called "Stray Straws," conducted by Dr. Miller. It consists of spicy little items of from one to ten lines. In one sense it is "bee gossip," and the Doctor proves himself to be a most excellent "gossiper."

IN THE COLWICK advertisement in the Dec. issue the price of three tested queens ought to have been \$5.00, instead of \$4.50.

NORTHEASTERN MICH. bee keepers will hold their annual convention Wednesday, Feb. 4, at the Commercial House in Port Huron.

Mrs. L. C. Axtell writes that they have never lost a colony when there were enough bees to cover two or three combs, not *one* comb, as the types make her say on page 162.

THE EDITORIAL department is crowded pretty hard this month by correspondence; and there is a pigeon-hole full of good articles yet on hand. Now is the time of year when bee keepers have time to write. Wait until next summer, and there will probably be plenty of room for the editorial pen.

THE BEE WORLD.

This is a new journal that, judging from the contents and editorials, is to be made up largely of extracts and comments upon the extracts, something after the style of the "Extracted" department of the REVIEW. It is edited and published by W. S. Vandruff, at Waynesburg, Pa., and, considering that this number was gotten up hastily, I think he has done exceedingly well. It is well printed, has sixteen pages, and its subscription price is fifty cents.

THE CHANGES IN THE REVIEW MEET WITH FAVOR.

Notwithstanding the doubling of the price, twice as many subscriptions to the REVIEW have been received since the December issue was mailed, as came during the corresponding period of last year; and, best of all, nearly every subscription is accompanied by congratulations and cheering words in regard to the changes made. Some are *very* enthusiastic in their expressions of pleasure. I wish I could write a personal letter of thanks to each kind friend, or, better still, take each by the hand and express my thanks in person; but this cannot be; the best I can do is to say "thank you," in this wholesale manner, and then work the harder to make the REVIEW more deserving of the praises showered upon it.

CANDY FOR QUEEN CAGES.

Mr. Manum adds glycerine to his candy for use in shipping queens. With this addition the candy will not dry up for years; at least so says Mr. Manum; and it appears reasonable. He also adds flour. Mr. Alley objects to the addition of the glycerine, saying that it contains more or less arsenic. If it contains enough to injure the bees, Mr. Manum would probably have discovered it long ago. As most of you know, I, for several years, made a specialty of rearing and shipping queens, and I never found anything any better than pulverized sugar and honey for provisioning the cages, and I don't ask for anything better. A "batch" made in the spring always kept moist enough for use the entire season.

THE AMERICAN BEE KEEPER.

When I got out the little book, "*The Production of Comb Honey*," I was living at Rogersville. The printing was done at Flint; and, that I might keep watch of the work, I was in town several days. While here I boarded with an old lady who had once lived neighbor to father when I was a boy. When I went to supper one evening, I carried with me the first copy that was completed. As the old lady looked it over she said: "Why, Will, how *clean* it looks!"

A few days ago the first issue of the *American Bee Keeper* came to hand, and, as I sat turning over its pages, this remark of the old lady was brought to my mind most forcibly: "How *clean* it looks."

Bee papers are expected to say something complimentary of a new journal, but I can say a good word for the *Bee Keeper* without feeling that it is simply courtesy. When I say that it is a nice looking journal, very neatly and cleanly printed, full of articles from well known apiarists, and well worth its subscription price, it is said with *pleasure*. It is published, at fifty cents a year, by the W. T. Falconer M'fg Co., Jamestown, N. Y.

AN OLD FRIEND IN A NEW FIRM.

Ever since it became known that the REVIEW was "home made," some of the friends have been writing to learn if I could print their circulars and price lists. I have no time for this kind of work, but I'll tell you, friends, where to send it to get *good* work

done at a fair price, and, at the same time help two young men just starting in business. Send it to Date & York, Room 1,110, 334 Dearborn St., Chicago, Ill. Mr. York, with whom I am well acquainted, was, for several years, compositor and proof reader on the *A. B. J.*, which is sufficient guarantee that the work will not be "botched." This firm has all *new* material, and the specimens of work that I have seen are very neat.

THE DOVETAILED HIVE, OR THE HIVE WITH
LOCK JOINTED CORNERS.

Dr. Miller takes "W. Z." to task in *Gleanings* because he objected to the use of the word "dovetailed" as a name for hives having lock-jointed corners. He says: "Why didn't you lift up your voice years ago against the 'so-called dovetailed' sections?" There would have been just as much sense in it, Doctor, and I presume I should had I thought of it. The name, "dovetailed" has been given to sections and hives having lock-jointed corners, and, although not entirely correct, it will probably hang to them.

Dr. Miller also asks if there is any law to prevent Bro. Hill and myself from making our hives with corners like store boxes? No, there isn't, but the point is just this: No one should be led to believe (unless it is true) that this method of putting together the corners is of so much importance that hives will be ordered from a distance when those with simple square corners might be obtained cheaper at home.

I have a long, kind letter, from Ernest Root upon this subject, also one from Mr. John G. Kunding; and I had hoped and expected to give them both in this issue, but the finishing up of the discussion upon foundation has taken up so much room, that I hope these two friends will excuse me if I give the gist of their letters instead of publishing them in full.

Bro. Root says that the dovetailing really *cheapens* the hive, because it can be crated for shipment in the flat, at less expense, and that the peculiar manner in which it is crated allows it to be shipped at lower rates. Closed end frames accompanied by compression are coming to the front, hence an extra strong corner is desirable.

Mr. Kunding says there is no trouble from shrinkage, as all the wood shrinks and

swells alike. Experienced mill men, carpenters and joiners, and the like, have told him that this joint is the strongest that can be made, and with proper machinery it need not be a "botch job." A No. 1, ten-inch machine costs only \$195.00, and, when once set up and adjusted, it can be run by cheap help and turns out about forty hives an hour. At the recent meeting of beekeepers at Detroit, Mr. Kunding had with him a sample corner, simply driven together, the ends projecting about four inches, and no one could "budge" it with the hands. If I remember right, Mr. Kunding sold about 7,000 of these hives last season.

Now, I have no interest, one way or the other, in this method of making hive corners. I have no doubt that it is a *stronger* corner, but the question in my mind is, is it a *needed* strength? Ever since I have kept bees I have used hives with the simple, old fashioned, square joint, and I have never seen the necessity for a stronger joint. When the hives were nailed up with the heart side of the lumber out, I have seen no trouble from warping. For five years I have used the Heddon hive made in this manner, and the compression has never even started the corners.

SEPARATORS.

This is to be the subject of our special discussion for next month. Is it always best to use them? If not, when *shall* they be used? Shall they be of wood or tin? How shall they be adjusted? etc., etc.

If the honey flow comes on with a rush, rushes while it lasts and stops suddenly, there is little need of separators, if the colonies are strong in numbers. Quite a number of ifs, isn't there? The point is just here. If the combs are all started at once, and continued and completed at about the same time, there is almost no bulging, particularly if the sections are not wider than seven-to-the-foot. Eight-to-the-foot sections furnish combs a trifle straighter, but it is only a trifle.

I have used very few separators, and have been rather inclined to argue against their use; but, even if I don't use them myself, I now believe that, as a rule, it would be better if they were generally used. That little item that J. A. Green gave us a few months ago about crating sections that went together like one of those sawed out puzzles, hit me

pretty hard. I could take them apart again, and it *seems* as though any one with common sense might do the same thing without injury to the comb, but it must be remembered that everybody isn't experienced in this kind of work. I think, perhaps, I *ought* to use separators if I don't. Even though I have raised thousands of pounds of honey without separators that was so straight that it could be put into and taken out of a case with no danger of injury, I have raised a few—well, perhaps a *few* hundreds of pounds that needed care in crating and in removing from the crate or case. Now I either ought to use separators or else not put any bulged combs on the general market—either use them myself or sell them direct to consumers and show them how to “do” the puzzle.

Is there any objection to the use of separators, aside from their cost? That is, does their use lessen the yield of honey? I don't know, but I doubt if it does. We hear a great deal about bees delighting to work in a body, but I tell you their instinct for gathering and storing is greater than their delight at working in a body.

If separators are to be used, which shall they be, wood or tin? I believe the gener 1 decision is that tin is preferable with wide frame and wood with the T supers. When used with wide frames the separators are nailed to the frames. Wood is likely to become split or injured and thus necessitate the trouble of removing the separator from the wide frame and the nailing on of another. When used with the T. super, the separators are placed between the sections without any fastening; simply resting up on the tins. If one of the separators is injured, simply throwing it away and picking up a new one ends the matter. Some have said that when wood separators were used there was less likelihood of the combs becoming travel stained, as the bees would use the separators as a stairway instead of using the combs. Whether there is anything in this I don't know, but I guess not.

Dr. Miller and I have had one or two little tilts over the matter of tin separators being colder (?) than wood. That is, tin is a better conductor of heat than is the case of wood, and he says, or intimates, that the bees draw back away from tin separators on cold nights, because the tin *feels* cold to them. I fail to see how that part of a separator enclosed in the cluster can conduct away any heat. Any heat passing through it

would simply be re-conducted into the cluster. It would be just the same as though the separator was not there. The power of the separator to conduct heat *out* of the cluster would be that of the infinitesimal surface represented by the *edge* of the *end* of the separator—too minute to be worth noticing. But, supposing the tin separators *did* cause the bees to draw back from them during cool nights, would we secure any less honey?

When the honey harvest opens gradually, and the bees commence in the center of a case, attracted there, perhaps, by a “bait” section, and gradually work to the outside, separators are needed. When partly finished sections, gathered together from different supers, are put together in one super and returned to the hive, separators are needed unless *very great* care is used in putting them in the super. In feeding back to secure the completion of unfinished sections a man's ingenuity will be put to the severest test in matching sections to prevent bulging, unless separators are used. Friends, if you don't use separators, why don't you?

WHEN SHALL WE USE FOUNDATION?

Last month I had in type an editorial of half a dozen lines explaining that the discussion upon foundation would be continued; but when I came to “making up” the forms this little item and the correction in regard to Mrs. Axtell's article, had to be left out. This gave the impression that the discussion upon foundation was at an end; and, as it happened that most of the articles rather favored its non-use, some of the readers felt that the discussion was an unfair one. A few have objected to the intimation by Mr. Hasty that supply-dealing journals were interested in keeping alive the “venerable falsehood.” One correspondent says: “I feel satisfied that you mean to be fair, but your dislike of the supply trade is carrying you into the other extreme.” I think an editor ought not to be held responsible for the views of his correspondents, even if he does not take the trouble to say, in a foot note, that his views are different. His responsibility, as I understand it, is in regard to whether the article shall be admitted; but, if it is admitted, the admission need not imply that he agrees with the correspondent. Now that attention has been called to the matter I will say that I don't agree with friend Hasty on this point. I think that the

editors of our supply-dealing journals are willing that the truth, whatever it may be, in regard to wax production and foundation, shall be known. Because I dislike to mix the supply business with that of journalism is no reason why I should not wish supply dealers to prosper. In fact I am glad to see them prosper; I am happy in seeing supply-dealing editors prosper; I like to see any man prosper who is deserving of success, even if he is what the world calls my rival. I have been earnestly, honestly, downright glad to see *Gleanings* get a new press and new type and embellish its pages with engravings; to see the *A. B. J.* improve itself by change of form and a new "dress" of type; to see the Falconer M'f'g Co. come out with such a bright, *clean* magazine—but I am digressing.

It will be seen that this issue gives what might be termed the "other side" of the foundation question. While I haven't a particle of doubt that bees may often be allowed to build combs at a profit, and while I know that I have for years practiced hiving swarms upon starters only in the brood nest and secured more surplus honey in consequence, I am forced to admit that, in the face of all this, it may be advisable under some circumstances to furnish newly hived swarms with foundation. One thing is certain, we must have perfect brood combs, even if they cost something.

When the brood nest is contracted laterally, it reduces the number of combs, and the result is that work is commenced in all of the frames at the same time, and all combs grow alike. For this reason a Langstroth hive contracted to five frames will, other things being equal, lead to the building of straighter combs than will be found in a hive contracted vertically and furnished with eight frames. I certainly have had some as perfect, naturally built combs as it is possible to secure with foundation, and I must admit that I have had some imperfect ones. It seems to me that the suggestion of Mr. J. A. Green, that very light foundation be used, is worth considering and trying.

To those who prefer no increase, yet wish to allow swarms to build their own brood combs, the plan described in the December issue by Mr. Boardman, is most excellent, as I know by experience. It is that of uniting new swarms, at the end of the season, with the old colonies that have swarmed and thus furnished themselves with young queens.

This allows the newly built combs to be assorted at leisure, when the imperfect ones may be melted into wax.

We can have a swarm in a contracted brood nest upon the old stand, transfer the supers to the new hive, and practice the Heddon method of preventing after swarming. This forces all of the surplus into the sections on the new hive. It is all in a "lump." There is only one set of unfinished sections where there would have been two if the old colony had been kept strong and storing in the sections. The old colony will be moderately strong in numbers, have a young queen and plenty of stores in the brood combs. The swarm will be moderately strong in numbers, have an old queen, and but very little honey. Now, at the end of the season we can kill the old queen, give the bees to the old colony, and take away the newly built combs to assort at leisure.

As I think over my own experience, and the reported experience of others, it seems impossible to lay down any set rules in regard to when foundation should be used. The best summing up I can give is, if you can secure perfect combs without it, allow swarms to build their own combs in the brood nest, but give them foundation in the sections; if you can secure mostly perfect combs and wish to unite the bees in the fall, and then sort the comb, do that; if you can do neither, then use light wired foundation. It is difficult to sum up the matter in a few words, because, even now there comes to my mind the plan of having combs built by feeding in the fall, as mentioned by Mr. Boardman, and of having them built by weak colonies and nuclei. It is one of those subjects upon which a man needs to do a whole lot of independent thinking.

EXTRACTED.

Large, Versus Small, Papers.

Those who think that the larger the paper the greater its value, will find food for thought in the following item clipped from that wide awake weekly, *Printers' Ink* :—

"*Printers' Ink* is interested in watching the evolution of the small paper. Even now it is the large paper to which most persons give preference. The majority of people want to feel that they get the worth of their money—in bulk. The standard is gradually

shifting, however, from quantity to quality. Nowadays, one can buy for a dime enough printed matter to keep him busy for a week. Yet the public is beginning to realize that reading matter is not like other kinds of merchandise. One can read only a limited amount of matter, and the coming man will insist upon having it served in crisp, condensed form—without padding. The big paper prints a vast amount of matter that it could dispense with if its editor were not required to fill a certain amount of space. The advertiser, too, finds himself buried out of sight. There is a place for the paper that will print as little as possible instead of as much as possible."

Educating Advertisers.

The REVIEW has had quite a little to say about advertising, but its editor believes, with *Printers' Ink*, that:—

"It is a duty which every newspaper owes to itself to assist in educating advertisers up to making the best use of their space. When newspaper advertisements are better constructed than at present and made more interesting, advertising space will be more in demand and worth proportionately more money."

Why We Wish to Know Who is Talking.

"I can't for the life of me see why so much fuss is made over so many trivial little things in bee literature, and in the conduct of the journals which depend on the pursuit of bee keeping for their living, such as *nom-de-plumes*, putting the names of the writer at the beginning of each article, etc. It would seem as if some of those who write in such a strain, have decided that they must know who writes an article before they will take the trouble to read it, and some articles they wouldn't read at any price, just because the right name wasn't at the head of the article. Away with such childishness.—*Observer in C. B. J.*

Well, Bro. Observer, I can tell you why I wish to know who it is that is doing the talking. I have learned from experience that, although some editors may think the writings of certain men are worth printing, I don't think them worth reading. They may be worth something to others—to me they are valueless. Another man may discover that the contributions of some *other* correspondent are of no value to him. On the other hand, there are some men whose names at the head of articles are of sufficient guarantee to me that they are worth reading. Some men *never* have written anything that I would care to read, while others have never written anything that I *didn't* value. Every one who has kept bees and read the journals for a number of years, has, I presume, had a similar experience.

Keeping Honey Over Winter.

"Hon. R. L. Taylor is an exasperating customer. In his President's Address he spoke of the "fact" that honey "may be kept in perfect condition from one year to another," but didn't tell how. I wrote, challenging him to tell. Back comes a postal, saying, "I have kept honey over in perfect condition, and it sold without question at the same price as new honey, and it was really decidedly better," and a few words of sauce, but not a word about the "how." If comb honey is meant, I have known of only two or three cases of keeping over in good shape, and that on a very limited scale. Whether he has a different or the same plan, it is important to know about it, and Bro. Taylor is not the sort of man to make a statement without solid foundation. Let's make him tell or put him out."—*C. C. Miller in Gleanings.*

I had intended to ask Mr. Taylor to describe his honey house, in this issue of the REVIEW, but so many articles already on hand must be left out from lack of room, that it seemed like folly to ask for more. His honey house is at one side of the apiary, and is built against the end of the barn. Under the honey house is a cellar in which part of his bees are wintered. The honey room is tightly ceiled upon the inside. Whether the walls are filled with any packing I don't know. I have been over there in winter when there was a ton of comb honey in this room. I was there once in February when there was, I believe, two tons in the room. This room is kept *warm* by means of a fire in a stove in the room, and, if I am correct, that is all there is to it. If a universally large crop of honey should cause the price to go unusually low, it might be advisable for those who could afford to do so, to keep their crop over in this manner.

Carniolans as Honey Gatherers.

Quite a number have written asking why I did not report in regard to the honey gathering qualities of the Carniolans. Simply because no surplus was gathered either by them or the Italians. As the REVIEW reported what Mr. S. A. Shuck said about them, it is no more than fair to clip the following from an article sent, in reply, by Mr. J. B. Black, of Pattonsburg, Mo., to the *A. B. J.*

"I had four colonies of Carniolans in the spring. No. 1 gave me 50 pounds of surplus honey, and one swarm. No. 2 yielded 40 pounds of surplus and one swarm. No. 3 gave 50 pounds of surplus and two swarms. No. 4 produced 12 pounds of surplus and one swarm.

I had 19 full colonies (3 blacks, 12 of ordinary Italians.) They stand on my register as follows: No. 5, 5 pounds of surplus. No. 6, 20 pounds. No. 1 gave one swarm. The bees in a five-chamber hive, containing three queens, gave 20 pounds. The rest gave nothing.

My object is to satisfy myself and those who keep but one kind of bees. If my Italians fall behind next year, I shall procure stock from another breeder, and give them one more trial. I have no advice to give and no queens to sell."

Carniolans and Their Crosses.

In reply to a correspondent in the *C. B. J.* Mr. Jones has the following to say concerning the Carniolans:

"Pure Carniolans have not the cross disposition you speak of, neither have they, as far as I can see, the disposition to rob. I never had pure Carniolans do it, but I have had crosses that would rob like everything. It is a very difficult matter to tell a cross between the Carniolans and the black bees except by those who have given the matter much attention, and I think that hybrids are often mistaken for the pure races. A cross between Carniolans and Italians is much better than between Carniolans and blacks. There is no doubt of what you say that the pure Carniolan is not equal to our best Italians, or what we term Italians in this country, which have a slight tinge occasionally of Syrian."

Extracting From Brood Combs.

Some one wrote to Mr. G. M. Doolittle as follows: "When I am working for section honey, my bees are prone to store more or less honey in the brood combs. Had I better extract this honey occasionally?" Years ago we used to hear about "extracting honey from the brood combs to give the queen room to lay," but I did not suppose that, in this day and age any practical bee keeper would ask such a query as the foregoing. Mr. Doolittle gives an elaborate answer of a column or more, in the *A. B. J.*, from which these extracts are taken:

"I have been a careful observer, and find that when bees are at work best in the sections there will be scarcely a pound of honey in the brood frames, providing that the body of the hive is not too large. I mistrust that the trouble with this correspondent is, that his brood chamber is too large, so that the first honey which comes in goes into the brood combs instead of the sections. But the extracting of this honey would only make matters worse, for it would give the bees a chance to put more honey below, instead of going into the sections as we wish.

If any one expects to get a large yield of comb honey and use the extractor on the brood combs at the same time, they certainly will not realize their expectations.

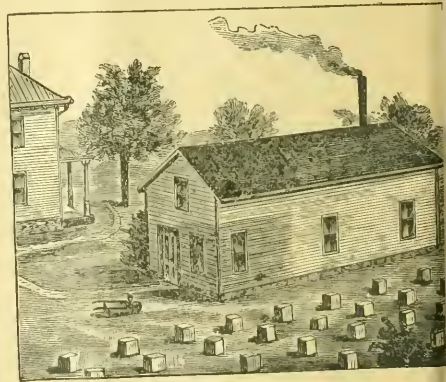
After the bees get thoroughly at work in the sections, let the brood combs alone, and you need have no fear of the queen being crowded, for as soon as the bees are thus occupied they will carry the little honey they may have in the brood combs, with a hive of the proper size, up into the sections, thus giving the queen abundant room.

Bees will always store honey in the brood chamber, in preference to the sections, when there are empty combs or empty cells there, and the more extracting of these brood combs the more empty cells we give, unless the queen has the cells occupied with brood, in which case there will be no honey to extract. Again I repeat it, if you wish a large yield of section honey, keep prolific queens, and let the brood combs alone, after they are once filled with brood in the spring."

Doolittle's Shop and Honey Room.—How to Keep Honey and Have it Better for the Keeping.

The following is an extract from an excellent article written by Mr. G. M. Doolittle, and published in *Gleanings* in 1888. Mr. Root kindly loaned the cuts illustrating the article:

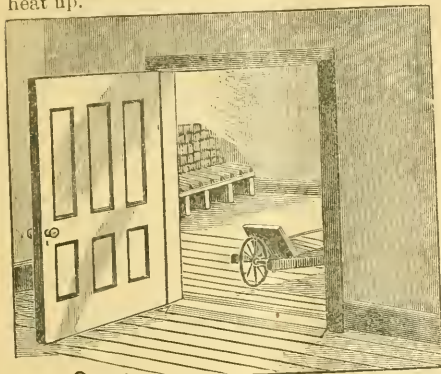
"I have been asked to give a description of my shop, and also to tell how I keep my honey so as to have it growing better after it is taken from the hive, as I have spoken of in back numbers of *Gleanings*. To do this, friend Root thought it best to have some engravings made, so that the description would be better understood.



DOO LittLE'S SHOP AND HONEY HOUSE.

Fig. 1 shows the shop as viewed from the southwest side of the apiary. It is 32 feet long by 16 wide; but if I were to build again I think I would have the width at least 24 feet. In this shop, during the winter season, I do all of my work, such as getting out sections, hives, wide frames, honey boards, and all that is necessary to be done along this line, besides doing much work in the line of getting out bee fixtures for my bee keeping neighbors, and sawing and planing for all who wish it for all ordinary purposes.

In the northeast corner of the shop is the office, in which I write all of my contributions to the different bee papers, and for a few agricultural journals, while the most of my private correspondence is done in the house, as seen at the left of the picture, that being done evenings. The reader will notice that, at the southwest corner of the shop, there is a portion of it that looks darker than the rest. This is where the storeroom for honey is, and is painted a dark color so as to absorb the heat from the sun. This makes the interior very warm in the afternoon of any clear day; and when there are piles of honey in it they get warm enough to carry the heat over to the next day, so that I often get the heat inside to average from 85 to 90 degrees for weeks at a time. In cloudy weather I resort to an oil stove to keep the heat up.



AN INTERIOR VIEW INTO THE HONEY ROOM IN THE SHOP.

We are now ready for Fig. 2, which shows the interior of the honey room as seen through the open door, from the inside of the shop. This room is 7 feet wide by 10 long, it being 8 feet high. In this room I had in 1877 nearly 11,000 pounds of honey, which is about all it will hold and give room for the operator. To the left, through the door, can be seen one of the platforms on which the honey is stored, and the pile as it looks when first started.

Both the outside door to the shop and the one into the honey room are made large and wide so a wheelbarrow can be run in full of honey and out when empty. Now, if we keep the temperature of this room at from 80 to 100 degrees our honey will grow better better and ripen every day till it gets so thick and good that the once thin honey in the open cells, around the edge of the box, will not run out, and the whole will be like "jack wax" as we boys used to term thick maple molasses put on snow. If this temperature is kept up, the honey will not deteriorate one particle for all time to come, as I said in the Query Department not long ago, as I know from a test of four years duration; but let the temperature go down to 50, and sweating and deterioration soon begin. If all is not plain, tell what it is, and I will most gladly explain."

ADVERTISEMENTS

NOW LOOK HERE.

JACOB T. TIMPE, of Grand Ledge, Mich., has three new seedling potatoes that he grew from the seed, and beat everything at the College, and to those who grow the most from one and two pounds, he will give one full colony and four 3-frame nuclei, of his **Five Banded, Italian Bees**, with breeding queens; four 3-frame nuclei with selected, tested queens; and three 3-frame nuclei with tested queens. Look for his ad. in next REVIEW, or send for catalogue. Should you desire any queen bees, let him book your order now and he will make you a special price, for stamp.

3-90-16t. JACOB T. TIMPE, Grand Ledge, Mich.

Please mention the Review.

SOMETHING NEW,

AGAIN, IN

BEE-HIVES.

SEND FOR HEDDON'S CIRCULAR FOR 1891.

Address JAS. HEDDON,

Downsagiac, Michigan.

Please mention the Review.

Names of Bee-Keepers.

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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

W. Z. HUTCHINSON, Flint, Mich.

DOCTOR
TINKER'S

SPECIALTIES.

The Nonpareil Bee Hive and Winter Case, White Poplar Sections, Wood-Zinc Queen Excluders, and the finest and best Perforated Zinc ever made.

Send for Catalogue of prices, and enclose 25 cts for the New Book, **Bee Keeping for Profit.**

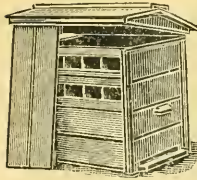
DR. G. L. TINKER,

1-91-tf

New Philadelphia, Ohio.

MAGAZINE Six months free, to introduce. Address "SPECIAL CROPS," Skaneateles, N. Y. 8-90-tf

Our 8-Frame Chaff Hive



IS THE LIGHTEST, cheapest and most practical Chaff Hive on the market. Perfectly interchangeable with the Dovetailed Hive. We want you to see this hive before you order your season's supply, and will send you a sample for \$1.75, made up and nicely painted, with a tin roof,

if ordered now while we are not busy. We are also prepared to rear the very finest **Carniolan and Golden Italian Queens**. Let us book your order now, and we will ship when queens are ready. Send for price list. ROE & KIRKPATRICK, Union City, Ind.

Please mention the Review

Send 25 cts for my book of Discovery and Invention, the

Queen Restrictor.

C. W. DAYTON,

1-91-12t Clinton, Wisconsin.

Please mention the Review.

J. FORNCROOK & CO.,

MANUFACTURERS OF THE

"BOSS" ONE-PIECE SECTIONS.



Will furnish you, the coming season, one-piece sections, sandpapered on both sides, as cheap as the cheapest and better than the best. Write for prices. Watertown, Wis. 12-90-4f

Please mention the Review.

White Poplar Sections.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice, Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,

1-90-4f Bristol, Vermont.

Please mention the Review.

PATENT, WIRED, COMB FOUNDATION HAS NO SAG IN BROOD FRAMES.

THIN, FLAT BOTTOM FOUNDATION HAS NO FISH BONE IN SURPLUS HONEY.



Being the cleanest is usually worked the quickest of any foundation made. **J. VAN DEUSEN & SONS,** (SOLE MANUFACTURERS), 3-90-4f Sprout Brook, Mont. Co., N.Y.

Please mention the Review.

PAY US APRIL 1, 1891,

And get your supplies now, at the following prices, in the flat:—

- 8-frame L. hive, 2 T supers, 8 frames, \$0.80
- Brood frames, thick top bars, per 100,90
- Brood frames, V top bars, per 100, 1.00
- T supers complete, each,13
- One-piece V groove sections, per M, 3.00
- Four-piece, dovetailed sections, per M, 3.00

Clark Smoker, 48 cents. "Jaxon" direct draft, 2 1/2 inch barrel, 90 cents. Bee veil, 28 cts. No. 30 wire, 2 1/2 cents a pound. Novice honey extractors, 5 per cent discount. All honey knives, 5 per cent off. Parker foundation fastener, 20 cents. All bee books at reduced rates. Japanese buckwheat, 60 cents a bushel.

Five per cent off for cash. Give references, and address, with list of goods wanted, 12-9 -4f **W. D. SOPER & CO.,** 118-120 Washington St., Jackson, Mich.

Bee - Hives and Sections.

Largest Bee-Hive Factory in the world. Best Goods at lowest prices. Write for Illustrated Catalogue. **G. B. LEWIS & CO.,** 12-0-4f Watertown, Wis

ITALIAN QUEENS AND SUPPLIES FOR 1891.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-4f. Augusta, Georgia.

Please mention the Review

PRINTERS' INK.

A JOURNAL FOR ADVERTISERS.

Is issued weekly, and is the representative journal—the trade journal of American Advertisers. It indicates to the advertiser how a advertiser should advertise; how to write an advertisement; how to display one; what newspapers to use; how much money to expend; it discusses every point that admits of profitable discussion. Advertisers find it very practical, by many but understood by few. The conductor of **PRINTERS' INK** understands, and their advice is based on an experience of more than twenty-five years in placing advertising contracts for many of the largest and most successful advertisers. A year's subscription costs but Two dollars; sample copies Free.

Address:—



GEO. P. ROWELL & CO., Newspaper Advertising Bureau, to Spruce St., New York.

THAT PITTSFIELD SMITH Wants to Exchange

With you. He wants, AT ONCE, 4 good horses and some cattle. He paid Fifteen hundred dollars for a 100 acre farm near the famous Saratoga Springs, N. Y., and now he doesn't want the farm but does want some stock for his Pittsfield place. Write him and see what he has to say for himself.

Address Plainly **CHAS. H. SMITH, Pittsfield, Mass., Box 1267.**

7-39-12t.

Please mention the Review.

MUTH'S Honey - Extractor,

Square Glass Honey-Jars, Tin Buckets,
Bee-Hives, Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

Apply to **CHAS. F. MUTH & SON,**
CINCINNATI, O.

P. S.—Send 10-cent stamp for "Practical Hints
to Bee-Keepers." 2-88-tf.

Please mention the Review

LEAHY'S FOUNDATION,
Wholesale and Retail,
Smokers and Sections,
Extractors and Hives,
Queens and Bees,
R. B. Leahy and Company
Higginsville, Missouri.

1-90-tf Please mention the Review.

Prices Reduced!

SELECT, TESTED QUEENS, \$1.25. Warranted queens, 75 cents—6 for \$4.00. By return mail. Make money orders payable at Nicholasville, Ky. **J. T. WILSON,**
Little Hickman, Ky.
4-90-tf

GLOBE BEE-VEIL



A center rivet holds 5 strong-steel bars like a globe to support the bobinet Veil. These button to a brass neck-band, holding it firmly—\$1.00.
We have some damaged Veils which we will mail for 60 cents—just as good as any but soiled by smoke in a recent fire. Two for \$1.10. Special rates to dealers, by the doz.

THOS. G. NEWMAN & SON,

246 East Madison Street, CHICAGO, ILL.

The Bee World.

A journal devoted to collecting the latest apicultural news discoveries and inventions throughout the world, containing, as it were, the cream of apiarian literature. Valuable alike to the amateur and veteran. If you wish to keep posted, you cannot afford to do without it. Subscribe now. It is a 20 page monthly at 50 cts a year. Stamps taken in one and two cent denomination. The Bee World is published by

W. S. VANDRUFF,

Waynesburg, Greene Co., Pa.

Please mention the Review.

CARNIOLAN QUEENS.

I expect to continue the breeding of CHOICE Carniolan Queens next season, and orders will be booked from this date. No money sent until queens are ready to ship.

JOHN ANDREWS,

Patten's Mills, Wash. Co., N. Y.
9-90-tf

Bee-Keepers' Supplies.

Before placing your orders for supplies, send for our Illustrated Catalogue We are now making best goods at lowest prices.

PAGE, KEITH & SCHMIDT CO.,

12-90-6t

New London, Wis.

Please mention the Review.

FREE on Test Trial anywhere.
Any **ORGAN** or **PIANO**
On your own terms
No pay before you see and TRY
CORNISH Pianos!
send at once for our new 20 pp. Illustr'd Catalogue. **FREE** to any address
WASHINGTON, N. J.

THE REVIEW.

The distinctive features of the BEE-KEEPERS' REVIEW are those of reviewing current apicultural literature (pointing out errors and fallacies and allowing nothing of value to pass unnoticed), and the making of each issue a "special number"—one in which some special topic is discussed by the best bee-keepers of the country. If you wish for the cream of the other journals, already skimmed and dished up, and to learn the views of the most experienced bee-keepers upon the unsolved, apicultural problems of the day, read the REVIEW. Price of the REVIEW, \$1.00.

Topics Discussed in Back Numbers.

VOLUME I.—1888.

Jan., Disturbing Bees in Winter.
Feb., Temperature in Wintering Bees.
Mar., Planting for Honey.
Apr., Spring Management.
May, Hiving Bees.
June, Taking Away the Queen.
July, Feeding Back.
Aug., Apiarian Exhibits at Fairs.
Sep., The Food of Bees in Winter.
Oct., Ventilation of Bee-Hives and Cellars.
Nov., Moisture in Bee Hives and Cellars.
Dec., Sections and their Adjustment on Hives.

VOLUME II.—1889.

Jan., Bee Hives.
Feb., Mistakes in Bee-Keeping.
Mar., Which are the Best Bees.
Apr., Contraction of the Brood Nest.
May, Increase, its Management and Control.
June, Shade for Bee Hives.

July, Queens and their Influence upon Success in Bee-culture.
Aug., Migratory Bee-Keeping.
Sep., Out-Door Wintering of Bees.
Oct., Bee Conventions and Associations.
Nov., Speciality versus Mixed Bee-Keeping.
Dec., Bees Alone or "Mixed;" if the latter, what with?

VOLUME III.—1890.

Jan., Brace Combs and their Prevention.
Feb., Foul Brood.
Mar., Queen Rearing and Shipping.
Apr., The Production of Comb Honey.
May, Raising Good Extracted Honey.
June, Comforts and Conveniences for the Apiary.
July, From the Hive to the Honey Market.
Aug., Marketing.
Sep., Management after a poor Season.
Oct., Out-Apiaries.
Nov., Apicultural Journalism.
Dec., Use and Abuse of Comb Foundation.

As the supply of volumes I. and II. is quite limited, the price is five cents a copy, except for the Jan, 1889 No., which is ten cents, there being only a few copies left. Of volume III. there is a fair supply, and the price is four cents a copy. Remember that each number is, in one sense, a little pamphlet giving the views of the best bee-keepers upon the topic mentioned.

WHAT OTHERS SAY.

The REVIEW is not very much given to the publication of "testimonials," but, as this issue will fall into the hands of many who have never seen a copy, it may be well to allow them to see in what estimation it is held by some of its older readers.

PROF. COOK says "You are giving us a **SPLENDID** paper."

ERNEST ROOT writes: "The last REVIEW was a good one, as usual. As an editor you are a success."

WM. F. CLARKE writes: "The REVIEW fills a niche all its own, and has fairly earned the right to live. It more nearly comes up to my ideal of what an apicultural journal should be than any other, and I think it well represents the best thought of our most advanced bee-keepers."

G. M. DOOLITTLE says: "I wish to say that I consider the Nov. REVIEW a wonderful production. There is something inspiring and ele-

vating in every paragraph. Don't know that I could add to it, and there is nothing I would have left out. You have certainly placed the REVIEW where no live, practical bee-keeper can do without it. Each number is worth the price of a year's subscription."

EUGENE SECOR writes as follows: "I have just laid down the REVIEW for Sep. What a delightful, chatty spirit pervades your editorials. I want to encourage you in your work. I presume you get enough criticism, even if you do not deserve it. It is no easy task, I believe, for an editor to publish a journal like yours—so nearly always right, and in such a kind spirit towards all. I congratulate you. I believe that editors, like orators, are born, not made. Many a man, educated to the printer's trade from boyhood up, fails to present so clean a sheet as yours. Few proof readers, devoting all their time to that one branch of business, leave so few errors undetected. Rarely do editors, who dream they are born to write, excel your style in clearness and force."

THE PRODUCTION OF COMB HONEY, is a neat little book of 45 pages, price 25 cents. (See advertisement in another column.) The REVIEW one year and this book for \$1.15.
Stamps taken, either U. S. or Canadian. **W. Z. HUTCHINSON, FLINT MICH.**

FEB. 10, 1891.



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.

The Production of Comb Honey.

Although this neat little book contains only 45 pages, it furnishes as much practical, valuable information as is often found in a book of twice its size. It is "boiled down."

It begins with taking the bees from the cellar and goes over the ground briefly, clearly and concisely, until the honey is off the hives; touching upon the most important points; and especially does it teach when, where and how foundation can be used to the best advantage; when combs are preferable and when it is more profitable to allow the bees to build their own combs. It tells how to have a swarm in an empty brood-nest, and yet secure more honey than when foundation is used. Price of the book, 25 cents. For \$1.15 we will send the REVIEW one year and "The Production of Comb Honey."

Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, FLINT, MICH.

HOLD ON!

Are you thinking of buying a queen this year?

TRY AN ALBINO.

They can't be beaten. Send for price list.

A. L. KILDOW, Sheffield, Ills.

Please mention the Review.

KNOWLTON'S BATHING APPARATUS.

Artificial Sea Bath.

Universal Bath. Full, Six, &c. in one. Vapor and Water—fresh, salt, Mineral.

Centennial Award, Medal and Diploma, against the world. Wholesale & Retail.

Send for Circulars. E. J. KNOWLTON, Ann Arbor, Mich.

Old Baths Renewed.

Weight 15 lbs. Adjustable. Many Thousands in use.

Stock Agents wanted every where.

CHEAPEST AND BEST BATH

EVER KNOWN!

FREE CIRCULARS EXPLAIN ALL.

Address E. J. KNOWLTON, Ann Arbor, Mich.

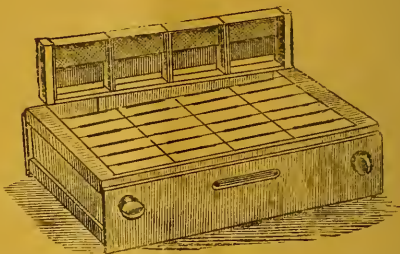
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MERIT TELLS.

IT BEATS ALL

How That Cary Fellow's



NEW STYLE CLAMP

SOLD LAST YEAR.

He could not get them out fast enough, but says he now has a big stock on hand. Write him at once for his 40 page catalogue, which gives a full description, also tells how to manage bees, to control the swarming fever and secure the largest yield of honey. He also makes a specialty of

XX THIN FOUNDATION,

from white wax, which every one wanted last year.

Wm. W. CARY,

(Successor to Wm. W. CARY & CO.) Coleraine, Mass.

2-91-f

Please mention the Review.

CHICAGO

Bee-Keepers' Supply Company.

65 CLARK ST., ROOM 14, A TOPEKA,

CHICAGO, ILL., N D KAN.

Manufacturers of and dealers in bee-keepers' supplies. For prices of bee hives, sections, shipping crates, frames, foundation, smokers, etc., write for circular and special prices before placing your order.

1-91-tf

Please mention the Review

BEE-KEEPERS' GUIDE.

Revised, enlarged, improved, illustrated. Every bee-keeper ought to have it. Price \$1.50. A. J. COOK, Agricultural College, Mich.

Please mention the Review.

Buy Your Early Queens SOUTH

I will have a stock of fine Italian queens as soon as they can be raised here in Texas. Write for prices and particulars.

OTTO J. E. URBAN,

2-91-tf

Thorndale, Texas.

Please mention the Review.

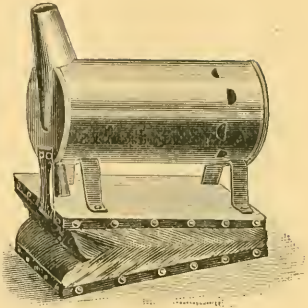
HILL'S BEE-FEEDER AND SMOKER.



This Smoker burns chips or hard wood without any special preparation. Very reliable. Greatest smoking capacity. Easiest to start and cheapest because it saves time.

The Best Bee-Feeder. Most convenient for the bees. No drowning or daubing bees. The feed is taken by the bees without leaving the cluster. From two to seven feeders full may be given a colony at one time which will be stored in the combs in ten or twelve hours.

Smoker, 3 inch barrel, freight or express, each, \$1.20. By mail, \$1.40. Per dozen, \$10.80. Feeders, one quart, freight or express, per pair, 30 cts, by mail, 40 cts; per dozen, \$1.60. Address A. G. HILL, Kendallville, Ind., or H. M. HILL, Paola, Kansas.



Discounts

On orders for queens, I have bought the Hearn queen that, together with her bees, took the first premium last fall at the Detroit Exposition. Her bees are the lightest colored I have seen. Another season I shall offer her daughters at \$1.00 each, before July 1st. After July 1st, single queen, \$1.00; 6 for \$5.00. I also have 20 queens, reared last season, by Alley, from his "one hundred dollar" queen, that I will sell at \$2.00 each. Upon all orders received in Feb. and Mar., accompanied by the cash, I will make a discount of ten per cent. Orders filled in rotation. Make money orders payable at Flint.

ELMER HUTCHINSON,
Rogersville, Genesee Co., Mich.



For Simplicity and Durability,

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3 1/2 inch,	.....	\$2.00
Conqueror Smoker,	3 "	.....	1.75
Large Smoker,	2 1/2 "	.....	1.50
Extra Smoker,	2 "	.....	1.25
Plain Smoker,	2 "	.....	1.00
Little Wonder Smoker, 1/2 "		.....	.65
Bingham & Hetherington Knife, .....		.....	1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,

1-90-1f. Abronia, Michigan.

Before placing your order for supplies, send 75 cts. for a sample of my

DOYETAILED HIVE

in the flat. 7 per cent. discount on Dec. and Jan. orders. JNO. G. KUNDINGER, Kilmarnagh, Huron Co., Mich.

Please mention the Review.

The Bee World.

A journal devoted to collecting the latest apicultural news discoveries and inventions throughout the world, containing, as it were, the cream of apiarian literature. Valuable alike to the amateur and veteran. If you wish to keep posted, you cannot afford to do without it. Subscribe now. It is a 20 page monthly at 50 cts a year. Stamps taken in one and two cent denomination. The Bee World is published by

W. S. VANDRUFF,
Waynesburg, Greene Co., Pa.

Please mention the Review.

Utility Bee-Hive.

Unexcelled for SIMPLICITY, CONVENIENCE and CHEAPNESS. Every part INTERCHANGEABLE, REVERSIBLE and INVERTIBLE. Adapted to interchange with the Simplicity and other frames and bodies. For introductory prices, etc., address

LOWRY JOHNSON,
1-91-1f Musontown, Pa.

Please mention the Review.

Wanted: To correspond with parties having Potatoes, Cabbage, Apples or Honey for sale or to consign. Prompt returns. All correspondence promptly answered. Best of reference. EARLE CLICKENGER, 11-90-1f Columbus, Ohio.

Reference: Editor REVIEW.

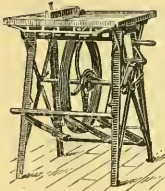
IMPROVED EXCELSIOR INCUBATOR



Simple, Perfect and Self-Regulating. Hundreds in successful operation. Guaranteed to hatch a larger percentage of fertile eggs at less cost than any other hatcher. Send 6c. for Illus. Catalogue.

Circulars Free. GEO. H. STAHL, Quincy, Ill.

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.

4-90-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills.

Pratt's Perfection Queen Cage

Is the best shipping and introducing cage in use. Only \$10.00 and \$20.00 per 1,000. Sample free to any queen breeder. It is manufactured and for sale by **C. W. COSTELLOW**, 8-90-tf

Waterborough, Me.

Please mention the Review.

LOOK HERE.

Before purchasing your supplies for 1891, get my prices and discounts. Price list free.

J. M. KINZIE,

11-90-6t

Rochester Oakland Co., Mich.

Please mention the Review.

Comb - Foundation.

WHOLESALE AND RETAIL.

"Langstroth on the Honey Bee, Revised." The book for beginners; the most complete text book on the subject in the English language.

Bee-Veils of Imported Material, Smokers, Sections, Honey Pails, and Bee-Keepers' Supplies.

Pamphlet on "Handling Bees" 8 cts.

Advice to beginners, circulars, samples, etc., free. Send your address on a postal card to

CHAS. DADANT & SON, HAMILTON, ILLINOIS.

4-90-12t

Please mention the Review.

SUPERIOR WORKMANSHIP AND Low Prices

Have brought us many thousand customers. We do not claim that our prices are below all others; there are some parties we cannot compete with. They do too poor work—but quality of goods and workmanship considered, our prices are "way down." We "guarantee perfect satisfaction." We have built up our business on this guarantee, and shall continue to stand by it. If you have not received one of our 1891 Catalogues, send for one, and also for a sample copy of the "American Bee-Keeper," a 20-page monthly magazine, illustrated. Every bee-keeper should subscribe. Only 50 cts. a year. **W. T. FALCONER Mfg. CO.,** Jamestown, N. Y.

Please mention the Review.

SOMETHING NEW, AGAIN, IN BEE-HIVES.

SEND FOR HEDDON'S CIRCULAR FOR 1891.

Address **JAS. HEDDON,**

Dowagiac, Michigan.

NEW FACTORY.

We are now building our new factory, which will be completed about Dec. 1st, 1890, when we expect to manufacture goods at the lowest possible prices. Send for price list be ore placing your order for supplies. Our former address was Douglas, Ohio, now it is

LEININGER BROS.,

12-90-ft

Ft. Jennings, Putnam Co., Ohio.

Please mention the Review.

Beautiful Bees ALWAYS PLEASE THE EYE.
Good Qualities ARE ALWAYS PROFITABLE.

If you wish for bees and queens that combine beauty and good qualities to a marked degree, write for descriptive circular giving low prices. No circulars sent unless asked for. Japanese buckwheat for sale. **CHAS. D. DUVAL,** 3-90-tf Spencerville, Md.

Please mention the Review.

Illustrated Advertisements Attract Attention.

Cuts Furnished for all illustrating Purposes.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. IV.

FLINT, MICHIGAN, FEB. 10, 1891.

NO. 2.

The special topic of this issue is

“Separators.”

That of the next issue will be

“Protection for Single-Walled
Hives.”

The Influence That Separators Have on the Honey Market.

J. A. GREEN.

I AM glad to see you admit that it would be better if separators were generally used, and I hope yet to see you admit that it would be better for your own interests if you used them yourself.

I freely admit that when the circumstances are all favorable, the sections will be filled with comb so straight and even that separators seem altogether unnecessary. The trouble is that circumstances are not always favorable. Some colonies never build straight combs. Sometimes the hive gets a little out of plumb. Honey may come in slowly or unevenly, or there may not be bees enough to fill the super. All these things and others tend to produce crooked and bulged combs.

Then the supers may be partly full of finished sections with honey coming in so slowly that we want to remove them before they become travel stained. Even during a

good honey flow the outer rows of sections are usually finished much later than the inner ones and it is better not to wait until they are finished.

Without separators there is always apt to be trouble unless all the sections in each row in the super are alike, and this is especially the case when some work has been done on them. If it is near the end of the honey flow the best way to dispose of these partly finished sections is to place all of them on a few of your best colonies.

When this is done, if separators are not used, the greatest care in arranging them will hardly prevent crooked and bulged combs.

Suppose you have secured a crop of honey without separators and are ready to ship it to market, let us say, to be sold on commission. It will take more care and time to scrape off the propolis and pack it in cases, and you are much more likely to injure it in doing so. It is more likely to be broken out of the sections in shipment because there is a greater weight of honey with very little more fastening. I like to use separators in the shipping cases as well as in the supers. Then if one comb should break out it does not injure those adjoining.

This I consider very important. It does not cost much and several times it has saved me a great deal of loss. Of course, it is impossible to use these unless the honey was built between separators.

When your honey has reached the commission store and is stacked up in a tall pile

beside a lot produced with separators, it suffers from contrast.

It may be just as white and nice in every other way, but the uneven reflecting surfaces of the combs destroy its uniformity and make it look worse in the aggregate than the smoother, more uniform separated sections.

Then comes the would-be purchaser, and as he wants to see what he is buying, the cover is pried up and he proceeds to inspect.

He has not been drilled in the mysteries of unpacking bulged honey and he does not know that there is only one row of sections in the case that may be moved with safety, so the one he picks out at random has the projections scraped off as it comes out.

There are about three chances to one that he will put it back sidewise or upside down, which gives chance for more scraping, and so of every one he examines. After it gets to his store, his clerks and customers haul it over in the same way. When a section is sold it is wrapped up in a piece of paper just as a bar of soap would be, laid in a basket, probably bulged side down or with something on top of it, and rattled off to its destination. If it reaches the consumer's table without bruising and leakage it is a wonder. The dealer finds by the time three fourths of the case is sold, that the remainder is in almost unsalable condition. The bottom of the case is covered with liquid honey, oozing out on the counter or wherever it is set. His customers do not call for more and he has hard work to sell the rest of the case without loss; so he concludes he does not care to handle any more honey.

Perhaps you think I have gone unnecessarily into details, but you must remember that little things count and that it is the careful attention to details that brings success in business.

I have watched the progress of honey from the apiary to the consumer, and I know whereof I speak. The past season I have bought and sold a great deal of honey built without separators. I bought it for less and sold it for less than good straight honey was worth, but I would rather not handle it at all.

The producers of other goods intended for the retail trade take the greatest pains, not only that their product shall reach the consumer in the most attractive and perfect condition possible, but that the retailer and

all who handle it may do so with as little trouble and waste as possible.

The honey producer by careless methods discourages the sale of his product and makes it unnecessarily expensive and unattractive to the consumer, thus diminishing his market to an extent difficult to estimate.

There is another reason just in this line for using separators, which is that they make the sections more uniform in weight. Almost all dealers prefer to sell honey by the section rather than by weight, and most consumers, too, prefer this way.

In the long run they do not lose by it and it simplifies matters very much to say that honey is 15c a box instead of saying that it is 20c a pound and that there are *about* three quarters of a pound in a box, and then weighing every section. If separators and full sheets of foundation are used, there will be but a trifling variation in weight.

When the sections are filled with foundation I do not think the yield is at all decreased by the use of separators.

It may be thought that when only narrow starters are used and honey is coming in slowly, with cool weather, that separators make the bees a little slower about beginning work in the sections. After they have once begun work, though, this disadvantage disappears.

As to whether tin or wood should be used, the general verdict that wood is better for loose separators and tin when nailed to wide frames, is correct.

I use both. Both have their advantages and disadvantages, but I prefer the tin.

DAYTON, Ill.

Jan. 29, 1891.

When to use Separators; Comparative Merits of Wood and tin; Tin Conducting Heat; Dovetailed Hive.

DR. C. C. MILLER.

YOU ASK about separators, "Is it always best to use them?" No, if I were raising only what honey I would use on my own table, or if my market were close by and would be satisfied to take my honey directly from the hives without any scraping, I think I should use no separators.

"When shall they be used?" Whenever you want your honey, (comb honey, of course) to be packed for shipment in some receptacle other than the one that was on the hive.

"Shall they be of wood or tin?" If loose separators are to be used, wood; if fixed, tin.

"How shall they be adjusted?" Doesn't that depend altogether on the place in which they are to be used?

You say, "If the honey flow comes on with a rush, etc., there is little need of separators." I have an impression that another item bears heavily on the case. If the bees are somewhat crowded for room, I suspect they will make pretty straight work without separators. For this reason those who favor natural swarming, are likely to have straighter work without separators, than those who try to discourage swarming by giving plenty of room.

Please remember that in the answers I have given to your questions I have answered only for myself. But I have had much experience with and without separators. At first I didn't need any separators, because I could haul in a wagon directly to my customers all the honey I had to sell. After I had for some time used separators, the success of others without, by means of the old Heddon super, induced me to try it. I saw sections raised by Heddon himself, and, with the self-same appliances, I was quite sanguine of success. But I didn't succeed—much to my regret. I suspect an important reason was that friend Heddon allowed his bees to swarm and didn't mind crowding them, while I gave each colony about one more super than he did. Even with the best success that any have had without separators, I suspect that more time must be spent, when packing, to get all in straight than I should like to spend.

"Is there any objection to the use of separators, aside from their cost?" Well, separators may not lessen the yield, but they don't make it any more, and I'm afraid the bees will do just a little worse for having a lot of wood or tin in their way. Another thing is, that, compared with a nice, straight section raised without separators, one raised with them has a "lean" look, as Heddon says.

When you bring together from different places a lot of sections not quite finished, if no separators have been used you'll have a sad job. If you've never tried it, just think of the pleasure it will be to take the same lot if they have been separated, every one of them as straight as a board. Well, let me tell you, that's nicer in theory than in practice. For some reason, they never work quite

so well as if left just where the bees started them.

The reason you give why wood is not good on wide frames—because it is split or injured—is not the principal one. I have used tin in T supers, and many wood on wide frames, and in neither case would they keep straight. That's the objection. Put a tin separator in a T super, and not being fastened at either end it makes use of its freedom to bend a little here and there, instead of keeping stretched out straight, and every now and then you'll find one end of your separator on the inside of your section. The wood separator will not bend in the direction of its length.

Put a wood separator on a wide frame, and as it is constantly shrinking and swelling, the nails, trying to keep it in one place, will make it curl sidewise. Wood separators should not have even a suspicion of a knot in them. They'll curl if they have.

There you go again about tin conducting heat. Of course no heat will be conducted out of the cluster if no separator is outside of the cluster. But every bit of the separator that's outside of the cluster, not merely the edge but the full broadside, will be constantly dissipating heat just so long as the heat of the cluster is greater than that of the surrounding air. Just think how it will be on a cold night with a tin separator in the cluster. One end of the separator, or rather each end, will not be entirely surrounded by bees, at least, I think I never knew it so. This projecting end will be cold, and the bees will draw away from it, leaving more exposed, and, in turn, the bees will leave that, until, if the night is cold enough, I don't believe a bee will be left on the separator.

Bro. H., your experience differs from mine. I have "seen the necessity for a stronger joint" than the common square joint. I've had plenty of nails started and sides or ends of hives warped so that the bee space was made smaller or larger. Neither was it because the heart side was in. But my hives are not painted. Then I like the Dovetailed corner because it keeps the hive more rigidly square when the bottom board is not fastened on. It's very much easier to put it together just right. I think that a pretty big item. No matter how much care you take with the square joint, something will be just a little out, and if any pieces are warped, the difficulty is increased,

whereas a bungler can put the dovetails together just right.

MARENGO, Ill.

Jan. 21, 1891.

[Yes, Doctor, the surface of the tin radiates heat, but it can radiate no more than comes to it through a piece of metal (the separator), the conducting power of which is represented by the edge of the end of the separator. I have used a few separators, but I have never noticed any of this "drawing back" of the bees away from the tin. I watched with interest to see if you were going to say you had *seen* such action on the part of the bees. I am yet in doubt on this point. You ask me "to think how it will be."

All the hives I ever had were made by myself from nicely seasoned lumber. They went together nicely and *squarely*; were kept painted, and they *stayed* square; and I ask for no better joint. But then, I am not everybody.—Ed.]

Separators Don't Lessen the Yield, but They are an Expense From Which There is no Cash Returns.

E. L. TAYLOR.

WHO THE question of using or eschewing separators I am more inclined, than upon almost any other question relating to apiculture, to say, with Dr. Miller, "I don't know."

I use hundreds of cases without separators and hundreds with them, both of wood and tin and each plan is so satisfactory that I am quite disinclined to give up any of them.

With the extended experience I have had I have been unable to find any indication that one method has any advantage over the others in the matter of the amount of honey secured.

If the question were solely as to the point of financial profit—economy of money and time—I should clearly be compelled to decide against separators, but we all have our little weaknesses in the matter of taste. Fine appearance, satisfaction and comfort always count to some extent. Every one would sacrifice something to produce what "suits" him, so I am unable as yet to decide that way.

The advantages of cases without separators lie principally in their greater comparative cheapness, the greater rapidity with which sections may be put in and taken out

and in the greater amount of honey which sections so filled will contain. The first cost is only about one third of that of single tier cases with wide frames and tin separators and about one-half of that of cases with T tins and separators.

The first cost, to one who has some surplus funds and who is certain that he shall want to use the cases till they or he wears out, is not so important, but to one whose purse is slender, or who is not certain that he will remain long in the business, or that he may not soon want to throw them aside for a new kind, the question of cost becomes a grave one.

T cases have the advantage only of permitting the use of separators and thereby of securing combs of superior straightness, but with single tier cases holding wide frames with separators there is the additional advantage of better protection to the sections against staining and propolis at times when they must be left on the hives a considerable length of time to be finished.

This case, if the sections and the wide frames be properly made—time and money aside—is perfection. The sections are easily cleaned, are as white as new, and are very rapidly crated. The combs are perfectly straight, fill the sections better than those produced in any other way, and if the honey flow be good are nearly as heavy as those produced without separators. Another remarkable advantage is that the proportion of partly filled sections is very much less. The bees follow the frames begun on, out to the ends, before spreading out laterally when the honey flow is not abundant, so that three or four frames are sometimes entirely filled while those outside are scarcely touched.

The drawback to these beautiful sections is that I can discover no appreciable addition to the wholesale selling price.

There are some who complain that without separators they cannot produce combs sufficiently straight to readily crate. I cannot understand it. I have produced many tons without separators, and almost every section was crated. Except that a little more time and care are required, there is no difficulty.

In conclusion, I think the whole matter may be correctly summed up in a word. For profit alone use no separators; if straighter combs are desired use the T super with separators; if the eye and the taste are

to be gratified at the expense of financial profit use single tier wide frames with separators.

LAPPEER, Mich.

Jan. 30, 1891.

The Review Does Review—Advantages of Foundation.

JOSHUA BULL.

SOME have said that the REVIEW does not review; but is not this a mistaken conclusion? Although it does not proceed in exactly the way in which many of us at first expected it would, that is, by sifting out the chaff and giving us the clean, meaty kernels of the ingrained, valuable thought which may perchance be found in the voluminous bee literature of the day, yet, instead of this, the editor writes up the topic for the next issue one month in advance, and invites all correspondents to review his leader, criticise, and enlarge upon the subject. By this means is obtained a compilation of the collective wisdom of many minds concentrated upon one theme. It seems to me that this might very appropriately be called a *grand review*.

Now, in regard to the question as to the advisability of using foundation at all possible times, there is likely to be some diversity of opinion, inasmuch, as results which by some would be considered quite satisfactory and profitable, would by others be regarded as insufficient to justify the necessary expense.

Besides this, there are some other problems which have an important bearing upon this matter, which need to be settled, or better understood, before we can intelligently decide just how far it is profitable or unprofitable to use foundation at all possible times, and in all places. Perhaps first among these will arise the question as to whether the secretion of wax by bees is a "physical necessity" over which they have no control; or, have they not the predominant volition to produce wax or not, according to their will and pleasure, as circumstances may require? I am inclined to favor the latter proposition; and in support thereof will refer to what every observing bee keeper must have noticed, viz., that when bees are supplied with ready built empty combs, all they can occupy, they will not build new comb, except in very rare cases. Therefore the proposition does not hold good that "comb building must of ne-

cessity go hand in hand with honey gathering" at all times. It is only when the comb which they already have is being constantly removed that they need to be continually building new. With these facts in view, it seems to me that the idea that the secretion of wax is a "physical necessity" over which the bees have no control, is quite out of harmony with the economy of nature.

Again, I believe that it is universally conceded that in order to produce much wax, the bees must of necessity consume an extra quantity of honey over and above what would otherwise be necessary. Now will anyone presume to say that the bees cannot desist from consuming this extra amount of honey to be converted into wax, when they have no use for the wax? That they secrete wax to some little extent involuntarily when handling large quantities of honey, there is not much room for doubt, but all that would be produced in this manner could readily be utilized in drawing out foundation, and capping brood and honey, without allowing any to go to waste.

You intimate in your leader that bees will work with increased zeal when allowed to gratify their instinct for comb building. But can it be proved that such is the case? If two new swarms of equal strength be hived at the same time, and to one be given drawn combs, to the other empty frames with starters only, when there comes a honey flow will not the one having the drawn comb manifest equally as much zeal in gathering honey as the other one which has new combs to build? The former can send a much larger force to the fields than the latter, and therefore will be able to store a proportionately greater quantity of honey. However much it may gratify their instinct to indulge in the operation of comb building, the fact remains that it is a serious tax upon their time and energies to have to build all new combs wherein to raise brood and store their honey. We should bear in mind that they do not ordinarily engage in comb building to any considerable extent only when there is honey to be gathered to put into it, unless they are being fed. How then are we to know whether it is their desire to build comb or the opportunity to gather honey that inspires their zeal? I am inclined to believe that it is the latter. I fully agree with your idea that the reason why more extracted than comb honey can be produced is "because the bees are furnished with drawn

combs, hence are not delayed by lack of storage." Or, in other words, are not delayed by having to build new comb. And what better argument can be offered than this in favor of giving the bees all possible advantage by the use of full sheets of foundation? Although there may be some minor considerations in favor of allowing bees to build natural combs, yet about the only way that I have ever been able to get all worker comb satisfactorily built without the use of full sheets of foundation, has been in nuclei, or weak colonies, according to the Doolittle plan. I have tried hiving swarms on starters only in the brood frames, according to instructions given in your little book, "The Production of Comb Honey," and persisted in trying, hoping to avoid the expense of foundation, but the result has been almost invariably too much drone comb, therefore I have discontinued the practice. A young and vigorous queen is no sure guarantee against drone comb in such cases if the swarm be a very large one; and I generally manage to keep them from swarming until they are large.

Another objection to this plan is found in the fact that where narrow starters only are used in the brood nest, and partly filled supers put on above, that pollen is sure to be carried into the sections, and many of them will be rendered unfit for market thereby. These difficulties can be obviated by the use of full sheets of foundation, or drawn combs in the brood nest. Then if partly filled supers are at once put on, the bees will carry most of the honey brought in right up into the super and store it with that which is already there. If they do at first put some of it into the brood combs below, so soon as the queen needs to occupy the room with eggs and brood, they will readily remove the honey "up stairs," and by this time it will have become pretty well ripened and ready to cap over as soon as placed in the sections.

I use full sheets of foundation in sections, and think that I get more honey by so doing, and the comb is built out and fastened to the wood, generally much better than when only starters are used. I use full sheets in brood frames, and thereby get good worker combs.

The principal objection which I find to the use of foundation is the expense. But my experience in using it has led me to the conclusion that I can obtain enough more honey by using it liberally, than I could get other-

wise, to more than pay all the extra expense, besides getting better built brood combs, and much more satisfactory results in a general way by having things more as I would like to have them.

In closing I offer this recommendation: Fill every section and frame with foundation, and when all the sections are filled with nice honey; take them to the market and exchange them for money.

SEYMOUR, Wis.,

Dec. 5, 1890.

Rejoinder to Dadant's Criticism on the Wax Experiment.

E. E. HASTY.

IT OFTEN happens that we make rejoinders when it would be better to simply let the matter rest; but I think my experiments, as to the amount of honey required to secrete a pound of wax, are important enough that they should be defended at every point where they are capable of defense.

First, a word as to manners. It seems to me that I would rather a man would fling an ungentlemanly epithet at my head than to call me ignorant of a science I think I have a fair general knowledge of. 'Spect most people feel the same way. Let us have one more inch of reform all around the shanty. Friend Dadant imagined he saw a little peg, on which the charge of ignorance of chemistry might be made to hang, in this sentence of mine, "I am not sure that thick honey declines in weight any more in being transformed into wax than molasses does in being transformed into candy. Why should it?" I thought at the time of explaining the chemical bearings of the thing, and decided not to. No man can turn aside to take up every slightly relevant point—to stop every gap where dullness might misapprehend, or an adversary start a cavil—without ruining the force and usefulness of his page.

As he has "drawn" me on the point, I will explain. Honey and wax are two different substances, it is true; but they are two substances *with the same ingredients*, namely, carbon, oxygen and hydrogen. There is a difference in the proportion of the ingredients; and therefore when one substance is transformed into the other there is necessarily a percentage of loss in weight. Whether there is a further loss, beyond what the physical conditions of the problem de-

mand, is not a matter for us to dogmatize about. Our rightful business is to experiment and find out. What I said I was not sure of amounts to this. Is the water of very thick honey (twelve per cent. some one says), plus the necessary loss by the readjustment of the three elements named, greater in the aggregate than the loss thin molasses sustains when being boiled into candy? Were honey and wax definite compounds the matter would be easier to get at; but neither is so. Three different waxes, in varying quantities, each with a different proportion of carbon, oxygen and hydrogen, are bound together in beeswax. As to honey, if I am right, science cannot yet tell *certainly* how many different sugars there are in it. The proportions of each vary greatly in different samples. I may as well confess I had not in mind how large a sacrifice of oxygen was necessary in transforming honey to wax. There are some indications that the actual secretion of wax is from the cane sugar which abounds in fresh nectar, but is hardly found at all in ripe honey. In 100 lbs. of cane sugar there are over 42 lbs. carbon, over 51 lbs. of oxygen, and nearly $6\frac{1}{2}$ lbs. of hydrogen. In 100 lbs. of wax, as per Cook's Manual (whether from a single sample, or an average of several samples I cannot say), there are over 79 lbs. of carbon, over 13 lbs. of hydrogen, and of oxygen only $8\frac{1}{2}$. So the necessary loss of substance approximates to one-half, exclusive of the water.

But how about friend Dadant's chemistry? He says: "Beeswax is no more honey than the fat of a hog is corn." Beeswax and honey have identical ingredients. Corn and lard have not. A considerable part of the corn is not nutriment at all. Another considerable part is nutriment with nitrogen in it, and therefore of doubtful avail in making lard which has no nitrogen.

Hearty thanks for the concession of seven pounds instead of twenty. "The world does move." The former figure will not, like the latter, impel every beginner to think every ounce of foundation he can make his bees use *must* be used at a profit, whether he can see any profit or not. Now give us the better conditions of fresh natural nectar instead of old honey, or concocted feed, a natural *swarm* of bees instead of a disgruntled old colony, mid-season instead of the time of year when bees are becoming semi-torpid, and liberty, and then we shall all get on

further, little by little, clear to the ultimate truth that there is, practically, no mysterious loss at all.

Mr. Dadant says my bees remained idle in the hive to hold honey. Let us see. Please confine attention for the moment to the experiment which gave the best results. These are the four days' gatherings. First day, 5 oz.; 2d, 5 oz.; 3d, 22 oz.; 4th, 16 oz. The third and fourth days there was, no doubt, comb to put the honey in. If there was any staying at home to hold honey it must have been the first or second days. Does not Mr. D. know that a four pound natural swarm has young bees enough, that do not yet go to the fields, to hold a great deal more than five ounces of honey? and that the field bees prefer to give it to them, even if there was ever so much empty comb? He knows these things very well indeed. He seems to be objecting without paying any careful heed to the matter before him. Moreover, notice the queer mathematics by which he makes the experiment support the 7 to 1 ratio. I said my experimental bees lost weight, four ounces each night, on the average, and that I equally divided this between food and wax. He says, "If bees consume *two and a half* ounces of honey during the eight hours of a July night, &c." This is not a slip of the pen, or a typographical error, for he directly multiplies it by 3 and makes $7\frac{1}{2}$ the product. Now, why does Mr. Dadant, one of the ripest practical apiarians in this or any country, deliver such wild blows? A charitable theory occurs to me that he went over the experiment with some approach to care years ago, and that he now sets his conclusions before us in a mixed and half-remembered state.

But, to return, there is a real difficulty at this point, on account of honey that escapes the scale, by being gathered in the morning and digested before night. My critic says, "Mr. Hasty forgets." How did I forget? By expressly stating in these plain words—Some honey gathered at morn is eaten and dissipated before night, and so escapes the scale, while the wax product of it remains. *To balance this*, on the other hand, all these pounds and ounces are pounds and ounces of rather raw nectar, not of ripe honey." Now, it was open to Mr. Dadant to say, if he chose, that I did not make allowance enough for digestion by day. He might even object to the whole plan of offsetting one thing against another. But to

say I forgot what I stated at length was not proper criticism.

If he insists on reading the elements of the experiment in a different way, without any offsets, he must make a reasonable allowance for the reduction of nectar to honey. Note that this nectar was all weighed the first time inside of fifteen hours after gathering; but when cut out and weighed the second time part of it had been ripening in the hive a much longer time, and was still quite thin. My first extractings one year bothered me by being thin; and on one occasion I boiled down 6 lbs. to $3\frac{1}{2}$. This was a reduction of 42 per cent. If we take the final 11 ounces of the second experiment and add to them 15 ounces for nectar gathered but not weighed (the amount being indicated by the night losses) we have 26 ounces of nectar. Reduce this 40 per cent. and we have 16 ounces of ripe honey. The wax it made was 4 ounces, indicating a ratio of four to one. If complaint is made about too much *estimating*, let me remind the reader that approximating the work of bees at work in the natural way is worth *something*, while exact figures on work that is unnatural are constantly liable to be worth just nothing at all.

As to the Simmins experiments, it is to be regretted that we have not the exact method of procedure (at least not in the REVIEW's quotation). Apparently he waited till there was no more honey in the fields, and then fed in the open air—colonies not in the experiment being shut into their hives. If so the ratio of $6\frac{1}{2}$ to 1 is excellent indication that 3 to 1 may yet be found none so small for perfectly normal work. Mr. Simmins wishes a considerable allowance to be made for the low temperature at the time. Another thing not mentioned occurs to me as likely to affect the result even more than the temperature. At that time of the year bees strongly incline to go into a semi-dormant state. This is noticed even in Cuba, where it is warm all the time. This sluggish inclination is a source of uncertainty, and we cannot be *sure* that we have anything like their best accomplishment during the months when it prevails. Again, we cannot at this time of year have fresh nectar from the fields. If kept for the purpose it will be quite sure to be damaged more or less. If we try to fabricate a feed equal to it we shall incur risk of falling short. Chemistry may be satisfied when

practical results "kick." Yet again (and possibly the most important of all), we cannot late in the season take down a natural swarm from the bough and set them at the experiment the first work they do. To take a settled colony, and plunder them of all their brood, and fix their interior so they must needs turn their main attention to comb building immediately, is a fearful overturn of their affairs, the best that can be made of it. And bees are among the most contrary of living creatures. With a new swarm matters are just the reverse of this. A swarm is pleased to have their new home without brood, pleased to begin comb-building with all their might in an empty domicile, *and would be displeased to have things otherwise*. To have our little fellows plastic in our hands, and anxious to do just what we want them to do, is an advantage we cannot afford to dispense with if we want the best work done.

RICHARDS, O.

Jan. 21st, 1891.

[In the Simmins experiment the bees were not confined to their hives but allowed to fly in a room 10 x 50 feet in size; but the season was autumn, when the weather was far from warm, and a "made up" swarm was used. ED.]

Workshop, Honey-House and House-Apiary.

JOSHUA BULL.

HAVE three buildings for the use and convenient management of my apiary.

The first is a work shop, 16x16 feet, with 14-foot posts, and two floors. The frame is sheeted up on the outside with matched lumber, then papered and clapboarded to make it warm; and painted "warm drab" to preserve the clapboards and make it look nice. On the lower floor is a work bench, foot-power saw, and such tools and implements as are needed for the construction of hives, supers, and other fixtures for the apiary. It is provided with a large box-stove to heat it up in cold weather. The chamber is used for a store-room, also for paint shop, when the weather is not suitable for out-door painting.

Building No. 2 is a honey house 20x25 feet. This also has two floors. The outside is clapboarded and painted "lemon-yellow;" trimmed with slate color. The floors are made of white ash and oak, each alternate

board being ash, and oiled, without paint. As we enter this building the stairway is immediately in front of us, just far enough back so that the stair door will not clash with the outside door if the two are swung open at the same time. At the right is a room 12x20 feet, which is wainscoted from the floor up about four feet, above which it is lathed and plastered. This room is used for general purposes, such as folding sections, setting foundation, filling supers, emptying supers, scraping sections, extracting honey, etc., etc. It is provided with a section press, a honey extractor, a machine for removing sections from supers and wide frames, and a work table. Near the outside door is a wash-bowl and towel-rack ready for use when the hands become smeared with honey or anything that needs washing off. Back of the door on some three cornered shelves that just fill the space behind the door when it stands open, is a place for smoker and other tools used in the manipulation of hives, frames and supers.

In one corner of the room arrangements are made so that, if desirable, seven colonies of bees can be placed upon shelves with passage-ways through the end wall of the house for the bees to go out and in. These colonies can be employed when necessary to complete partly filled and unfinished sections, and if found necessary to "feed back" for that purpose, it can be done more conveniently than to go out into the open yard to do it. If the feeding is done inside, the suspicions of the inquisitive passer-by will not be aroused by catching a glimpse of the (to him) mysterious operation.

This room is well lighted by three windows, each containing twelve panes of 9x14 inch glass, and all are covered with wire-cloth screens nailed on to the casings outside, with bee escapes at the top. If the windows were set open, and a whole swarm of bees let loose inside, they could all find exit in a very short time. Back of the staircase is a dark closet, or sulphur pit, large enough to contain 400 or 500 brood combs, where they can be smoked with sulphur when necessary for the destruction of moth worms. A ventilator allows the smoke to escape when it has done its work, without letting it into other parts of the building.

In the other end of the building, at the left hand as we enter the outside door, is a room 10x20 feet. This part is sheeted up on the inside of the studding with $\frac{3}{4}$ inch

boards, then lathed and plastered over the boards. If at any time it is found desirable to make it warmer, the walls can be packed with sawdust or other material by pouring it down between the studding from the chamber above. This room has two windows, one in the front and one in the back end. These are also covered with wire-cloth, same as the other windows. This is my store room where I keep my honey until it is sold. A part of my plan (not yet carried into execution) is to arrange shelves crosswise in the center of this room on which to place sections which may need further ripening, and by opening the windows on both sides expose them to a free and rapid circulation of air when the weather is warm and dry.

The chamber to the honey house is all in one room, and is not finished off any further than that it has a good matched floor laid down. I use it for a miscellaneous storage room for supplies of whatever kind; and in winter for empty hives, supers, honey boards, etc., etc., where all are kept dry and free from vermin, all ready for use when needed. The whole building is made impregnable against mice and rats, unless they happen to slip in at the outside door when it is open.

I do not claim that these buildings are models for others to imitate, but have simply described them just as they are as near as I can; and would say that I have found them quite satisfactory so far as I have used them. The honey-house was not completed until last spring, and, therefore, has been in use only one season. I have not yet proved the utility of having hives of bees right in the honey-room, on which to get partly filled sections finished up; but I now have a number of colonies packed therein for wintering, and, if all goes well, expect to give the matter a practical test next summer.

Building No. 3 is a bee-house, or house-apiary, built in form of a half hexagon, being twenty feet long on the north side, the other three sides measuring ten feet each, and facing the south-east, south, and south-west. It is arranged inside to accommodate ten colonies, with entrance to hive through side wall of the building. (No colonies are placed on the north side). The platform upon which the hives stand is about twenty-four inches above the ground, (there is no floor). The bottom boards upon which the hives rest are made six inches longer than the hives in order to admit of moving the hive backward and forward thereon, and are

nailed permanently in place; a strip is nailed on at each side to hold the hive up $\frac{3}{8}$ of an inch above the board. In the center of each bottom board an opening is made 2x8 inches leading into a funnel-shaped tube which passes downward through a box containing eight inches of packing and extends fifteen inches below the brood nest. At the lower end of this funnel is an opening 1x8 inches for winter ventilation. By means of a slide which is attached to the under side of the bottom-board, the amount of ventilation can be regulated at any time to suit the requirements of the bees. It may be entirely closed during the working season, and the hive moved close up to the wall of the house in order to save as many steps as possible for the faithful little workers when they labor so hard to gather in the harvest.

To prepare them for winter, the hives are drawn backward, and a piece of board six inches wide and as long as the width of the hive, is laid across in front and rests down upon the rim of the bottom board upon which the hive rests; this provides a covered passage-way out. Movable boards prepared for this purpose are placed about eight inches in the rear, in such manner as to form a sort of bin a little deeper than the depth of the hives. Then the space at the back, in front, and between the hives is filled with sawdust, chaff, or any other suitable material for winter packing. The hive covers are removed, a piece of cotton cloth is spread over the top of the hive, a folded newspaper is laid on over this cloth, and then a sawdust cushion four or five inches in thickness and of sufficient length and breadth to extend two inches beyond the wall of the hive on all sides in order to lap well on to the other packing, is placed on over all to complete the job. When continuous cold weather sets in, I close the outside entrances as near air tight as I can make them, and draw back the slide in the bottom board to give whatever ventilation is necessary from below through the afore named funnel. Thus the bees are warmly packed, have plenty of fresh air, and are not exposed to the chilling blasts of the wintry winds. No attempt is made to make the body of this house warm; on the contrary it is made open and airy in order that there may be no accumulation of moisture inside. The protection for the bees is in the packing around the hives. If, at any time during winter, there comes a time when the weather is suitable, the outside en-

trance can be opened and let the bees have a flight, and then close them up ag in. By this arrangement bees can be restrained from flying in unsuitable weather in the spring of the year, and possibly thereby prevent spring dwindling to some extent.

My intentions are to have those bees remain here winter and summer. Of course, the packing will be removed when warm weather comes. I am aware that house apiaries are objected to by some people because when a hive is opened for any purpose, many bees will fly inside, and cannot be readily gotten out of the house again.

To obviate this difficulty, I have provided an opening 4x10 inches directly in front and above the entrance to each hive which can be opened or closed in a moment at pleasure. When manipulating a hive, if this is set open and all other lights excluded, except just enough to enable the operator to see what he is doing, I think that nearly all of the bees which take wing will fly immediately to this opening and pass out; and, if any young bees are among them, which have never before been out to take a flight and mark their location, they will find themselves right at the entrance of their own hive and will likely enter there instead of going elsewhere.

This house apiary having been built since the close of the last honey season, I have not, therefore, had an opportunity to test its practical merits. Meanwhile, I feel quite sanguine in regard to its utility, and shall take pleasure in reporting results another year.

SEYMOUR, Wis.,

Dec. 5, 1890.

Whitewash vs. Paint.

JOHN HANDEL.

HIVES painted with lime and ochre, if done right, will last as long as those painted with oil.

In the first place, the lime should be slacked, as for plastering, at least a week before use, a month is better. It should have more body than oil paint. The thicker the better, so long as it will spread. By mixing yellow and red ochre with it different shades can be given.

The painting must be done in a damp place, and the work left there for at least one week. The lime should dry as slowly as possible, so that the whitewash will soak

into the wood. A damp cellar, or wet straw thrown over the hives, will do.

I also have my honey house painted with lime and ocher, and just enough oil to form a film over the work to keep the water from evaporating. The work was done two years ago, and looks better than oil paint.

SAVANNA, Ill.

Jan. 24, 1891.

Building Cellar and Honey-House Walls of Concrete.

S. A. SHUCK.

EDITOR REVIEW.—At the time of building all the honey house I have, I did not own the premises and did not know that I should ever own them. Then, too, my purse was quite small, and consequently the building was made small, 10x14 feet. As I had a hundred colonies of bees before I built a honey house, it became necessary to do as I had been doing with my empty hives, stack them up out doors. With the past season's crop in this little room there was scarcely standing room for two persons to say nothing about storage for surplus extracting combs.

So I have just completed the walls of a bee cellar, 16x30 feet, over which I hope to build a shop and storage room next summer. The principal thought I wish to present in this communication is concerning material. But before I enter into this I wish to say that I want my buildings at one side of my apiary, especially the honey house, as in addition to the objections mentioned in your leader, I do not like to have my work all around the house. Then, too, I think there is such a thing as having things too convenient sometimes. Especially is this true when there are several hives close to the honey house door. It is so handy to pick up a super, walk to a hive and place it on and go back into the honey house, get another super and go to another hive, &c.: while, if the hives were a little farther away, we would place several supers on our wheelbarrow, or whatever we have to carry them on, and thus save time and labor, by making fewer trips to and from the honey house.

Now about my cellar and the contemplated work shop.

The brick for my cellar walls would have cost me not less than \$75.00 laid down on the ground, but the materials used, which are

lime, cement, and cinders from an old furnace, cost me less than \$20.00. The work of excavating the cellar, putting in the walls, including cost of material, all combined, except my own labor, cost me less than the brick would have cost me.

While one of our townsmen, who spends considerable time sitting at our village store, has wagered a "forty dollar trotting rooster" with the young man who helped me do the work that my walls will fall down in less than a year, I do not feel uneasy about it.

The walls were put up with what is known as concrete, using the cinders instead of small stone. Owing to the time of year, I have braced the walls and will not plaster them until next summer. I have put on a set of joist and covered the cellar over so as to prevent freezing, and intend to put my bees in there for the rest of the winter.

I intend to continue the concrete for the walls of the shop, and accomplish two purposes in so doing, that of making them fire-proof and perfectly safe against rats and mice.

If my man loses his "forty dollar rooster" I will let you know at once.

LIVERPOOL, Ill.

Jan. 1, 1891.

What I Think I Know About Honey Houses.

ARTHUR C. MILLER.

THE FIRST consideration is the location of the building. In what part of the apiary shall it be put? Put it where Pat put the handle to his jug—on the outside, and on that part of the outside that was nearest to him.

If it is in the middle of the apiary it is frequently inconvenient and sometimes unsafe to approach it with a horse and wagon, and it is folly to put the building where everything must be lugged or wheeled to and fro by hand power.

In planning the building, let the first concern be the honey room.

Bro. H. says in his leader, "there must be a shop proper, a storage room for hives and fixtures and perhaps a special room for storing honey."

Bless my stars! What earthly use is the rest of the building, the hives, or the bees, if I have not a proper place for caring for my honey, the product of my labor, the object of all this investment.

It may be necessary, and it is generally best, for me to hold my crop for awhile, and shall I store it in the room where my hives are, where it can get dusty, soiled, and more or less injured? No, sir. I will have a room on purpose to put it in—a room where I can keep it dry and warm—and into this room it goes from the hives, and there it stays until sold.

In this room is done all the extracting, cleaning sections, and preparing it for market, and nowhere else. Then the sticky is all in one place, and will stay there if I am careful.

The workshop and store-room for hives and fixtures may be all in one, but I prefer to store my hives out of the way, so that I can have full swing in my workshop for any work, whether it is a bee-hive, a wagon, or a house.

My shop is roomy, light, dry, and can be warmed when necessary. My bench is in the best light in the shop and my tools are in a convenient place. I have a place for everything, and everything is in its place—occasionally. Sometimes I forget where the place is.

For storing combs I shall build a closet where I can treat them to a dose of bisulphide of carbon when necessary. The closet will be of such size as to hold the frames to best advantage, and is to be ventilated from out of doors, so that none of the dangerous gas can enter the house or room where any one could breathe it or where it might be ignited. The closet doors must necessarily shut *tight*.

So far as possible I have everything on one floor. No running up and down stairs for me, thank you. Land is too cheap in the country to pay to put things up into the air where I must climb for them.

A cellar I do not need, as my bees winter well on the summer stands.

PROVIDENCE, R. I.

Jan. 4, 1891.

Experiments at the Mich. Agricultural College—What they are to be, and who is to Conduct Them.

A. J. COOK.



ASPER request, Mr. Editor, I gladly give the facts regarding our plans concerning experiments in apiculture here at the College. Not long since, Dr. C. V. Riley visited our college and wished to

know if I would give attention and care to experiments in bee-keeping, in case the Department would furnish a good assistant to care for and manage details. I said I would do all I could to make such experiments successful. In discussing the matter, Dr. Riley and I thought best to press the work of special planting for honey, that it might soon be decided whether it would ever pay or not. It was also thought wise to take every care and pains to breed up a superior variety or strain. It is also proposed to try experiments to find all the factors that enter into the matter of ill success in wintering. Other experiments will be conducted, but the above will receive the emphasis of our care and effort.

In making inquiries, I was led to decide upon Mr. J. H. Larrabee, Secretary of the Vermont State Association, to assist in this work. Mr. Larrabee is very intelligent; a hard worker; neat and methodical in his work; has proven his ability by that best of tests, real success; and is of that judicial turn of mind that can carry on an experiment and give results—the real facts—without prejudice or bias. At least, I was led to that belief after many inquiries; and now that Mr. Larrabee is with me, and I have become acquainted with him, I am more assured that I made no mistake in deciding upon him to assist in this important work.

Let me add that we shall be very glad at any time to receive suggestions from bee-keepers, either as to ways to conduct these experiments, or regarding other experiments that it may be thought wise to prosecute.

AGRICULTURAL COL., Mich. Jan. 19, 1891.

[Let's all give Bro. Larrabee a hearty welcome and encourage him all we can in his important work. I shall look with interest to the results of these experiments, particularly those that have a bearing upon the wintering question.]

In a private letter, Mr. Larrabee suggests that one issue of the REVIEW be devoted to the discussion of "Progress." He says: "Many issues have been devoted to what has been done and how to do this or that, now have one devoted to 'Experiments I should like to try.' Let your writers look into the future of bee culture, especially upon inventions, discoveries and methods." What do the readers of the REVIEW think of such a topic? I think that now that we have succeeded in catching a real live bee-

keeper, and he is to be put to work under Prof. Cook, let us tell him what experiments we would like to have him try—let's use him.—Ed.]

Pure ads.—No Articles Ought to be Skipped.

The Review is for Advanced Bee-Keepers;
But has Been Almost too Topical.

ARTHUR C. MILLER.

I DARED not venture an article on the subject of bee journalism, lest I should be overwhelmed by the others, and, as it turned out, I am glad I did not; but, now that the rest have shown their hands, I can safely show mine, just for your *own* perusal.

I like the idea of pure "ads.," and of stopping the paper when subscriptions expire.

Don't quite like the sentiment shown in regard to skipping (by readers) articles not having a "leading" name at the top, for there is, or ought to be if the editor admits it, good grain there.

Don't forget that the REVIEW is for advanced bee-keepers; there are enough of them to well support it; let other papers cater to beginners.

Dr. Miller's remarks concerning the name of the REVIEW are a little contradictory, for *he* is "reviewing." What was that very Nov. No. but a good review of bee papers? The best review should suggest an advance, and that is what you are constantly doing.

One trouble with the REVIEW is that it doesn't give a fellow a chance to "talk back." It is so topical that one feels it is useless and out of place to try to answer contributors through its columns until a kindred topic presents the opportunity, and then the iron is cold and "I's dun forgit it all."

If my advice is good for anything, don't oh *don't*, go into the supply business.

PROVIDENCE, R. I. Nov. 20, 1890.

[Yes, friend Miller, the REVIEW has been a little "too topical," in the sense in which you use the words. Lack of room was the trouble. This has now been remedied, and as I said last month, no discussion need be considered closed, so long as anybody has anything of value to offer. There will now be an opportunity to "talk back," and it often happens that some can "talk back" better than they can start the conversation.—Ed.]

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. The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, FEBRUARY 10, 1891.

The *Api.* thinks bee escapes will have a short run. The REVIEW doesn't.

FIVE EXCELLENT articles upon "Separators" yet on hand. If others wish to write upon the subject, let them do so. Now that the subject is "up," let's do it justice.

THE HURON, Tuscola and Sanilac Co's (Mich.) Bee-Keepers will meet in Caro, March 11 and 12, 1891. The editor of the REVIEW expects to be present and read a paper on the "Different Varieties of Bees."

MR. TIMPE, of five-banded bee fame, sent enough of the new potatoes, that he is advertising, to enable each member of the family to have a potato. They are certainly very nice. They have a taste that, mixed with a vivid imagination, would about enable them to pass for sweet potatoes.

SUPERS THAT COMPRESS THE SECTIONS.

I have often thought, if we could have a super that would compress the sections both ways, something after the style of the Foster case, for instance, but free from any accompanying disadvantages, it would be a grand thing. Mr. Heddon's new style of case and wide frames compress the sections sidewise by means of a screw. Geo. E. Hilton has a case in which the sections are similarly compressed; and Wm. W. Cary has just sent me a super, or "clamp," as he calls it, in which the sections and section holders are pressed together with screws. Wood separators are used. Of course, the closer together we get the sections the less opportunity is there for using propolis. Mr. Cary also sent me a shipment of foundation last year that was very nice, and the *whitest* I ever saw.

AUXILIARY COLONIES.

Geo. A. Stockwell urges, in the *American Bee-Keeper*, that we have auxiliary colonies; colonies to aid others by building comb for them. I don't believe this would be profitable. This everlasting fussing and puttering is one thing that makes some of us say "bee-keeping doesn't pay."

STRENGTHENING WEAK COLONIES IN THE FALL.

A. C. Tyrrel says, in the *Api.*, that he strengthens weak colonies in the fall by giving them the young bees that it is sometimes so difficult to drive from the sections. The bees of the colony, as well as those in the sections, are thoroughly smoked before uniting. After bees have thus been introduced to a colony, he says more young bees may afterwards be given from any colony without the use of smoke, as the colony has become accustomed to the influx of strangers.

REVERSIBLE BOTTOM BOARDS.

Dr. Miller, in the *American Bee-Keeper*, describes a reversible bottom board. It is simply a shallow box (minus one end) $1\frac{1}{2}$ inches deep, as wide as the hive and a little longer. The open side is used uppermost in winter to furnish an empty space under the bees. In summer it is turned over. I furnish this space below the combs in winter by simply raising the hive and putting sticks under it. This is the management in the cellar; out of doors, a little rim of lath is placed under each hive.

A TRADE MARK FOR HONEY PRODUCERS.

At the Detroit meeting of Michigan beekeepers it was proposed that the Bee-Keepers' Union get up a "trade mark" for the use of its members in labeling their honey. The idea is that the public will thus be enabled to distinguish between honey put up by members of the Union, and that put up by outsiders. If dishonest men could be kept out of the Union, there might be something in this scheme; but there is nothing to prevent a rogue from joining the Union and then pointing the finger of assurance at the "trade mark" adorning his adulterated goods. If he is "exposed," then the Union and its boasted "trade mark" is brought into disrepute.

AMONIA FOR REMOVING GREASE FROM TIN CANS.

Gleanings protests against the shipping of honey in tin cans that have been used in shipping kerosene, a practice largely in vogue in California. Hot water alone will not clean such cans. If they *must* be used, says Mr. Root, add two tablespoonfuls of amonia to half a cup of water, put the mixture in the oily can, screw down the top and give the can a good shaking. This will remove the black, greasy, inky looking substance and leave the tin as bright as a dollar.

THE AMERICAN BEE-KEEPER BUYS THE "ADVANCE."

Simply buying up the subscription lists of other journals will not enable a man to establish a successful paper. If I remember aright the *Bee-Keepers' Advance* absorbed five other journals, yet it was not a success, and has just been sold to that enterprising firm, The W. T. Falconer Mfg. Co. Some men might have the most successful journal in the country put into their hands, and it would be dead in a year. Such, however, will not be the case with the *American Bee-Keeper*. That had "success" stamped upon the first issue.

THE A. B. J. PUBLISHED AT COST.

In one of his "straws" in *Gleanings*, my old friend, Dr. Miller, was inclined to take me to task just a little, because he thought I had hinted that all bee papers, except the *Review*, were published at cost. When I said, in the Dec. issue, that "an extensive dealer in supplies can well afford to send out a journal at cost," I had no intention of hinting that all or even any of them *were* thus sent out; as I didn't know but some of them might be published at a small profit. It would seem, however, that such a hint would not have been far from the truth, at least so far as the *A. B. J.* is concerned, as Bro. Newman says, in a recent issue, "That there is not one cent of profit in publishing the *Bee Journal*. The only profit there is comes from the sale of books and supplies. New periodicals, if they intend to compete, really have great difficulties to encounter."

As an encouragement, let the editors of new periodicals remember that *price* is not the only element in competition.

WHERE AND HOW TO BUILD HONEY HOUSES.

A honey house should be at the side of the apiary. There seems to be no question upon this point. The bees are more easily watched, and it can be more easily approached with a team when bringing in supplies, and in shipping honey.

If in a locality where a cellar is needed in wintering the bees, the place for the cellar is under the honey house. The cellar ought to be near the apiary and needs a cover over it. The honey house must also be near the apiary and needs a good foundation. Putting the cellar under the honey house accomplishes both objects.

It costs but little more to build two stories high, and the upper story furnishes an excellent store-room for hives, supers, sections, empty combs, and the thousand and one things that accumulate in an apiary.

A large share of the lower floor is needed for a shop, and the balance is for a honey room. There is one point upon which I neglected to touch in my leader on this topic, and none of the correspondents have touched it, and that is, shall the extracting be done in the honey room? If we are to keep the honey room at a high temperature, *a la* Doolittle, when it contains comb honey, such a room would not be a very comfortable place in which to extract the honey. Aside from this, I see no objection to having the extracting room and honey room all in one.

As to materials used and methods of building, much depends upon circumstances, and what is available in each locality. I was quite interested in the plan proposed by Mr. Shuck, that of making the cellar and house walls of cement.

PROTECTION FOR SINGLE-WALL HIVES.

Mr. A. I. Root believes that no method of protecting bees that calls for loose pieces and packing to be put on in the fall and taken off and stowed away in the summer, will ever become popular. I think anyone will admit that there is one objection to this method, that is, the labor of adjusting, removing and stowing away the packing materials. We must remember, however, that this labor comes, not in the hurry and rush of the honey harvest, but in the comparative leisure of the spring and fall; and need not be skilled labor, at that. Mr. A. I. Root argues for a chaff hive, one in which the walls are permanently packed with chaff or saw-

dust. The advantage claimed for this hive, and it is an advantage, is that it is always ready for winter. There is no packing nor unpacking and no litter. Once packed, always packed. But to go into the harvest with bees in chaff hives brings to my mind the figure of a man burdened with an overcoat, but striving to keep up in the harvest field with his fellows who are working in their shirt sleeves—perhaps these are rolled up. We need our overcoats, wraps and furs in winter, but when returning warmth calls us to the fields to labor, these outside garments are laid aside—we pull off our coats, roll up our sleeves, and enter the contest unincumbered. As extra clothing would hamper our movements, so is the management of an apiary hampered by the use of heavy, cumbersome chaff hives. I know there are methods of management in which the unwieldy, standstill character of the chaff hive proves no obstacle, but such methods are not the most expeditious. It seems as though there has been, if there isn't yet, a disposition to look upon the idea of "handling hives instead of combs" as though it were more theoretical than practical. It *isn't*. Gradually, methods embodying this idea are coming into use. There is the plan of hiving swarms by allowing them to return to the old location; how it is simplified if the hive is readily movable. The Heddon method of preventing after-swarming is practically impossible with chaff hives. Chaff hives are illy-adapted to tiering-up, either in raising comb or extracted honey. As the years go by, specialists are establishing out-apiaries; and some are beginning to practice moving their bees to better pastures, when circumstances warrant the move. The chaff hive completely blocks the road to progress in these directions. In short, I can't understand how anybody, all things considered, can prefer a chaff hive.

Earnestly as I advocate the use of light, readily movable, single-wall hives, I am by no means inclined to leave them unprotected in the winter or early spring. My favorite method of protecting them in the winter is that of placing them in the cellar, but I want them out on their summer stands as soon as it is warm enough for the bees fly. A flight in the open air, a little freshly gathered pollen, honey and water seem to put new life into the bees and encourage brood rearing as nothing else will; but, as we always have cold snaps after this, I would protect

the hives by outside packing. I have seen the mercury remain at 35° for a week at a time in May, after there had been three weeks of fine weather and the combs were filled with brood. Some fair colonies (unprotected) actually *starved*; being clustered closely upon the brood which they were unable or unwilling to leave to bring honey into the cluster. It doesn't seem to me that there need be any doubt that spring protection is beneficial, that it is often needed, and, if it can be secured cheaply enough, always profitable.

I know some are now ready to ask, if spring protection is so important that it is advisable to pack the hives after they are taken from the cellar, why not winter the bees out of doors, giving them the needed protection in the fall, thus saving the expense of a cellar and the labor of carrying the bees in and bringing them out? The saving in honey, by wintering in the cellar, will pay for the expense twice over; besides, taking one winter with another, the cellar has proved to be the safer place in this locality. In a severe winter the cellar is superior; in a mild winter it is no *worse* than in a cold winter; but out-doors may be, usually is, a better place for bees in a mild winter. If we only knew in advance what the winter would be we would know just what to do; put the bees in the cellar if it is to be cold, leave them out if it is to be warm. But we are obliged to take our chances; and, while my choice is the cellar, I wish to say that it by no means has *all* the advantages. What kills our bees in winter is the overloading of their intestines. Sometimes one winter flight, that may be secured if the bees are in the open air, is their salvation. If this flight doesn't come, then the advantage is with the cellar. At the recent meeting of bee-keepers in Detroit, Mr. Heddon said: "J. B. Hall said, at Brantford, last year, that scarcely anybody wintered their bees out of doors. 'One man puts all his bees in one big cellar; another builds a little cellar over each colony. What's the difference?' I tell you, friends, there is a *big* difference. That little cellar built over a colony *has an entrance*. A week ago my bees on their summer stands had a flight. As I understand it, their term of confinement for the winter dates from that flight."

But this is digressing a little. We are not to spend *very* much time discussing cellar vs. out-door wintering, but narrow the question

down to, shall we protect our bees out of doors in permanently packed chaff hives, or with temporarily protected, single-wall hives; if the latter, what shall be the style of the protection? Probably enough has been said, in this leader, upon all these points, unless it is the last mentioned.

I have for several years wintered a few colonies out of doors, and protected others in the spring, by setting a rim of cheap lumber, six inches larger, each way, than the hive, over the hive, filling the space around and over the hive with dry sawdust, putting on a cover and weighting it with a stone to keep it in place. It will be seen from an item in the Extracted Department that the Roots are experimenting with a similar protection. For this locality I think the space for packing ($\frac{3}{4}$ inch) is insufficient. I hardly know what to think of the plan of having the packing material enclosed in a long, thin cushion to be wrapped around the hive before the outside shell is slipped down over the hive. It will save the scattering of litter, and will, I think, expedite the labor of packing and unpacking, but it will also add a little to the expense.

When I first advocated spring protection for bees wintered in the cellar, Mr. Heddon was my opponent. Knowing that he had since changed his views upon this point, I wrote a few days ago and asked him to describe the boxes in which he packed his bees, and also to tell how the work of packing was done. Here is his reply:—

"The boxes are two inches bigger, all around, (three inches in front, in order to accommodate the alighting board) inside dimensions, than the hive is outside measure. There are also $1\frac{1}{2}$ inches under the bottom in front, which is necessary on account of the front cleat, and 2 or $2\frac{1}{2}$ inches behind, because the hive has a tip forward in the box. On top there are three or four inches of space packed with sawdust as solid as we can pack it. The cover is made absolutely water tight and weighted solid on the sawdust on top, so that the sun's rays on top can be felt right through. The whole business faces the south, and the packing box is tipped forward towards the south, and in my opinion this is the best packing material, the best thickness of it, and the best arrangement of it that I know of. Of course we use the bridge arrangement for the passage of the bees. We want our hives heat-reflecting in summer, so we paint them white or nearly so, and in winter, you see, we use the dark color which is heat-absorbing.

Now I have become a convert to what I once opposed you in; that is, in packing the bees in just such packing boxes as these after

they are taken out of the cellar. I have in use 200 of these boxes, and 200 a great deal larger and deeper, with four or five inches of space around the hive and seven or eight above. I prefer the smaller boxes. They all have tight bottoms. My bees that are now in the cellar will all be packed in such boxes when they come out in the spring. You were right and I was wrong. When you oppose me in anything connected with our chosen pursuit, I at once become suspicious of my premises; consequently, after the discussion of that point several years ago, I began watching closely and carefully and found you were right. I forgot to mention that these smaller sized packing boxes are made of $\frac{3}{8}$ material, all around, except the ends, which are $\frac{1}{2}$. The cover is cleated like a trunk cover and these cleats shut right down over the outside, about two inches, so no water can get in, as the cover board covers all cleats and everything. The sawdust is poured right in between the walls in the ordinary way, and packed down with a little board.

Two men will pack about 100 in a day, I think, if they have the sawdust all ready. We have a large rain-proof shed in which the boxes are stored in summer, and the sawdust is left in the boxes from year to year. We are highly pleased with these little boxes."

Years ago Mr. Hill of the *Guide* protected his bees by a cap or outer case covered with sawdust held in place by a band of cotton cloth. From a circular lately received, I should judge that he now protects them by a double-wall cap, of thin lumber, filled with chaff, that slips down over the body of the hive. I believe J. A. Roe of Union City, Ind., makes an outside case of wood to be used with packing over single-wall hives. "Rambler" has advocated some sort of felt covering. Cork is an excellent material. It is my opinion, however, that wood is the best and cheapest material of which to make an outside shell for holding packing material around a single-wall hive, and that sawdust or chaff—substances easily obtainable in most localities—will answer every purpose as packing material.

I presume some of you have already noticed, from the heading on the first page, that this matter is to be made the subject of our special topic for the March REVIEW. Perhaps some will wonder why such a topic is taken up at this time of the year. It is done because I wish you all to try taking some of your bees from the cellar as soon as it is warm enough for them to fly, protecting them until it is nearly time to put on the supers, and I wish to help you to make a wise choice when deciding in what way that protection shall be given.

EXTRACTED.

Feeding Sugar and Honey in Winter.

Mr. Alley recommends using the Good candy (pulverized sugar and honey) for feeding needy colonies in winter. He gives the following directions.

"A frame not less than two inches wide should be made one side covered entirely with thin boards. The other side should not be wholly covered; space should be left at the top for placing the food in, also for a passage way for the bees to reach the food. The frames should be made sufficiently large to hold ten pounds of food each. The brood nest should be contracted to about four or five frames, and the food placed at the sides of the hive with the open part of the frame next the combs."

Wood-Queen-Excluding Honey-Boards.

Gleanings says:—"These have been made before with the slots *parallel* to the grain, but they were discarded because of the shrinkage of the wood and the consequent moisture of the hive. But the G. B. Lewis Co. are now making them with the slots to go *across* the grain, and they predict their success."

I believe I was among the first, if not the first, to use a wood-queen-excluding honey-board. I still have some in use, but don't like them. With me, the trouble is not in the shrinking and swelling of the wood, but the bees plug the holes with hard wax. Whether they do this because of the nature of the material used, or because of its thickness, I cannot say, but think it is the latter. I have often thought of chamfering off the wood around the edges of the openings, until the wood, at the edges, was about 1-16 of an inch thick, but I never tried it, fearing these thin edges would be too easily broken. Perhaps making the openings across the grain would allow this thinning of the wood around the openings without danger of breakage.

Candied Honey Easily Scorched.

In the *A. B. K.*, E. E. Hasty tells how easily the reputation of a honey producer may be injured, at the same time his honey is "scorched" in being re-liquified by the consumer. He says:

"Nearly every one seems to think that so long as honey does not boil, of course it can not burn. That is an awful mistake.

Let us consider the state of things when a large can is set on a stove. What is the temperature of the iron under the can? Perhaps 250° or 300°. The under side of the

tin speedily rises to nearly the same, and the upper side to over 212°. In contact with this high temperature the honey remains about as long as it can without boiling. It then springs off, and gives place to another film of the same, which in turn is heated to about 210° and sent off. If the whole contents of the can were fluid and warm, regular currents might set in which would modify things and prevent over-heating. But the bulk of the honey is solid and cold and cannot flow back and forth. It is plain that a considerable part of the honey in a can (if not all of it) may be subjected piece-meal to the temperature of 210°, while the mass is not at any time much over blood-warm. It is very unsafe to heat honey to 210°. There seems to be a very great difference in the amount of heat different samples of honey will stand. Some honey can be boiled vigorously with but a moderate degree of damage to its quality, while other samples are ruined without coming to a boil. I am inclined to think that every can of honey ought to go out to its destiny with a plainly printed warning stuck upon it, and a very emphatically worded one, too, ending up with, 'Sample this honey before you heat it, or I will not be responsible for its quality. BILLY FAIRPLAY.'"

Newly Settled Localities the Best for Bee-Keeping.

One time when I was visiting at Mr. Heddon's, he showed me some stereoscopic views taken in Vermont in the vicinity of Mr. Manum's apiary. It seemed as though the whole country was mountains. "I tell you, Hutch," said Mr. Heddon, "that's the place to keep bees. *They can't plow up your posies.*"

This little incident came to my mind as I read the following from "Rambler," in the *Api.* :—

"From our observations upon the honey resources of our country, it is evident that there must be a radical change in methods, or a change in bees to increase the yield, or bee-keeping as a business will be among the things of the past. This applies especially to the Eastern states, or in localities either east or west, where a high state of cultivation exists. Where the country is comparatively new, an abundance of wild flowers aid in the general yield. Basswood, sumach and millions of raspberries, of themselves, give an excellent yield. But the destruction of all these, and the substitution of fruit and clover, makes the yield too unreliable for the patience of the average American. We discover in our rambles that good localities where the yield has been 100 pounds, have fallen to forty, and in some instances to only an average of twenty pounds per colony. Where our yields are so light we naturally turn our eyes to a more certain field, and just now the Alfalfa fields of the far West have a charm for bee-keepers. For what greater charms can there be than a

steady flow, an equitable climate, and a ready sale.?"

"Rambler" then goes on to say that we must either emigrate or else develop a bee that can suck honey from the bottom of the red clover tubes. I have no hope in this stretching the bees' tongues, but there is a great deal of sense in the idea that, other things being equal, a comparatively newly settled country is more reliable in furnishing good crops of honey. This fact was recognized long ago, as there is an old German adage that runs thus :—

"Bells' ding dong,
And choral song,
Deter the bee
From industry :
But hoot of owl,
And 'wolf's long howl,'
Incite to moil
And steady toil."

Hives with an Outer Case for Winter.—No Packing at the Sides Until Spring.

There seems to be a disposition at present to "get up" a hive with an outer case for use in winter. Bees in our Northern states certainly need protection in winter and spring, and, just as surely, we need to have that protection out of the way in the working season. Upon these points, E. L. Pratt has the following to say in the *American Bee Keeper* :

"Very few bee keepers seem to understand the principle of wintering bees out of doors successfully. I am decidedly in favor of double walled hives, but not as generally made. I am not a Chaff hive man, never was, and doubt if I ever will be. They are too ponderous, too expensive and not what is claimed for them. We want hives that not only winter the bees but spring them also, and this cannot always be said of a Chaff hive. The Chautauqua hive has the correct principle, but I want a hive that I can work single or double as I choose, therefore there is nothing that suits me so well as a thin winter case with gable cover made to telescope over the case, allowing about $\frac{3}{4}$ of an inch ventilation at each gable end. As cold weather comes on, the outside cases can be slipped on over the hives and they are safe until Thanksgiving, when final preparations are usually made. There should be no packing material used between brood chamber and case until breeding commences in the spring, as the heat generated by the cluster is not sufficient to throw off the moisture until then, and the sun does not get a chance to dry and to warm up the hive so thoroughly when packed at the sides as it does with no packing. A good, thick cushion made of cut hay or straw, large enough to fit snugly inside the case, should be provided for each colony. Lay a section box, or a small block of some kind, on the top-bars where the bees are clustered the thick-

est, throw over that a piece of burlap or old carpet, and crowd the cushion snugly down over all, put on the winter roof, and either nail or screw it down so as to be sure the wind cannot remove it, and I warrant the bees in that hive to come out sweet and clean in the spring, and all alive, provided they have had stores enough.

When breeding commences is the time to pack at the sides, as then the cluster has expanded and the heat is sufficient to throw off all dampness. At the time the packing is put at the side the cushion should be raised and a thin board laid over to cover the brood chamber, as now we wish to retain all the heat possible so that brood rearing will progress very rapidly."

I cannot agree with Mr. Pratt that it is better not to protect the sides of the brood nest in winter. When there is an opportunity for the moisture to pass off at the top I have seen no trouble from dampness.

The Solar Wax Extractor and Honey Evaporator.

In *Gleanings* for Jan. 15, is illustrated and described what strikes me as the best solar wax extractor of which I have seen any account. H. R. Boardman is the man who "got it up" and from his description I copy the following:—

"The improvement consists in mounting upon rockers instead of wheels, by which means it can be adjusted, or turned, with perfect ease. It also dispenses with the chamber at the lower end, for holding the wax-pan. In fact, it is little more than a plain shallow box with a few modifications, covered with glass, and adjusted at an inclination to the sun, for its heat. The combs are thrown into this box, when the wax is melted and runs down the inclined bottom, leaving the residue. The wax can be drawn off or allowed to cool, when it can be removed. The lower end of the extractor is covered, so that it leaves it in the shape of A. I. Root's bread-pan feeders with sloping sides, so that it really combines the wax-pan with the extractor.

There are ventilators in each end covered with wire cloth, that can be opened or closed at pleasure, when used as an evaporator.

I am sure that Mr. Newman does not over-rate its merits. It has been a success with me, not only as a wax-extractor, but for evaporating and melting honey.

It is an old chestnut, that granulating is the test of purity in honey. I am using honey on my table now that is clear and limpid, that has been treated only by being placed in this evaporator for a while at the close of the honey season. This is the only extracted honey I have ever been willing to say I thought equal to comb honey. Isn't this the secret of some of the California honey not candying? I suspect it is.

I have had some difficulty in finding just the right material for the inside, or lining. Wood seems to do as well as any thing I

have tried. It must be of narrow stuff, matched, and well painted a drab color. The only objection I have found to wood is, it shrinks, from the constant heat it is subject to. Tin does nicely, but does not absorb heat as does something of dark color. I have tried paint on tin and iron linings, but they do not hold paint as well as wood. The hot wax dissolves or softens the paint, and it scrapes loose in cleaning out the residue, or "slum gum," as our California friends say. Mr. Doolittle advises the use of Russia iron; but iron will not do. I have rejected a lining of Russia iron, after giving it a thorough trial, on account of its discoloring the wax. It won't do to use iron when it comes in contact with melted wax."

Two points in the above I wish to emphasize. Granulation is not a test of purity. I have seen pure honey that would not granulate, and I have seen honey mixed with twice its weight of glucose, and it *did* granulate. Never allow wax to come in contact with iron.

Contracting the Brood Nest and the Use of Queen Excluders.

Dr. Tinker tells the readers of the *American Bee Keeper* that:—

"The principal of contracting the brood nest at the right time in producing comb honey is a measure sanctioned by the majority of leading apiarists in this country, and it is universally conceded that if the brood nest is contracted to any considerable extent a queen excluder is a necessity. The reason why there is any difference of opinion in the matter is because in certain localities no contraction of the brood nest is ever advisable excepting under rare circumstances affecting nectar secretions. There are localities where there is an almost continuous flow throughout the season, and wherever we find such localities, whether in this or any other country, the most profitable bee keeping is with large brood nests and large hives. In quite a number of districts in France, it is stated by Mr. Cowan, in his recent interesting address before the British Bee Keepers' Association, (B. B. J., pp. 518,) that there is an almost continuous flow of nectar from Spring to Autumn, and he found the bee keepers there nearly all using Dadant's and DeLayen's large hives, the latter containing from sixteen to twenty-four brood frames, about double the size of our standard frames. No one in their right senses would talk about contraction of the brood nest in such localities, but unfortunately they are few and far between in this country. Where we have one such locality there are a hundred where the season for surplus ends with white clover or the basswood bloom. It is in these localities, which so largely predominate, that we must contract the brood nest, both during the honey flow and during the balance of the season, if we would make the most of bee keeping, and whoever admits the advantage of such contraction in his

locality will be compelled to admit the value of the queen excluder in the production of comb honey."

With an 8-frame hive I have seldom found it advisable to contract the brood nest of an established colony; but I *would* contract the brood nest of a newly hived swarm. I would do this to force the white honey into the sections.

A Dovetailed Protection for the Dovetailed or any Single-Walled Hive.

Mr. W. A. King has been arguing in *Gleanings* for an outside, protecting case to be used over single-wall hives in winter.

In reply to one of his articles, Ernest Root says:—

"Hundreds of bee-keepers have the eight-frame Dovetailed hive, and they may take a notion to winter outdoors either a half or all of their colonies, because the cellar, if they have one, is too damp, or because some other condition is not right. They have the hives on hand, and desire to winter outdoors. Now, how shall we fix them up? If it is practicable, and subsequent experiments justify it, we propose putting on the market a winter case made of $\frac{3}{8}$ lumber, dovetailed at the corners. This case will be $\frac{3}{4}$ inches deeper and larger all round than the eight-frame Dovetailed hive, and it is to have a tin-roof cover. By dovetailing the corners we find we can make it of much lighter lumber, and we are also able at the same time to dispense with corner-posts. Well, this winter case, or cap, is to be set directly over the regular eight-frame Dovetailed hive, and is deep enough so that the edges may be pushed down into the sand or sawdust around the hive. We then virtually have a double-walled hive, with a dead-air space so called. This air-space will be sufficient for moderate climates; but for colder regions, possibly even for the locality of the Home of the Honey-bees, we shall be obliged to use additional packing. To accomplish this, we make a cushion in the form of a ring, just large enough to put around the eight frame Dovetailed hive, and another cushion on the cover. The case would be then just large enough to slip over the whole snugly, and crowd down into the sand or sawdust, as before mentioned. The expense of the case, when put on the market in lots of 100, would be about 35 cents each in the flat. As the chaff, or some absorbent, can be obtained cheaply in most localities, each bee-keeper can make for himself the cushions he would need. Now, please bear in mind that we have tested a similar arrangement only one season, and on a rather limited scale.

While it was successful last winter, the weather was too warm to prove any thing. This will make the cheapest double-walled arrangement ever before offered in the market; and if successful, I do not see any reason why it should not supersede all other more expensive double-walled hives, because it can be so readily adapted to eight-frame hives already in use, that have no porticoes."

To the above, A. I. Root disagrees in the following language.

"I do not believe that any hive will ever become popular that is made with the intention of removing the packing or winter covering in summer time. After you have once protected a hive suitably for wintering, do not think of removing the protection in the summer time. The bother, complication, loose pieces, litter, etc., is too much, especially where hives are handled by the hundreds or thousands. Sooner or later, putting on packing will be neglected, and a great many times it will be off at the very time it is needed. Make your protection in the shape of something good and substantial. Have it painted and nice: and if you do this, it will come pretty near a chaff hive made a little smaller, with the view of having only eight instead of ten combs in the brood nest."

Bro. Root, if you will make your "good and substantial" protection in such a manner that it can be pulled off in summer, about as easily and quickly as a man does his overcoat, there will be but little argument between you and I.

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Colonies, Nuclei, Queens (tested and untested) at living rates. Send for circular and price list to
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Read What the Mich. Ag'l Col. Says.

In Bulletin No. 57, the Michigan Agricultural College has the following to say of my new seedling potatoes.

"**TIMPE'S NO. 1**—Early, yield 185 bushels. Round, flat, red." This was also critically treated against scab, and where untreated it was entirely FREE FROM SCAB. Per lb. 75 cts.

"**TIMPE'S NO. 2**—Long, round. Eyes few, small, shallow. Color nearly white. Flesh white. Medium early. Yield per acre, 340 bushels. A VERY HANDSOME AND VALUABLE VARIETY." Per lb. 75 cts.

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IN CONCLUSION, the Bulletin adds: "TIMPE'S SEEDLINGS have been grown here for FOUR YEARS, and have shown themselves to be VERY PROMISING varieties, worthy of general introduction."

FOR \$2.00 I will send 1 lb. each of Nos. 1, 2 and 4. For \$2.25 I will send 1 lb. each of Nos. 1 and 2, and 2 lbs. of No. 4. All potatoes sent prepaid. If convenient to receive them by express, mention express office when ordering.

IN ADDITION to my offer in Jan. REVIEW, page 25, I will give to the person growing the largest potato one 3-frame nucleus with \$5.00 queen, on EACH variety; and for the best name proposed I will give one 3-frame nucleus with \$5.00 queen, on EACH variety, proposed names to reach me by Aug. 15, and premium bees will be sent in time for the fairs. Competition open to all purchasers.

A TESTED QUEEN FREE or your money refunded, and the order filled free. I must get these potatoes all put up and ready to mail by April 1st, as I already have orders booked for over 500 queens, and must devote my whole time to queen rearing after that date; therefore, to induce you to order AT ONCE, I will give a tested queen free or return the amount of the order to the one sending the order, of \$1.00 or more, that is first received from each state or province. To all others ordering at once, I will give two or more packets of my choice seeds, free. Catalogue now ready, but you better order from this advertisement. Order at once.

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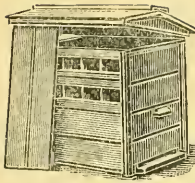
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Clark Smoker, 48 cents. "Jaxon" direct draft, 2½ inch barrel, 90 cents Bee veil, 28 cts. No. 30 wire, 2½ cents a pound. Novice honey extractors, 5 per cent discount. All honey knives, 5 per cent off. Parker foundation fastener, 20 cents. All bee books at reduced rates. Japanese buckwheat, 60 cents a bushel.

Five per cent off for cash. Give references, and address, with list of goods wanted,

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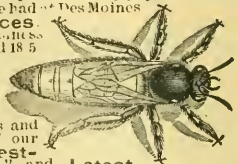
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THE REVIEW.

The distinctive features of the BEE-KEEPERS' REVIEW are those of reviewing current apicultural literature (pointing out errors and fallacies and allowing nothing of value to pass unnoticed), and the making of each issue a "special number"—one in which some special topic is discussed by the best bee-keepers of the country. If you wish for the cream of the other journals, already skimmed and dished up, and to learn the views of the most experienced bee-keepers upon the unsolved, apicultural problems of the day, read the REVIEW. Price of the REVIEW, \$1.00.

Topics Discussed in Back Numbers.

VOLUME I.—1888.

Jan., Disturbing Bees in Winter.
 Feb., Temperature in Wintering Bees.
 Mar., Planting for Honey.
 Apr., Spring Management.
 May, Hiving Bees.
 June, Taking Away the Queen.
 July, Feeding Back.
 Aug., Apiarian Exhibits at Fairs.
 Sep., The Food of Bees in Winter.
 Oct., Ventilation of Bee-Hives and Cellars.
 Nov., Moisture in Bee Hives and Cellars.
 Dec., Sections and their Adjustment on Hives.

VOLUME II.—1889.

Jan., Bee Hives.
 Feb., Mistakes in Bee-Keeping.
 Mar., Which are the Best Bees.
 Apr., Contraction of the Brood Nest.
 May, Increase, its Management and Control.
 June, Shade for Bee Hives.

July, Queens and their Influence upon Success in Bee-culture.
 Aug., Migratory Bee-Keeping.
 Sep., Out-Door Wintering of Bees.
 Oct., Bee Conventions and Associations.
 Nov., Specialty versus Mixed Bee-Keeping.
 Dec., Bees Alone or "Mixed;" if the latter, what with?

VOLUME III.—1890.

Jan., Brace Combs and their Prevention.
 Feb., Foul Brood.
 Mar., Queen Rearing and Shipping.
 Apr., The Production of Comb Honey.
 May, Raising Good Extracted Honey.
 June, Comforts and Conveniences for the Apiary.
 July, From the Hive to the Honey Market.
 Aug., Marketing.
 Sep., Management after a poor Season.
 Oct., Out-Apiaries.
 Nov., Apicultural Journalism.
 Dec., Use and Abuse of Comb Foundation.

As the supply of volumes I. and II. is quite limited, the price is five cents a copy, except for the Jan, 1889 No., which is ten cents, there being only a few copies left. Of volume III. there is a fair supply, and the price is four cents a copy. Remember that each number is, in one sense, a little pamphlet giving the views of the best bee-keepers upon the topic mentioned.

WHAT OTHERS SAY.

The REVIEW is not very much given to the publication of "testimonials," but, as this issue will fall into the hands of many who have never seen a copy, it may be well to allow them to see in what estimation it is held by some of its older readers.

PROF. COOK says "You are giving us a **SPLENDID** paper."

ERNEST ROOT writes: "The last REVIEW was a good one, as usual. As an editor you are a success."

WM. F. CLARKE writes: "The REVIEW fills a niche all its own, and has fairly earned the right to live. It more nearly comes up to my ideal of what an apicultural journal should be than any other, and I think it well represents the best thought of our most advanced bee-keepers."

G. M. DOOLITTLE says: "I wish to say that I consider the Nov. REVIEW a wonderful production. There is something inspiring and ele-

vating in every paragraph. Don't know that I could add to it, and there is nothing I would have left out. You have certainly placed the REVIEW where no live, practical bee-keeper can do without it. Each number is worth the price of a year's subscription."

EUGENE SECOR writes as follows: "I have just laid down the REVIEW for Sep. What a delightful, chatty spirit pervades your editorials. I want to encourage you in your work. I presume you get enough criticism, even if you do not deserve it. It is no easy task, I believe, for an editor to publish a journal like yours—so nearly always right, and in such a kind spirit towards all. I congratulate you. I believe that editors, like orators, are born, not made. Many a man, educated to the printer's trade from boyhood up, fails to present so clean a sheet as yours. Few proof readers, devoting all their time to that one branch of business, leave so few errors undetected. Rarely do editors, who dream they are born to write, excel your style in clearness and force"

THE PRODUCTION OF COMB HONEY₁ is a neat little book of 45 pages, price 25 cents. (See advertisement in another column.) The REVIEW one year and this book for \$1.15
W. Z. HUTCHINSON, FLINT, MICH.

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MAR. 10, 1891.



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Manufacturers of and dealers in bee-keepers' supplies. For prices of bee hives, sections, shipping crates, frames, foundation, smokers, etc., write for circular and special prices before placing your order. 1-91-tf

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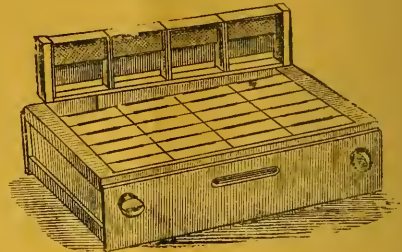
EXTRACTOR for SALE, OR EXCHANGE.

In the way of a trade, I have come into the possession of a new, Stanley, Automatic, Honey Extractor, that I should be glad to sell, or would exchange it for honey. It has two baskets that will take combs as large as 12 x 18. Price, \$15.00. W. Z. HUTCHINSON, Flint, Mich

MERIT TELLS.

IT BEATS ALL

How That Cary Fellow's



NEW STYLE CLAMP

SOLD LAST YEAR.

He could not get them out fast enough, but says he now has a big stock on hand. Write him at once for his 40 page catalogue, which gives a full description, also tells how to manage bees, to control the swarming fever and secure the largest yield of honey. He also makes a specialty of

XX THIN FOUNDATION,

from white wax, which every one wanted last year. See what Mr. Hutchinson says in the Feb. REVIEW, page 45.

Wm. W. CARY,

(Successor to Wm. W. CARY & CO.) Coleraine, Mass.

2-91-fj

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BEEES FOR SALE.

Colonies, Nuclei, Queens (tested and untested) at living rates. Send for circular and price list to C. C. VAUGHN & CO.,

2-91-3t

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WHY ARE SOME PEOPLE ALWAYS LATE?

They never look ahead nor think. People have been known to wait till planting season, run to the grocery for their seeds, and then repent over it for 12 months, rather than stop and think what they will want for the garden. **VICK'S SEEDS** never disappoint, is the verdict from the millions who have planted them. If it is Flower or Vegetable seeds, Plants, Bulbs, or anything in this line, **MAKE NO MISTAKE** this year, but send 10 cents for *Vick's Floral Guide*, deduct the 10 cents from first order, it costs **nothing**. This pioneer catalogue contains three colored plates, **Grandest Novelties** ever offered, \$200 in cash premiums to those sending club orders. \$1000 cash prizes at one of the State Fairs. Grand offer, chance for all. Made in different shape from ever before; 100 pages 8 1/2 x 11 1/2 inches.

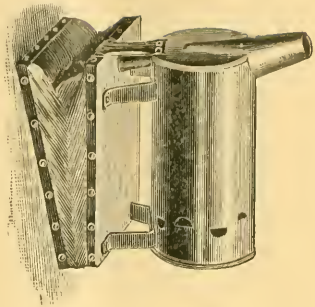
JAMES VICK, SEEDSMAN, Rochester, N. Y.

HILL'S BEE-FEEDER AND SMOKER.



This Smoker burns chips or hard wood without any special preparation. Very reliable. Greatest smoking capacity. Easiest to start and cheapest because it saves time.

The Best Bee-Feeder. Most convenient for the bees. No drowning or darning bees. The food is taken by the bees without leaving the cluster. From two to seven feeders full may be given a colony at one time which will be stored in the combs in ten or twelve hours.



Smoker, 3 inch barrel, freight or express, each, \$1.20. By mail, \$1.40. Per dozen, \$10.80. Feeders, one quart, freight or express, per pair, 30 cts. by mail, 40 cts.; per dozen, \$1.60. Address A. G. HILL, Kendallville, Ind., or H. M. HILL, Paola, Kansas.

BROKE DOWN!

10 Per Cent Off

On all orders received, before April 5th, for the eight or ten-frame

Dovetailed Hive.

Special prices to dealers. 24-page price list free. JNO. G. KUNDINGER, 12-90-tf Kilmanagh, Huron Co., Mich.

White Poplar Sections.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,

1-90-tf Bristol, Vermont.

Please mention the Review.



For Simplicity and Durability,

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3 1/2 inch,	\$2.00
Conqueror Smoker,	3 " " " " " "	1.75
Large Smoker,	2 1/2 " " " " " "	1.50
Extra Smoker,	2 " " " " " "	1.25
Plain Smoker,	2 " " " " " "	1.00
Little Wonder Smoker, ..	1 1/2 " " " " " "	.65
Bingham & Hetherington Knife,		1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,

1-90-tf, Abonia, Michigan

The Bee World.

A journal devoted to collecting the latest apicultural news discoveries and inventions throughout the world, containing, as it were, the cream of apiarian literature. Valuable alike to the amateur and veteran. If you wish to keep posted, you cannot afford to do without it. Subscribe now. It is a 20 page monthly at 50 cts a year. Stamps taken in one and two cent denomination. The Bee World is published by

W. S. VANDRUFF,

Waynesburg, Greene Co., Pa.

Please mention the Review.

HIVES and SUPPLIES.

We are prepared to furnish bee-keepers with supplies at low prices.

Take notice, and don't forget that our **ALBINO BEES** are ahead and that our queens are as fine as the finest and as good as the best. We also have the golden Italians which are very good honey gatherers. Send for circular and price list and see how low we sell them.

S. VALENTINE,

3 91-tf Hagerstown, Wash. Co., Md.

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Wanted:

To correspond with parties having Potatoes, Cabbage, Apples or Honey for sale or to consign. Prompt returns. All correspondence promptly answered. Best of reference. EARLE CLICKENGER, 11-0-tf Columbus, Ohio.

Reference: Editor REVIEW.

ITALIAN QUEENS AND SUPPLIES FOR 1891.

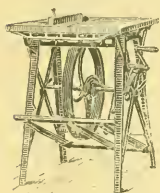
Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf, Augusta, Georgia.

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.

4-90-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

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Pratt's Perfection Queen Cage

Is the best shipping and introducing cage in use. Only \$10.00 and \$20.00 per 1,000. Sample free to any queen breeder. We manufacture a full line of bee-keepers' supplies, and send catalogues free to any address.

C. W. COSTELLOW,

8-90-tf

Waterborough, Me.

Please mention the Review.

LOOK HERE .

Before purchasing your supplies for 1891, get my prices and discounts. Price list free.

J. M. KINZIE,

11-90-6t

Rochester Oakland Co., Mich.

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Comb - Foundation.

WHOLESALE AND RETAIL.

"Langstroth on the Honey Bee, Revised." The book for beginners; the most complete text book on the subject in the English language.

Bee-Veils of Imported Material, Smokers, Sections, Honey Pails, and Bee-Keepers' Supplies.

Pamphlet on "Handling Bees" 8 cts.

Advice to beginners, circulars, samples, etc., free. Send your address on a postal card to

CHAS. DADANT & SON, HAMILTON, ILLINOIS.

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SUPERIOR WORKMANSHIP AND Low Prices

Have brought us many thousand customers. We do not claim that our prices are below all others; there are some parties we cannot compete with. They do too poor work—but quality of goods and workmanship considered, our prices are "way down." We "guarantee perfect satisfaction" We have built up our business on this guarantee, and shall continue to stand by it. If you have not received one of our 1891 Catalogues, send for one, and also for a sample copy of the "American Bee-Keeper," a 20-page monthly magazine, illustrated. Every bee-keeper should subscribe. Only 50 cts. a year. **W. T. FALCONER Mfg. CO.,** Jamestown, N. Y.

NOW, SEE HERE,

If you wish to try my

NEW POTATOES,

See descriptions in my ad. in Feb. REVIEW; also read what the editor thought of a sample, as given on page 45. I guarantee safe arrival of potatoes. Orders will be filled the first week in April. Only five states have tried for the FREE QUEEN, and Mich. was not one of them. Order now. **JACOB T. TIMPE,** Grand Ledge, Michigan.

Beautiful Bees ALWAYS PLEASE THE EYE.
Good Qualities ARE ALWAYS PROFITABLE.

If you wish for bees and queens that combine beauty and good qualities to a marked degree, write for descriptive circular giving low prices. No circulars sent unless asked for.

CHAS. D. DUVAL,

3-90-tf

Spencerville, Md.

SOMETHING NEW,

AGAIN, IN

BEE-HIVES.

SEND FOR HEDDON'S CIRCULAR FOR 1891.

Address **JAS. HEDDON,**

Dowagiac, Michigan.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. IV.

FLINT, MICHIGAN, MAR. 10, 1891.

NO. 3.

The special topic of this issue is
"Protection for Single-Walled
Hives."

That of the next issue will be
"Introducing Queens."

Double-Walled Hives and Closed-End Frames.

S. CORNEIL.

ADVOCATE the use of permanently packed double-walled hives. The objection that they are heavy and cumbersome depends for its force upon their construction. I have a single-walled eight frame Langstroth hive, made in Mr. Heddon's factory. Its outside dimensions are $13 \times 19 \frac{1}{2} \times 10$ inches, without the bottom board. It weighs $9 \frac{1}{2}$ lbs. I have two others of the same kind, only they are double-walled, and are half an inch wider inside. Their outside dimensions are $16 \frac{3}{4} \times 23 \frac{1}{2} \times 15$ inches. Their weight is 10 lbs. each, without the packing. One is packed with granulated cork, and the other with cut straw, such as is used for fodder. When packed each weighs 15 lbs. It will be observed that even though half an inch wider inside, the double-walled hives are only $3 \frac{3}{4}$ inches wider, and 4 inches longer, from end to end, than the single-walled hive, and the difference in weight is only $5 \frac{1}{2}$ lbs. I maintain that

where protection is needed these hives are neither so heavy nor so cumbersome as to preclude their use. They can be moved to distant fields, placed in clamps or in cellars, almost as easily as single-walled hives. Their outside walls are of plump $\frac{3}{8}$ inch stuff, lined with one thickness of building paper to keep out wind. The inside walls are of picture backing 3-16 inch thick. The space for packing is $1 \frac{3}{4}$ inches.

For such hives I make a reversible bottom board like Dr. Miller's. This is not packed. The hive can be set on straw when protection is required for the bottom.

Those hives are warm, too. I recently made somewhat elaborate experiments to test the relative conductivity of their walls. A pail containing seven and one-half pounds of boiling water was placed in each hive. The tops and bottoms were protected so as to cause the cooling to take place chiefly through the side walls. In my last experiment soft wet snow was kept crowded up against the outside of the hives. Thermometers were inserted in the covers, so that the bulbs reached the hot water. The single-walled hive described above had the top and bottom protected in the same way and was used as a standard for comparison.

The following were the times of cooling 75° .

Single-walled hive, -	503 minutes.
Straw-packed hive, -	570 "
Cork-packed hive, -	675 "

As to the material for permanent packing, I think there is nothing available as good as

cork. I don't like chaff. I would prefer cut straw, but I think I would prefer the long, stringy sawdust, made in cutting cedar shingles, to either chaff or any other kind of sawdust. I regret now I did not test it with the others.

The cost of such hives would not be an objection to those who are willing to go to the expense and trouble of giving either spring or fall protection. I think they need not cost more than about double as much as single-walled hives of the same kind.

An overcoat worn by a laborer in the harvest field has been used as an illustration to show that in the heat of summer double-walled hives are too warm. They are not analagous cases. One of the purposes served by perspiration in animals is to keep the blood at an equable temperature, because when the body is kept covered with moisture there is rapid evaporation, and evaporation causes cooling. The overcoat encasing the body of the harvest hand would interfere with rapid evaporation, but there is nothing analagous to this in the hive.

The effect of a good double-walled hive is to prevent rapid changes of temperature. At all times when the temperature of the air in the shade is lower than the normal temperature of the brood-nest, non-conducting walls are advantageous, because the bees will require less food, and exert less labor, to keep up the proper heat for vigorous brood rearing.

Objection is taken to double-walled hives because in certain quarters there is talk about handling hives instead of combs. The leading bee-keepers in the Mohawk Valley in York State have conveniences for the rapid handling of combs which the bee-keepers in Michigan do not seem to appreciate to any great extent. These York State bee-keepers use closed-end frames, but they have no such nonsense as rims with thumb screws, or iron rods with nuts, to clamp their frames together, limiting the number of frames one can use to the requirements of the clamp. They hold their frames together with cords, and the number of frames they can thus clamp together may be two or twenty, in fact limited only by the length of their string. I can take up three such frames at once and hook them in place, take up and place three more the same way, and so on till the story is full, and then fasten the strings. I have a strip of band sheet iron at

the upper edge of one of the side boards, and on this I hook another story crosswise of the first. I often have four stories of ten frames each, and the strings are sufficient to hold frames plumb, if the bottom boards are level. These frames have other advantages "too numerous to mention" in my limited space.

If any of your readers are thinking of trying the closed-end frames allow me to advise them to send for a sample frame or hive to W. E. Clarke, Oriskany, N. Y., or some other reliable person who has got past the experimental stage in their manufacture. Let them adhere to the pattern rigidly, and not fall into the usual weakness of bee-keepers of trying to make improvements before they understand what they already have. It is unnecessary to discard other hives now in use. By a little ingenuity closed-end frames may be used for surplus on almost any hive. For instance, with very little trouble an upper story of fifteen closed-end frames may be placed crosswise on the double-walled Lungstroth hive described above, but want of space prevents my going into particulars.

It is in the surplus stories we handle frames most, and for cheapness, convenience, and saving of time in manipulation, I do not know of anything as good as the closed Quinby frames.

LINDSAY, Ont.

Feb. 27, 1891.

[It is evident that I did not make my meaning clear in regard to the harvester encumbered by an overcoat. I did not intend that the figure should be used to illustrate any phase of the *heat* question, but that the bee-keeper whose bees are in chaff hives, is as badly *hampered* in his *management* of the apiary, as the laborer would be in his *movements*, by the wearing of an overcoat.]

Protecting Single-Wall Hives Permanently with Planer Shavings.

L. C. WHITING.

YOUR special subject for March is of great importance to bee-keepers in this part of the State, on account of the level country, which makes it almost impossible to have cellars free from overflow.

I have tried chaff hives, air spaces, tarred paper, building paper with air spaces added, and have, after experimenting largely, come

to the conclusion that five or six inches of planer shavings between the hive and outer shell suits me best. The bottom of the hive requires the same protection as the sides. I used to make this protection in a temporary way each fall, and would remove it after warm weather had fairly set in. This protection is also found to be of great benefit in the spring, especially with weak swarms. A protected swarm will raise much more brood, other conditions being equal. After making these temporary protections during several years, I began (like others about here) to make them in a permanent fashion, and leave the hives in them summer and winter, in this way saving nearly all of the packing in the fall, and the unpacking in spring. This protection I found to be of great benefit also in the hot weather, as no shading was required.

The packing was left in, even with the top of the frames, summer and winter, and all the addition necessary in the fall packing was the six inches of shavings over the frames.

I make the outer shells sixteen feet long, holding eight hives. The cover is hung on hinges, opens from the back side, and is divided in the center so as to open to four swarms at a time. A board ten inches wide at the back of the box is also on hinges, and turns down even with the top of the hive.

When the bees swarm they are caught in a light swarming box and brought to the hive I wish them to enter. The manipulations are the same as in any other way of managing bees, except when I want to hive the swarm on the old stand; then I remove the sections and take out the brood and bees, place them in an outer hive and put them where wanted, fill the hive with empty frames, put on the sections and let the swarm run in. I sometimes place the hive of unhatched brood near the entrance of the old swarm, and when all is hatched, shake the bees off the combs and let them run into the old hive.

EAST SAGINAW, Mich. Feb. 24, 1891.

Chaff Hives Presuppose all Seasons.

T. F. BINGHAM.

SPRING protection for bees implies, among bee-keepers, many things; while, to those not familiar with the methods resorted to by bee-keepers, it would seem a simple and easy matter.

Nature did not essay to keep bees in this northern belt of latitude, and the effort to cultivate exotics is now, as it ever will be, attended with many unmeasured obstacles. To overcome those obstacles is impossible; but by having a skillful physician constantly at the service of the family, climatic and dietetic *la grippe* in many cases may, to a certain extent, be rendered harmless.

The conditions subject to the bee-keeper's control, so far as winter warmth is concerned, are easily met by the ready use of capital, but the spring conditions, necessarily due largely to the unnatural winter necessities, are not so readily doctored. So far, capital has not, with the genius at its command, become master of the situation. It has been able only to watch and pray, while the fruits of a misspent winter has determined the harvest as by foreordination.

No doubt it would be well to protect, as you remark in your editorial chart, when you would like to have the soundings made and the currents defined in such a manner as to enable any one to steer his argosy of bees to a safe and hospitable port; but bee-keepers, like sailors, often have to abide the old saw, "any port in a storm."

The multiplicity of hives, the complexity of manipulation, and the so-called evolution of apiculture, demonstrates too well that bee-keepers have not as yet been able to meet their necessary wants, to say nothing of the needs of their families.

Much has been written and said of chaff hives, and it has been well said, no doubt, and many results have been attributed to such hives, some on specific points peculiar to such construction, and so far it has not been controverted. On general principles, no one can complain.

Of course, a chaff hive presupposes all seasons, and does not lay much stress upon spring or any other particular season, or special management; as such, all the present types of chaff hives meet many of the practical bee-keepers' wants, with no more labor or expense, one year with another, than with single-wall hives.

Those who weigh and begrudge every drop of honey one superfluous drone may chance to consume, or envy the poor, black queen the generous comfort of scattering her eggs, must, in their desire to have all the honey, consent to take some risks and do some things others would not do.

A man's mind and strength, as well as the cold of winter, and the winds of spring, and

the lumber and material with which he is environed; must determine the practical method for him to pursue. A few things in Michigan must be kept in view. First of all a location sheltered from winds; abundance of good honey; a large space between the bottom of the combs and hive floor, and an entrance somewhat above the bottom.

ABRONIA, Mich.

Feb. 24, 1891.

Protecting Hives With Paper.

RAMBLER.

ROBABLY one of the main fascinations of bee-keeping is the many problems to be solved as we progress in the practice. Twenty years have made a remarkable revolution in appliances and methods of management; yet the problems come up to us as rapidly as ever.

One of these problems of long standing, and much study, is that of proper winter and spring protection.

That the cumbersome chaff hive is not the ideal or final method is evident from the continued unrest for something better. To speak broadly, the method is not flexible enough, for ease and range of work.

The permanently packed, cumbersome, chaff hive stands, in relation to all points of management, just as the box hive did to the higher movable frame system. And the tendency of the hour is to lighter and less cumbersome methods in hive management.

We find much variety of opinion upon the amount of packing, or of even dead air space, and when a person is not too firmly wedded to his methods he finds that a thin packing, or even the so-called dead air space, all properly applied, is as successful in wintering the colony as is a vast amount. Our Vermont bretheren are very successful in out-door wintering in packed hives, as far north as the 45th parallel, and, if they are successful, others can do the same under like temperature, from the Atlantic to the Pacific.

But cellar or house protection has gained a high reputation also, in not only saving the lives of the bees but in the greater economy of stores. But, even in cellar wintering, we are confronted with spring trials. The packing is therefore needed, even up to the month of June. To take bees from the cellar and pack in chaff or sawdust is an intolerable nuisance, and if such cumbersome things are to be used, why not make them a permanent fixture and have done with it? I

am happy to say, however, that we have a cheap and plentiful material that will answer the purpose full as well, if not better than chaff and sawdust. I will call it condensed sawdust, or, giving it a more familiar term, I call it paper. While the above cumbersome materials have been crowded around the hive to the extent of several inches, the same material in the form of paper has been despised.

For the protection of bees in the spring I use a hood of waterproof manilla building paper, lined with several thicknesses of newspapers. This hood can be put on or taken off in a few seconds, and can be folded up into a small space, and if protection in the spring is necessary, and the protection can be applied so handily, then it can be put on to advantage in the fall, as soon as the bees are prepared for wintering, say in September.

For wintering out-doors a more permanent covering is used. I have used oil cloth successfully, but perhaps a light woolen case and tin cover would be better for permanent use. Such a case could be easily made to fold up and to be packed away during the three or four months when it is not required.

With a light protecting case I would also use a lighter hive made of boards not thicker than one-half inch. In conclusion, I would say to the bretheren that I have not outlined mere theory in the above, but have put it to practical test, with the exception of the half-inch hive body. If I should ever use a hive of this thickness I would prefer a dovetailed corner. Let us study for few parts and condensation in our work.

Protect Single-Wall Hives by Packing Them in Clamps.

O. E. BOYER.

TO DO THIS successfully, the bees must first have plenty of good stores to last them through the winter and spring. If they lack honey, feed sugar syrup, making all colonies *strong* by uniting the weak ones. Select the most sheltered and driest ground in the apiary, and, just outside of where the bees are placed, make the clamp by first laying down scantling to set the hives on. About six inches outside of these, drive two rows of stakes, placing them about one foot farther apart than the hives are long, and about six feet apart in rows. Boards are now lightly nailed inside these stakes; the boards being left $1\frac{1}{2}$ inches

apart where the entrances of the hives will come. Place a board three or four inches wide at the entrance of each hive, so that it will hold the chaff above the entrance, thus allowing the bees to pass out and in.

The hives are then set in on the scantling, placing them about four inches apart, with their entrances adjusted to the openings left in the boards. Dry clover chaff is to be snugly packed all around the hives, covering them about three inches deep. This gives a space of four inches in front and six inches back of the hives that is filled with chaff.

Another tier of hives can now be set on top of these, and packed as the first, only above the last tier use about eight inches of the chaff.

The stakes are kept from spreading by nailing cleats across on top of them. On these cleats place good sound boards for a roof, allowing good lap and sufficient pitch to turn storms readily.

If the bees have been supplied with an abundance of stores to last them until honey comes the following spring, they can be left in the clamps until nearly swarming time and will need but little attention. I have been able to winter bees quite successfully in this way, more so than I could in the cellar, or than I have ever seen them wintered in the cellar. They should be put in the clamps about October 10th to 25th.

I expect to try some packed cu hions around the hives this spring, covering them with painted manilla paper, tied down close around the sides.

AINGER, Ohio.

Feb. 27, 1891.

A Cheap Outside Wintering Case.

H. L. HUTCHINSON.

MAKE the bottom board $2\frac{1}{2}$ inches larger all around than the body of the hive. Make a box, of $\frac{1}{2}$ inch lumber, without top or bottom, of the same dimensions of the bottom-board, for the outside case. There will be a two inch space between walls for chaff. The cover is made like a chaff hive cover with gable ends.

This style of packing cases costs but a trifle more than those made of shingles, looks neat and tasty, besides being handier and stronger.

Of course, there should be a bridge at the entrance, and an alighting board nailed to the front edge of the bottom board.

MAXVILLE, Mich.

Feb. 23, 1891.

Spring Protection Needed, but Chaff Hives are Unhandy.

A. L. KILDOW.

PROTECTION for single-wall hives vs. chaff hives is the March subject.

But you have so thoroughly gone over the subject, there is very little to say, except to tell whether you prefer chaff hives or single wall hives, with or without protection.

For the past two years I have successfully wintered a part of my bees on the summer stands, without protection, farther than a quilt or burlap over the frames.

And those in the cellar are not taken out until the last of March or first of April, when pollen can be gathered, and are then placed on the summer stands. On removing from the cellar, contract the frames so the bees will quite well cover them, placing a section case filled with burlap or other material over them, which should be left on until time for sections. This I prefer to any chaff hive of which I have knowledge.

My objections to the chaff hives are, first, you cannot move them; second, they are too hot for summer. I have had my bees, in a two-story chaff hive (Root's make), melt down and kill the entire swarm, before I could help them; while in the single-wall hives I would seldom have a comb melt. Third, they are a very unhandy hive to get to the lower frames, especially if the bees are blacks or hybrids, and it is very difficult to work over a hive where you are obliged to either stand astride one corner or get your knees against the side and your heels braced on the ground to keep your balance.

And as to bees in a chaff hive breeding earlier, my experience does not confirm it. For time and again on taking my bees from the cellar, the hives have seemed to be better filled with bees than when put away in the fall, and they would swarm just as early as those in the chaff hive.

But I do prefer some kind of spring protection for single-wall hives. If the spring should be early, your protection will do no damage, but if a cold, backward spring, it will be dollars in your pocket.

A good cheap protection can be made from banana boxes, which cost little, or often nothing. They are about the right width, but too long, saw them off to the right length, place the end back, make a cover for it, and you have a good, yet cheap, protection. These will last several years if taken care of when removed from the hive.

I have 110 colonies on their summer stands, without protection, and 54 in the cellar. Those in the cellar are keeping, apparently, the best I ever saw, there is not a gallon of dead bees in all.

SHEFFIELD, Ill.

Feb. 21, 1891.

When Separators Are Needed.

RAMBLER.

IN THE production of comb honey in my own apiary I have secured several thousand pounds in sections without the use of separators. The crate employed was a combined hive and shipping crate, and the honey, though quite uniform, was off-weight so much that the dealer disliked to handle it. The demands of the market then called for new shipping crates, and another crop of honey was repacked, and, though this was accomplished, it required much time and patience to fit bulges and hollows. Since passing through such an experience, I have used separators. I found in using a crate without separators that a steady flow of honey and close contraction gave me the best results in uniformity, while the first and last filled sections, and a slow honey flow, gave the most trouble.

I prefer a wood separator. I dislike any thing metallic in the interior of a bee hive; and, as far as my observation goes, the insect world avoids things metallic.

I can arise in the night and walk in my room upon the carpet with comfort even in the coldest weather, but if I step on the oil cloth around the stove I get off instant; and metal would be still more uncomfortable. Even in warm weather there is a difference in favor of the carpet, and did you ever notice that the wood separators, or any wood about the hive, has a sort of a mat surface, like a carpet, which must be very congenial to the bees?

I have always disliked to use separators permanently fastened to the frame, and now use a case that enables me to insert the separators as I desire. I can leave them all out if necessary until the bees get well started in comb construction, and then insert for finishing up. But I think if the weather is warm and the honey arriving rapidly, I am sure it makes but little difference in the yield whether separators are used or not, even from the beginning to the end of the season.

I have been interested in the discussion upon the subject of foundation, and wish to break my silence upon the subject by saying that I am in favor of full sheets in the brood chambers and in the sections. I also have just as good authority for saying that it takes twenty pounds of honey to make one pound of wax, as our missionary friends have for saying three or seven. The latter are mere assertions not founded upon careful experiments. Oh! for a careful, unprejudiced experimenter; where shall I find him?

Thin Wood Separators Preferable.

JNO. S. REESE.

MY EXPERIMENTS with separators for the past few years may interest some. Of course, there are a large number of us who are ready and willing to admit that they must be used (the city retailers of our honey want us to use separators), and that when honey is to be had the bees gather it regardless of the separators, and the question with me was, which are the best kind?

Heavy tin was first used. Cost too much. Very light tin next. Cost still too much. One-sixteenth inch wood was next used, which was liked better than tin, but was too thick. The next season I used several different thicknesses of press board, such as is used largely in manifold copy books. This press board is made of paper, is very hard, and has a good deal of oil in it. One thickness runs 68 sheets to the inch, and another over 100 to the inch. This press board gave promise of good results, but I soon found, when the cases were left on any length of time, as is often necessary, that the bees would gnaw or bite them badly, and when another little yield of honey came the sections would be uneven. The next thing used was wood again, about 28 to the inch, and for this I have discarded all other substances.

The thin tin and press board allowed the sections to come closer together, and less propolis was used, but I found the sections had to be gone over any way, and the slight difference cut no figure. The wood separators are good to wedge up the sections in T cases by placing them at the sides. Wood separators are better for use the second year, if you have time to clean them, which can be done very rapidly.

WINCHESTER, Ky.

Jan. 22, 1891.

Protection Needed for Single-Walled Hives
all the Year Round—The Light Movable
Chaff Hive.

J. A. ROE.

IT SEEMS to me there are several good reasons why it will pay to protect single-walled hives all the year round. Do we want the hot sun pouring down on a flat cover only a bee space from the sections? If you don't think this will drive the bees out of the sections, I do. Have you not seen such cool nights during a honey flow that the bees left the cases? I have. If the winter case is high enough to take in the surplus arrangements, it may be left on all summer, then the hive is protected from the hot sun and cool nights; and the labor of taking it off, storing it away and putting it back on in the fall is saved.

If the outer case is to remain on all the time, the inside hive can be made from thin lumber, and need not cost over one-half the price of ordinary single-walled hives, and could be worked the same as any single-walled hive, by simply lifting it out of the case, as when hiving swarms on the old stand, or wintering in the cellar. When moving these thin hives to an out-apiary the outer cases would have to be moved along, but the advantage gained by their protection would pay well for the trouble.

I would have these outside cases made the same as the outside of a good chaff hive, with a tin roof and nicely painted.

As to packing, I prefer to put it in the brood nest, in the shape of chaff dummies, with a cushion on top. This contracting the brood nest serves several important purposes. It puts the packing next to the bees, where it will do the most good, and thus enables them to rear and protect more brood; and it confines the bees to their stores. In severe winters bees often starve with plenty of honey in the hive. I saw a case of this kind the other day in a Root chaff hive, and this has been a very mild winter; but the bees happened to consume all the honey in the cluster, just at a time when it was too cold to move over on to other frames containing honey. Contraction of the brood nest on plenty of stores would have saved this colony. So I prefer to place the packing in the brood apartment, and when the room is needed for brood rearing, it is warm enough to take the dummies out.

In regard to chaff hives, I agree in all you say against *big, heavy, clumsy* chaff hives with high walls always packed, but *all* chaff hives are not made in this way. I have in my yard a small, light frame chaff hive, that weighs less than the Simplicity hive. I can handle this with the same ease as a single-walled hive, and I prefer to leave the packing out of the outside walls, which makes it a very cool hive for summer. Between such a chaff hive and protected single-walled hives, I think the advantages are with the chaff hive; but, as I have already written at greater length than I intended, I will not take up the space to give my reasons.

UNION CITY, Ind.

Feb. 26, 1891.

Outside Winter Cases—Why They are Superior to the Permanent Double-Walled
Hive.

ERNEST R. ROOT.

MR. EDITOR:—You ask me to give my views on outside winter cases.

Personally, I have had but little experience, but yet enough to make me believe there might be something in them. This started an investigation, and I called for reports; and the result is, that I find they are more generally used than I supposed; and not only that, they answer their purpose excellently. I notice in some correspondence that I am credited with the idea that they are something entirely new. I never thought they were. They are as old as the hills; but that fact, nevertheless, does not argue that they are therefore worthless, because I do not discover that they have been discarded where once given a fair trial.

What do I mean by an outside winter case? I mean something in the nature of a cap made of $\frac{3}{8}$ -inch stuff that can be set directly over an ordinary brood-chamber, leaving a space between the walls of from one to two inches. This winter case may be either "filled" with (1) dead air, or (2) with packing.

The former, which I will style No. 1, is, in detail, as follows: It is simply a box made of $\frac{3}{8}$ inch stuff, and dovetailed at the corners, with a permanent cover large enough to set down over an ordinary brood-chamber, and yet leave one inch of space between the walls and between the regular hive-cover and the top of the outside case. To prevent the circulation of air, this case is to be shoved into a banking of sawdust around the hive,

This sawdust will, from necessity, be more or less damp, and in cold or freezing weather the outside case will be frozen solid to it; and if the case is made tight, we have, as nearly as possible, a dead-air space. This is outside case No. 1.

Outside case No. 2 is a box made of $\frac{3}{8}$ stuff, without top or bottom, also dovetailed at the corners, two inches wider, longer and deeper, than the regular brood-chamber used, thus leaving an inch space between the walls. For a cover, a gable top is made just enough larger to telescope over, with a rim two inches deep. To pack such a hive, this outside rim is pushed into sawdust, as in the former case, and then packing material is poured around between the walls and on top of the cover, and the telescope cover is slipped over the case, and the bees are ready for winter. With both Nos. 1 and 2, of course some sort of bridge is necessary, so that the entrance of the hive can communicate to the outside.

Arrangement No. 2, I think, will work satisfactorily, because the regular chaff hives do. But some one says, "Do you want to leave only an inch space between the walls?" If you think that is not enough you can have more; but so far as I can gather from reports, an inch-packed space is just as good.

Of arrangement No. 1 with a dead-air space, I am not so sure of its successful working. But so far in our apiary it has done just as well as those that are packed like arrangement No. 2: and reports from a few places show that it does just as well. But in fairness I should say that the localities do not experience the coldness of our more northern stations.

As to cost, neither of these outside cases should exceed 35 cents, when made up in lots of 100. The first mentioned can be made for about 25 cents, by using building-paper or painted muslin for a cover, with $\frac{3}{8}$ boards beneath.

Now, then, why are these outside cases superior to the regular chaff hives, both outside and inside walls of which are permanently fixed? Before I answer this question I will admit that the permanently fixed double-walled chaff hives have given splendid results in wintering. There is scarcely one nowadays who doubts their immense advantage for spring and winter protection. For a series of nearly ten years now, we have lost scarcely three per cent. of the bees

wintered outdoors in chaff hives. Spring dwindling and cases of dysentery have been so rare in our yard of late that they are scarcely worth considering. If all colonies wintered outdoors had young queens to go into winter quarters, the percentage of loss would be reduced to somewhere about one per cent. Well, then, why do I want any thing better? Permanently fixed double-walled hives, as I have called them, while the results they afford are all that we could ask for, are too expensive. The price of honey hardly warrants their cost. In the second place, they are large, heavy, and, of course, awkward to handle and move about; and the fixed double-walled hives are something that cannot be very well adapted to them. The ordinary wagon-box will not take more than four of our large chaff hives; and even with the addition of a hay-rack there can not be loaded much more than a dozen. What we want, then, is all the advantages of the fixed double-walled hives without their disadvantages; and this means, in a word, the ordinary single-walled hive with a removable outside winter case. We have frequently loaded as many as 35 eight-frame Dovetailed hives full of bees on a wagon. Two such loads would make an ordinary out-apiary, viz., 70 colonies. To carry the same number in ordinary chaff hives it would take six loads, to say nothing of the great inconvenience of lifting them on the wagon, and then lifting them off on arrival at the out-yard.

Well, how about outside winter cases? We can move them in a large hay-rack, and stack them up six or eight feet above the wagon-box, or higher yet, so that we can take the whole number in one load; and not only that, we can move them in the fall whenever we have the most leisure. These, on arrival at the yard, can be set over the hives, and then the bees are ready for winter; or if packing or leaves are necessary, these can be slipped in between the walls, and we have double-walled hives all packed, and ready for winter.

The point is this: Outside winter cases and single-walled hives permit of moving an out-yard by piecemeal; while in the instance above given, half of the number of trips that fixed double-walled hives would require would suffice.

But some one will urge that these outside cases will be in the way during summer. No, they will not. They will be just right

to slip over the supers as a cap. They make the nicest kind of shade. I saw their advantage in this particular when I visited Mr. Elwood's apiary recently. He has a similar outside case which he employs even for summer use; and the sides hanging down protect the sides of the supers from the sun.

MEDINA, O.

March 3, 1891.

Arranging Hives in Circles — Scattering Buildings to Avoid a Wholesale Loss by Fire—An Excellent Shop, Honey Room and Bee Cellar.

B. TAYLOR.

FRIEND Hutchinson, I see the question of Buildings for the Apiary is to be continued, and I have concluded to give my ideas on the subject.

I consider the advice of most of your correspondents, to make everything, workshop, honey house, wintering cellar, storage room and all in one building, bad advice, and this for two main reasons, viz., convenience and safety. I know that it is cheaper, in the cost of building, to make all in one structure, but economy in time and labor in using them strongly favors scattering them through the yard, while safety *absolutely demands it*. Where all is concentrated in one building, should a fire occur, which we know frequently happens, it would mean ruin more or less complete to most bee-keepers.

My bee yard has the hives placed in three circles, the circles arranged in the form of a triangle. Each circle is 60 feet in diameter, with a smaller circle, containing eight stands of two hives each, within the larger circle. After a thorough trial, this arrangement pleases me better than any that I have yet tried. It is compact, convenient, and gives an individuality to each stand that I never could obtain in any other way.

My buildings are conveniently located around this yard. My curing house for comb honey is covered entirely with iron, making it as near fire-proof as possible. It is 12x12 feet in size, will hold 15,000 pounds of comb honey, and is situated so a fire in the other buildings would not endanger it. The wintering cellar is 16x40 feet in size, with capacity for 200 colonies, and is on the west side of the yard, and entirely out of danger of fire from the shop or dwelling. In the room above the cellar I store my next year's stock of hives, sections, foundation,

hive covers, bottom boards, queen excluding honey boards, and numerous other things, which, with my stock of bees, are all secure from fire, in case the shop, the most liable of all to burn, should be consumed. This wintering cellar is built of stone and wood, and partly below ground, and I left nothing undone, so far as knowledge goes, to make it perfect; and so well did success attend my efforts that for three months, without the slightest change, or even opening a door or ventilator, the thermometer has not been above 44° nor fell below 42°, and the bees seem to be wintering in the most perfect way. The building cost about \$300, and I consider it one of the best investments I ever made in the bee business.

The shop, 22x40 feet, is 1½ stories high, finished and painted in good style, and is fitted with steam power and machinery of the most perfect kind for making everything needed by a bee-keeper. It cost about \$1,600; and, although I do but little work outside of my own supplies, I consider it a first-class investment, as my 16-year-old son and myself can go into it any day and do the work of ten hand workers. Here, in the winter, we make hives, supers, sections, queen excluding honey boards, swarm catchers, foundation, and other needed things. There is a little building to the left of the honey house for cleaning the cases of bees before depositing them in the honey house. In the honey house I keep the comb honey for two months at a temperature of 100° before crating it. It is then crated in 12-pound, nearly leakage-proof crates, and in the crowded markets of 1889 I found no great trouble in disposing of thirteen tons at a fair price.

FORESTVILLE, Minn.

Feb. 2, 1891.

Why I Don't Use Separators.

W. P. HENDERSON.

DON'T use separators because bees will occupy the sections much sooner without them.

Where only starters are used in the sections, with separators, the bees, in drawing out the foundation, will stop short of the bottom, which will not be the case without the separators.

With full sheets of thin foundation in the sections, with separators, the bottoms are cut away by the bees for passage from side to side.

In shipping there is less breaking of the comb when it touches and is attached to the top, side and bottom of the sections.

I use only the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$ in., or 1 lb. section, and not one in one hundred will contain a full pound where separators are used.

I don't put on sections until the honey flow commences, when they will be immediately filled with bees, the secretion of wax commenced, and all sections drawn out at the same time, and not one section in one hundred will be bulged.

Instead of waiting until every section is filled and capped, I remove them as fast as completed, which I can more easily do if no separators are used.

Separators are unnecessary, expensive, and as now used give the bees much labor stopping cracks and crevices which they make when placed between sections: besides they give the bee-keeper more work cleaning sections.

Sections made true and of the same thickness and fitted close together in the supers have but little propolis stuck to them, and instead of traversing the fields and woods in search of gum, the worker leaves the hive on an errand of nectar gathering.

What few combs are bulged or built across and connecting two sections, are generally the result of the breaking down of the foundation.

When I commenced using sections I also used separators. For the past two seasons I didn't use them, and don't think I shall again, unless they would increase my small crop of honey comb. I don't think they would.

If I were again to use them I think I would remove them as soon as the starters were drawn out and before the honey was capped. This would make some work, but where one keeps bees for profit, one must labor as well as the bees.

MURFREESBORO, Tenn. Jan. 24, 1891.

Separators or Not?

E. P. GIBBS.

A FEW YEARS ago this was, to me, a question of no small importance, dearly did I learn the answer. I used tin separators and wide frames, *a la* Root, and was satisfied with the plan, but at that time tin was high, and I think the two separators for one wide frame cost five cents; but I managed to buy what I had to

have from one season to another until I had 150 colonies of bees. Now I wanted to make 200 hives, and the question arose, shall I make the wide frames and use the tin, or shall I use the case *a la* Heddon? I had made a few of these cases the season before, about 50, and had been unable to get the combs straight enough to pack, without putting them into the shipping case just as they came off the hive. But then I had used the two-inch section, and friend Heddon said it must be just seven to the foot.

Now, I had a neighbor, a supply dealer, and first-class apiarist, who was making the Heddon hive for sale and using them in his apiary. I consulted him in regard to the matter. He said he got them just as straight as he wanted them, by using the narrow section, and thought I would have no trouble if I would use the same width. He showed me honey that he said was a fair sample of his honey, and that was certainly straight and nice. Now, I had other evidence that honey could be secured perfectly straight without the use of separators. There was a young man, somewhere in Michigan, by the name of W. Z. Hutchinson. He wrote articles for *Gleanings*, and he told what he knew about getting comb honey without separators. How you must not put on your surplus cases until the hives were just boiling over with bees and you could see the new white comb on top of the frames. Then, and not till then, should you put on your cases. Then the bees would hop on to every starter at the same time and bring them all down perfectly straight and without a bulge in a single comb. Then Mr. Heddon told us that it was perfectly unnecessary to use separators in order to get straight honey in the sections: that by the use of "my honey case" and that "break joint honey board of mine," you can get them just as straight as you can with separators. Now, I knew very well that I had not got them in that way. But then, I had used the wide section, and that must have been where my trouble came in: for how could such noted apiarists be in the wrong? I must be a spooney, and as it lessened the cost of the hives fully one-fourth, I concluded to make 400 more of the Heddon cases, which I did, and used a part of them that summer. But I also used first what tin I had.

Now, when I came to get the honey out of those Heddon "*cases of mine*," it was with *revocation of spirit* that I saw my supply

dealing friend, and asked him how he had succeeded with the Heddon case that season. He assured me that everything was lovely with him, and he could not understand why I had the trouble. "It must be that I put on too many sections at one time." (He used an eight and I a ten-frame hive). Well, as the saying is, I was just knocked out.

But in the fall I went to Chicago, and the commission man that had his honey had a part of mine, and I got permission to look through that honey that was so straight that he had had no trouble in packing, and imagine my surprise when I could not find a single case from which I could take a section from the center without scraping the comb. I came home, made some more wide frames, and put tin on them. I have not used any more Heddon cases since then, except to set hives on. They do very well for that.

Well, what did my supply dealing friend do that winter? He said to me: "Ed, I think I will make some wide frames to hold one tier of sections and tin them, and try some of them next season." He did so. In the fall I asked him, "How do you like your wide frames with tin?" The answer was, "They are the boss." The next season he cleaned out what is now known as the old style Heddon case.

The next thing I knew Mr. Heddon was using wide frames and tin; and now comes the editor of the REVIEW and says, "I think perhaps I *ought* to use separators, if I don't."

I use separators because I can't get straight combs without, and it is hard to make me believe that any one else can. Which shall it be, tin or wood? So far as the honey is concerned, I think it makes no difference. I have seen as nice honey produced with one as with the other. The tin is the thinnest and takes less room out of the surplus arrangement, and I think would be the cheapest in the end, on account of its indestructibility. So far as to tin being a good conductor of heat, and would conduct the heat from the bees, I doubt whether this would cut any figure, from the fact that when the weather is so cold that the bees would need the heat that they (tin separators) would conduct away, it would be too cool for the secretion of honey, and the bees would be in a cluster in the lower part of the hive.

Now, Mr. Editor, the only objection that I can see to the use of separators is their *cost*, which in a large apiary is not trifling, and I would be glad to get along without them on that account, but until there is some plan hit upon that is better than anything that I now know of, I shall continue to buy them as I need them.

LYNDON, ILL.

Jan. 31, 1891.

Separators Needed Where the Honey Flow Fluctuates.

GEO. F. ROBBINS.

FRRIEND H.—I want to touch briefly on two items regarding the subject of separators. If you have no room for it, just light your cigar with it. I prefer separators. The pros and cons would be pretty easily and equally balanced but for two things. First—Although I have raised much beautiful honey without separators, yet I can, as a rule, secure more even comb surfaces and equal weights by their use. Swarms hived in contracted brood chambers with empty sections on the hive and plenty of room are prone to bulge the central row or rows of sections. But the principal trouble is due to the characteristics of my locality and honey flow. Almost my only source of surplus honey is clover, which never comes in a prodigious shower, and seldom stops very abruptly. But in regard to the elements we might say literally, "It never rains but it pours." We are apt to have either a drouth or a flood, either one of which will curtail the honey yield. A good harvest here must last from six to eight weeks. But it is very seldom that we ever have an uninterrupted flow during that time. One or two weeks, perhaps, after the harvest begins, and the bees get pretty well started in the sections, we will have a week of rain, which keeps the bees at home so much of the time and dilutes the nectar so much when they can get out, as to check the flow considerably. Then about the time farmers think that corn begins to suffer for rain the income reaches its best, but let the drouth continue for a week and again the yield gradually diminishes. About the first step then is to draw in the surface of the combs. The next is to omit the outside sections and build on the central ones only. Now, if a little more honey comes in a day or two, if there are no separators, they proceed to lengthen the unsealed cells of these central combs. You see, separators are the

only safeguard against these consequences of the ebb and flow in the honey yield.

Now the second item. You say that wood separators are preferable for T supers. I think not, if the tin should be nearly as cheap in the long run. We want to reduce the propolis nuisance to the minimum, if we can afford to do so. With tin separators, if the sections are keyed up tightly as they should be, scarcely more propolis will be used than where any two surfaces meet. But with separators 1-16 to $\frac{1}{8}$ in. thick there is space enough to ram in a whole lot of the stuff. Still, if wood separators are to cost us 30 cents per hundred and the tin \$1.90, perhaps we had as well use the wood.

MECHANICSBURG, Ill.

JAN. 22, 1891.

Separators and Leaders—How Can the Review be Improved ?

JAMES HEDDON.

HAVE a practical bee-keeper, a successful, dollar-and-cent honey producer, for the editor of a bee journal, is a very good thing, and no one was more pleased than I when you took up apicultural journalism. But there it is again; this rose bush has thorns on it. You know all about the practical facts relating to nearly every topic you bring up, and in the number just previous to the one in which the discussion is to appear, you go over all of the ground, and leave us fellows who have kept bees for years, nothing to do, except to say, "Yes, we think just as you do." If you would simply ask questions and not write an essay yourself a month in advance of all the rest of us, we would have something left to say, that would not be second hand. The way you are doing the business, we would rather you were entirely impractical, so you would print a lot of false assertions, then we could have something to throw clubs at. We have no objections to your essay, but we want it in the same issue with our own.

How do you like to be scolded in this way ?

How do you like my essay on "Separators," anyhow ?

DOWAGIAC, Mich.

JAN. 26, 1891.

[Accompanying the above was the following private letter.—ED.]

FRIEND H.—I mapped out, in my mind, what points I would touch on the Separator question, and then got out the REVIEW and read your leader, and found it led all over my entire ground, so I put in the enclosed

squib, for it contains food for thought, and may make a little spice to the general dish. I can't say a word about Separators, except to repeat just what you said one month previous.

J. H.

[What a time I do have trying to suit you all. Awhile ago Dr. Miller said, "Whatever you do, don't give up your comprehensive leaders." Still longer ago, Mr. Boardman complained because I expressed myself so freely in advance of the discussions, because some might hesitate to express their opinion when it opposed the editorial opinion. Now Mr. Heddon says that I tell everything in advance, so there is nothing left for him or anyone else to say.

The REVIEW is published for the purpose of securing and scattering the most reliable information pertaining to practical, successful, financial bee keeping, and its editor is always willing to take into consideration any scheme whereby it can be made to more successfully fulfil its mission. Instead of stating my views upon this question of writing exhaustive leaders in advance of discussion, I most urgently ask everyone who has the interest of the REVIEW at heart, to write me his views upon the subject. Not necessarily for publication, but simply that I may in this manner get my finger upon the public pulse. I know that we have recently had quite a discussion upon apicultural journalism, but, for all that, I should be very glad to have the personal opinion of *each* reader as to what might be done to improve the REVIEW. Would you be pleased to have more correspondence, or more editorial, or more extracts ? Don't hesitate to say "less editorial," if you feel that way, as it will not hurt my feelings a *particle*. Tell me with whose writings you are particularly pleased, with what number you were particularly pleased, with which feature of the REVIEW you are the most in love, etc., etc. Say what topics you would like discussed. In short, write a free, chatty, candid letter, telling me just what you would like to have me do. Such letters will be considered confidential, and will not be published—unless permission is given. You don't know, friends, what a treat it would be to receive such a letter from *each* of you. All would be read, and the suggestions considered, and it does seem as though good would come from thus getting so near to my readers as to know exactly what each wanted. Write to me.—ED.]

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, MARCH 10, 1891.

Dr. Mason says he always "goes for" the editorials in the bee journals. That's me. What is there so peculiarly attractive about editorials, I wonder? It can't be because an editor knows so much more than anybody else, can it? I guess not. I think it is just this: It is his business to write and to say things in an interesting way, if he *can*. If he can't, he gets to be something else besides an editor.

THE CALIFORNIA BEE-KEEPER.

Once again California has a bee journal of her own. Its name is *The California Bee-Keeper*, and its editor is Wm. Styan, of 130 Post St., San Francisco, it is a 16-page monthly, at \$1.00 a year. Evidently, Bro. Styan does not intend that his natty little bark, newly launched upon the tossing sea of apicultural journalism, shall founder upon the rock of low prices. Like the editor of the REVIEW, he probably looks upon the publishing of a bee journal at cost as a rather somber sort of amusement, unless there is an enormous supply business to be fostered thereby. Success to Bro. Styan.

THE INFLUENCE OF FREE SUGAR ON THE CONSUMPTION OF HONEY.

After April 1st next, the present duties on foreign sugar, which average 2½ cents per pound, will no longer be imposed, and a bounty of two cents a pound will be paid on sugar made in this country. This will certainly lower the price of sugar, and probably have some effect upon the price of honey, more particularly upon the lower grades of extracted honey now used by bakers and other manufacturers. Comb honey is a thing of itself; in one sense it has no competitor, in another it has. Cheap sugar will encourage the production of fruit preserves,

and they will compete, to a certain extent, even with comb honey. There is also another light in which this matter may be viewed. Sugar may become so cheap that it will be more profitable than ever to force all the white honey into the sections, and feed sugar for winter stores. I know from experience that with the proper methods of management, and the right kind of feeders, that this can be done very easily and cheaply. The obstacle in the way of using sugar for winter stores *has been* its high price.

PUT ONLY STRAIGHT COMBS ON THE MARKET.

It does not seem as though very much of a summing up is needed upon the Separator question. I think all will admit that only straight combs ought to be put upon the market. If the condition of the honey flow and colonies, or of the management, result in straight combs without separators, then they are a useless expense, otherwise they ought to be used. Combs need not necessarily be as straight as a board, but so straight that they may be readily removed from the case without injury. If a bee-keeper can secure nearly all straight combs without separators, and has a local market—in which he can sell direct to consumers—for the few bulged combs that he may have, separators would still be a useless expense.

If honey raised with separators brought a higher price in the market, I think their use would soon become almost universal; but Mr. Taylor gave what seems to me to be the chit of the whole matter when he said: "The drawback to these beautiful (straight) sections is that I can discover no appreciable addition to the selling price." Notwithstanding this, no bee-keeper ought to put honey upon the market so bulged as to cause any trouble for those through whose hands it may pass. Such a course must have a bad effect upon the sale of honey.

When separators are needed, it appears to be settled that wood is preferable for loose separators and tin for those to be nailed fast to wide frames.

HOW A BUSINESS MAY BE BUILT UP BY PERSISTENT AND INTELLIGENT ADVERTISING IN A GOOD JOURNAL.

That old-time friend, "Pittsfield Smith," wants to sell out. When he sent in his present advertisement it was accompanied by

the following letter, which, at last, I venture to give, even if it does praise the REVIEW, as it shows what can be accomplished by well directed and continued advertising in the right medium :

PITTSFIELD, MASS., Jan. 23, 1891.

Friend Hutchinson,—

The Dec. REVIEW has been received, and for me it comes just at the *wrong time*, for it looks so neat and handsome, and takes hold so kinder firm like, that it makes me feel bad to think of leaving it: but, owing to a steady press of real estate business, I am unable to give my growing supply trade the care and push needed, so I have decided to dispose of the latter. You can readily imagine that I dislike to do this, as I have spent time, money and work in building up a good business, and I know that at least one-half of my success has been due the clean, clear-cut pages of your REVIEW! I should have advertised more extensively had I been able to have properly filled the orders, but the REVIEW has kept me busy with a *select* custom.

I know I can sell to the right party and make it a profitable investment to the purchaser, and whoever buys will, and must, continue with the REVIEW as a part of the *necessary* expenses.

Yours truly,
C. H. SMITH.

LIGHT, SINGLE-WALL HIVES; CELLAR WINTER-
ING, AND SPRING PROTECTION.

The old, heavy, cumbersome, two-story, double-wall, chaff-packed hive is rapidly losing friends. The advanced methods of bee-keeping demand a light, readily-movable hive: a hive with thin walls and fixed frames: one that can be handled almost as readily as we can handle a frame. The old style of chaff hive is to modern bee-culture what the box hive was to bee-keeping of olden times. Single story chaff hives, with thinner walls and less packing are better than the old style of chaff hive, but they are better only in a *degree*. Give me the *naked* hive during the harvest. I don't want any packing cases standing over the hives in the summer time to reach over into or to lift off out of the way. Yes, I know they shade the hive, but they also prevent the circulation of air around the hive. How many of you remember about Mr. Doolittle killing the hen by putting her under a box out in the sun? A colony of bees is a living, heat-creating body, and would probably meet the same fate as the Doolittle hen, were it not that its mouth (the entrance of the hive) reaches open air. The way to keep the bees

from suffering from heat in summer is to have them shaded, and in hives having thin white walls. Shade them with a shade-board laid over the top of the hive, a space intervening between the board and the top of the hive. Then the cool breezes can reach every part of the hive. Yes, it is some trouble to take off the shade board every time a hive is opened, but no more so than to remove the cover to an outside case. If the case is used without a cover, then the top of the hive, that part that receives the most direct rays of the sun in the hottest part of the day, is left unprotected. I don't put a weight on shade boards any more; it is so seldom they are blown off that it is not worth while.

After reading all that has been written on the subject, I am still in favor of thin-wall hives; and, in this locality, I would winter the bees in the cellar, and protect them upon their summer stands in the spring. I am also of the opinion that wood is the material from which to make the outside case, and, where it can be readily obtained, sawdust the material to use for packing.

Don't think I am "stubborn" over this matter. Didn't I "modify" my views regarding the hiving of swarms on foundation, and that, too, after I had written a book upon the subject? When a man can do this, it seems to me that he might be considered open to conviction upon any subject.

INTRODUCING QUEENS.

To introduce a queen to a colony of bees, two things must be well considered—the condition of the bees and the condition of the queen. The condition and behavior of the queen is very important. If the queen will only walk about upon the combs in a quiet and *queenly* manner, and go on with her egg laying, she is almost certain to be accepted if the other conditions are favorable. Let her run and "squeal" (utter that sharp "zeep, zeep, zeep,") and the bees immediately start in pursuit. Soon the queen is in a ball of tightly clinging bees, and the only course is to smoke the bees severely until they release the queen from their embrace, when she must be re-caged for another trial. Dropping the ball of bees in a cup of water has been recommended to induce them to release the queen. To the

inexperienced this may be the better plan, as, when driving the bees away with smoke, it often happens that one of the bees will grasp the queen and endeavor to sting her, smoke or no smoke, and, in his attempt to rescue the queen, the novice may injure her.

To introduce a queen from one colony to another in the same apiary does not call for the skill needed when the queen has been absent several days from a colony, and is jaded by a long journey. I have frequently taken a queen from a colony, and caged it to send away, and then immediately taken a laying queen from a nucleus and placed her upon the spot upon the comb from whence I had removed the other queen, and had the satisfaction of soon seeing her surrounded by a circle of admiring retainers. I believe there are times, particularly when honey is coming in freely, when a colony with a laying queen would accept *another* fresh laying queen, simply by having her placed upon the combs; and all would go well until the queens came in contact. Then there would be a conflict in which the chances of the new comer would be equally as good as those of the old queen. I have sometimes doubted if bees recognized each other, or the queen, by the scent. I have clipped a queen's wing, and, upon returning her (placing her directly upon the combs), she was attacked by her own bees. Perhaps she acquired a different scent by being handled. If so, then the hundreds of other queens that I have clipped must also have acquired a different scent, yet they were not attacked.

So far as the queen is concerned, it is important that she be brought before the bees in a natural manner, in such a place and in such a way as they would expect to meet her. When clipping queens I have replaced them by dropping them upon the top bars, or at the entrance of the hive, when the bees would immediately pounce upon them as intruders. A puff of smoke would cause the bees to "let up," when the queen would walk majestically down upon the combs, or into the hive, as the case might be, and here she would not be molested, because the bees here found her where they *expected* to find their queen. When I wish to introduce a queen by allowing her to run in at the entrance, I first shake off the bees, from two combs, in front of the hive; as they are running into the hive, I allow the queen to run in with them. At such times as this there are no guards at the entrance, the bees that

are crawling in will not attack the queen, and by the time that the colony has recovered its tranquility, the queen is quietly parading the combs.

When a colony has been queenless long enough to build a batch of queen cells, I usually introduce a queen by simply taking a comb, with the adhering bees and queen, from a nucleus and hanging it in the queenless colony. By means of smoke, or a feather, I drive all the bees from the inside wall of one side of the hive, and against this side of the hive I turn the side of the comb upon which is the queen. Thus she is not immediately brought in contact with the excited, strange bees; but the bees intermingle, and, almost unconsciously, the whole colony has accepted the queen. If any of the queenless bees stray near the queen, they find her surrounded by a cortege of her own bees. She is also attending to her duties, and is almost *certain* not to be molested.

When queens come from a distance they are more difficult to introduce. They have not laid any eggs in several days, and are in a jaded condition. It is for this reason that it has always *seemed* to me that the Peet cage ought to be an unusually good cage with which to introduce queens. This cage can be attached to the surface of the comb, when the withdrawal of a tin slide allows the queen access to the surface of the comb that is covered by the cage. Care should be taken to select a spot where the young bees are just gnawing out. If a few cells of unsealed honey can be included, so much the better. The queen can then walk about upon *comb*, and with the Scotchman she can sing:

"My foot is on my native heath."

She can drink nectar from the unsealed cells. She will soon have a retinue from the newly hatched bees that are ready to accept her, as they have never known any other queen. She will begin laying in the few cells at her command, and when she is released, will be in a nearly normal condition, and surrounded by a few followers. Usually the bees release the queen by eating under the cage. If they do not, she can be released by thrusting the blade of a pocket knife through the comb from the side opposite to the cage, and giving the knife a twist or two. The bees will clean out and enlarge the opening, thus letting out the queen. One objection to the Peet cage is that the bees may release the queen sooner

than is best. Of course, this may be remedied by leaving in the tin slide, but this defeats the advantages, or supposed advantages, arising from caging the queen against the comb. I say "supposed advantages," because, as favorable as the Peet cage appears as an introducing cage, I have been equally as successful with other cages. I have had excellent success with a cylindrical cage, made from a piece of wire cloth four inches square. Ravel about two wires from one edge of the wire cloth, roll it up, thrusting the projecting ends of the wires through the meshes of the opposite edge, and clinch the ends by bending them over. This forms a round tube about an inch in diameter and four inches long. The ends may be stopped by plugs of wood, corncob, or cork, or the ends may be "squeezed" until they are closed. When the queen is confined in such a cage, the cage should be placed between two combs just over the brood nest, and the combs pressed together until their pressure holds the cage in place. That the queen may not perish for want of food, should the bees neglect, or refuse, to feed her, see that one side of the cage is pressed against some part of the comb containing honey.

No definite length of time can be given as to how long a queen should be caged before she is released. The behavior of the bees is the best guide. If they are "balling" the cage, clinging to it in masses, like so many burdocks, their behavior indicates what the queen would have to endure were she within their reach. The operator must wait until the bees are in a different mood; until they are walking quietly about over the cage, as unconcerned as upon the combs of honey—perhaps the bees may be offering food to the queen and caressing her with their antennæ. This shows that the bees are favorably inclined towards the queen, and that it is safe to release her.

When Mr. S. W. Morrison was in the queen business, he sent out bees in a cage that was an excellent one for use in introducing queens. Its opening was covered with a piece of zinc in which was a perforation just large enough to allow a worker to pass, but not a queen. Over this was a slip of unperforated tin. As soon as it was discovered that the bees were favorably disposed towards the queen, the tin slide was turned, admitting them to the cage. For some peculiar reason, the bees will not attack the queen, in the cage. Perhaps it is because

she cannot run, and perhaps it is because the bees don't feel as courageous when they find themselves cooped up in a cage. With this arrangement a large number of bees can go in the cage, a few at a time, and pay their respects to her majesty. After the bees have been on their good behavior for a day or two, the queen is finally released by turning aside the slip of zinc. As the queen emerges she is accompanied by a little company of bees that has virtually accepted her as sovereign of the hive.

There is probably no method of releasing a queen, let the cage be what it may, that is equal to that of stopping the entrance to the cage with Good candy, and allowing the bees to eat it out. The bees that first meet the queen are in good humor from the candy they have eaten. The queen is released quietly at a time when the colony is undisturbed.

Until quite recently a few of the leaders in apiculture advised bee-keepers to examine a colony within an hour after the queen was released, to see how she was being treated. If she was found in a ball of bees she must be re-caged. No worse advice could be given. The disturbance frightens the queen; she begins to run and "squeal," when the bees immediately "ball" her. When a bee-keeper rescues his lately-released queen from a ball of bees, it may be natural for him to conclude that his interference saved her life; but the truth in nine times out of ten would be that it was this very meddling that put her life in jeopardy. After a queen has been released the colony should be let entirely alone for three or four days, or a week, until the queen has become fully established as queen of the hive.

To be successful in introducing queens that have come from a distance, the condition of the colony must be well looked after. It is better that it should be *hopelessly* queenless. Let it build a batch of queen cells, and remove them after all the larvæ are too old to be developed into queens, then the bees are almost certain to accept a queen if given to them in a proper manner. I would sooner release a queen after the bees had discovered the loss of their old queen, and before they had begun the construction of queen cells, than to release her after the cells were under way, *unless* I waited until the cells were sealed over and had been removed.

When engaged in queen rearing, I did not lose one queen in 100 that I attempted to

introduce to a colony that had *built a batch of cells*.

Bees are in a much more amiable mood when honey is coming in freely. Don't attempt to introduce queens when no honey is being gathered, without feeding the bees two or three days before the queen is released.

There is one method of introducing queens that *never* fails: it is that of confining the queen in a hive with several combs of just hatching bees. Go over several hives, and select enough combs, from which the bees are just emerging, to fill a hive. Choose those combs having the least unsealed brood, as the most of this will perish. Shake off every bee and hang the combs in a hive, closing it up *bee-tight*. Allow the queen to run in at a small opening, closing it behind her. This work should be done in the fore part of a warm day. In a few hours enough bees will have been hatched to make quite a little cluster, with which the queen is *absolutely safe*. It might be well to carry the hive into the house at night, for two or three nights. In a week the hive may be given a stand in the apiary, and the entrance opened enough to allow the passage of a single bee. So much trouble is not advisable unless it is with a very valuable queen.

If bees are shaken from their combs into a box, and kept confined, without a queen, several hours, Mr. Doolittle says they will invariably accept a queen if given one in the box. In other words, they are *hopelessly* queenless, and away from their home, and will accept anything in the shape of a queen.

Mr. D. A. Jones is successful in introducing queens by using chloroform. Use a small Bingham smoker. Put a dry sponge at the bottom of the fire barrel. Wet a sponge with chloroform and put on top of the dry sponge. Over this put another dry sponge. Put on the nozzle and then drive the vapor into the mouth of the hive, the same as smoke would be driven, by working the bellows. When the bees begin to drop down on the bottom board, allow the queen to run in, and the work is done. I have never tried either the Doolittle or the chloroform method.

In recapitulation I will say, if you wish to be *sure* of success in introducing queens, received from a distance, observe the following directions. If the bees are not gathering honey, feed them. Have the bees *hopelessly* queenless. Before releasing the queen, see

that the bees are favorably inclined towards her. Allow the bees to release her by eating candy out of the entrance of the cage. Don't disturb the bees for several days after the queen is released. I am aware that success is often achieved when some of the points are neglected, but each has its weight.

There, friends, I have gone over the ground as faithfully as I could in the space I have used. Now will you tell me where, in your opinion, I have made mistakes, and what of importance I have omitted, and I will print your replies in the April issue. Many will be ready to introduce queens by that time, hence a discussion of the subject will be "in order." Let us have a thorough interchange of ideas and experiences.

EXTRACTED.

Painted vs. Unpainted Hives—Whitewash as a Substitute.

Wm. G. Hewes tells the readers of *Gleanings* how important it is to have hives painted white, or whitewashed, unless they are shaded. From his article I make the following extract:

"In March 15th *Gleanings*, 1889, Mr. Doolittle has an article advocating unpainted hives, saying that, as the paint prevents evaporation of moisture, painted hives are much more damp and cold, and that bees in the unpainted ones will swarm from one two weeks earlier in the spring. A. I. Root, in his foot-notes, recalls the fact that he had often seen water running out of painted hives, and says that he is pretty sure there would have been no such ice and condensation had the hives been unpainted. Thinking over the matter I remembered that, in my painted hives, I had had many combs rotted by mildew. I was increasing my apiary rapidly at that time, and had many hives to build. I decided not to paint them. The interior valleys of California are hot. Where my apiary is, the mercury often registers in the shade 110° Fahrenheit for eight hours a day and eight days at a time. Well, this heat on my black unpainted hives causes the combs to melt down *en masse* unless the hive is shaded or very much ventilated. One day in July, one of these hot days came. I had wilted in the morning as soon as the sun hit me: and, though knowing that my bees needed extra ventilation, I lay under the dense shade of an oak and read 'King Solomon's Mines.' In the evening I crawled off to look at the bees, and it seemed to me there was a creek of honey running out of the entrance of all the unpainted hives in my apiary. I lost some forty colonies outright, and there were many others badly

damaged. The white painted hives stood the ordeal vastly better, though even in them, when the entrance was not full width of hive (like your Dovetailed hive), there were some combs melted down. My combs were mostly new ones, and very full of honey. After that disastrous experience I whitewashed my hives, and now I believe that that is the proper treatment for them, as it combines both the advantages of the painted and the unpainted hives. The whitewash does not prevent evaporation of moisture; and by giving a fresh coat each spring the hives much surpass in whiteness, and therefore in coolness, a painted hive, especially if it has not been painted for two or three years. Mr. Doolittle, too, seems to have had some unfavorable experience with unpainted hives since writing his article of March 15, 1889; for, May 15, 1890, one year and two months after, he closes a letter by saying he now 'prefers to paint his hives and let them stand in the sun.'

Your Dovetailed hives, both in body and style of cover, are well suited for this climate, as nails alone will not prevent boards from warping here."

I should be willing to leave hives unpainted, if they were to be shaded, were it not that it is an advantage to have all hives exactly alike in appearance. Some operations are greatly simplified by this uniformity in appearance. For instance, that of hiving a swarm by allowing it to return to the old location. If a man could have all of his hives made at one time, and never need any new ones, this objection to leaving off the paint would not hold good. But when new ones are added and none of the hives are painted, there is a decided difference between the old and new as regards the color.

Grading, Shipping and Marketing Honey.

At the recent meeting of bee-keepers in Albany, N. Y., Mr. Segelken, of the firm of Hildreth Bros. & Segelken, commission merchants of New York City, read a paper upon grading and shipping honey, that was unusually meaty, so much so that it is a difficult task to condense it; but I am going to try and see what I can do in that line, and give the result below:

"In these days of sharp competition it is necessary to put goods on the market in the most attractive style.

The single-tier case is better than the double-tier. If a section leaks in the double tier, those below are daubed.

Put only the net weight on the cases, and put it in plain figures on the end of the case. Never have any odd ounces; the dealer is obliged to "throw off" the odd ounces. Changes some of the sections from one case to another, until each case has an even number of pounds.

Put heavy paper in the bottom of each case, and turn it up half an inch on the sides. If any combs break down, the paper catches the drip and prevents it from running out and daubing other cases.

Heavy *pasteboard* boxes (the Schofield) are preferable to the folding box made of light paper.

In the New York market, *glassed* sections still find a ready market, in fact the demand is increasing and promises to be permanent. Of course, it is profitable to put up honey in this shape. The nailed or dovetailed sections are preferable when the sections are to be glassed. The glass is attached by tin tags or wire nails. Glue is sometimes used, but the glass sometimes drops off if the glue is not good.

It is of great importance to have sections weigh not more than a pound. From 14 to 16 ounces is preferred. It is slow work selling heavy sections. Make the sections narrower—not more than $1\frac{1}{2}$ inches, or $1\frac{3}{4}$, so when glassed the section will not weigh more than a pound.

Two grades are sufficient for white honey. Never mix dark and white honey. Straight buckwheat honey finds a readier sale than mixed honey.

For extracted honey, basswood, white clover, or buckwheat, a keg holding 150 pounds, a half barrel of 300 pounds, or even a barrel of 500 pounds is preferable. Tin cans are expensive, and the honey in them will not sell for any higher price.

All honey should be sent by freight. There is less likelihood of its being broken, and the cost is less. As the transportation companies will carry it only at owner's risk, why pay express companies three times freight rates?

Ship in the original cases. Don't put six or eight cases into one large crate. [Here I must disagree. If the honey is put into an ordinary box or crate, that may be tumbled about either side up, then Mr. Segelken is right; but if the crate is made with slats at the side, allowing the honey to be seen, and of such size that it will hold about 150 pounds, and provided with handles that tempt freight handlers to grasp them, then the safety of transit is enhanced.—Ed.]

The best time to ship honey to market is in September and the first part of October. Be the crop large or small, early shippers get the best prices and quickest returns."

Outside Cases for Winter.

Gleanings for March 1st, comes just in time for me to copy the following most excellent and timely article from the pen of that old-time friend and correspondent of the Review, J. A. Green:

"From the references that have appeared in *Gleanings* lately in regard to outside shells for packing bees that are to be wintered on their summer stands, the novice would almost be led to think that it is a new and untried device. I have used such packing-

cases for four years; and at present I have over a hundred colonies protected in this way. In fact, with the exception of a few in your chaff hives, every colony that I am wintering out of doors is snugly packed in leaves or shavings held in place by an outer case. Besides this, there is a great stack of them waiting to be put over the bees now in the cellar when they are brought outdoors.

"What," you say, "do you go to the trouble of packing bees that have passed through the winter safely in the cellar?" Yes, that is just what I am going to do. I believe that it pays to protect bees, and I think there is no time when they need protection more than in the spring, when we want them to rear as much brood as possible. Thin-walled hives are too easily affected by changes of temperature at this time, and brood-rearing suffers in consequence.

To make my packing cases I use ordinary lath cut into two pieces, 20 and 28 inches long. These are nailed to three-inch corner strips to form the ends and sides of a box without top or bottom. It is made of such height that, when set over the hive on its stand, the outer case resting directly on the ground, it will be five or six inches higher than the hive. The end pieces should be nailed to the flat side of the uprights, and two or three left off at one end for the entrance. Now put a "bridge" over the entrance, set the packing-case over the hive so that the front rests on the bridge, holding it firmly in place, and put in your packing material. This may be whatever is convenient. I generally use leaves. Soft leaves, such as those of the soft maple, are excellent. Planer shavings or sawdust are more easily handled, and better.

We now want a roof over it. Above all other qualities it must be water-tight. Wet packing is worse than none at all. I have given considerable thought to the matter of making a roof that would be cheap, durable, and effective. All these qualities are hard to combine. A very good and cheap roof may be made by nailing barrel-staves crosswise to a three-inch strip a little longer than the packing-case, putting over them a sheet of roofing-paper, then nailing on another layer of staves so as to break joints with the first ones. The most satisfactory covering, though, and the best, all things considered, is a sheet of corrugated iron, large enough to cover the whole. An ordinary sheet (96 in. long) makes three pieces just right. Nothing further is required. Just lay the sheet of iron on top, and lay a stone on it to keep it from blowing away; or, better, lay a short piece of board across the top, and the stone on that. This makes a roof that cannot leak; and with ordinary care it is practically indestructible. With a coat of paint occasionally, it will last as long as the owner. When not in use they can be stored in a very small space, as they nest into one another. They make the best of shade-boards for summer, if any are desired. Cut the corners off rounding, so clothing will not get torn on them.

These corrugated iron covers cost me a trifle less than 20 cents each. A bunch of lath, costing 15 cents or less, will make two

packing-cases. I think these are practically as good as if made of more expensive lumber. If you desire, you can turn them into excellent chicken-coops for summer use. If you want them more ornamental, paint them with a mixture of skim milk and hydraulic cement, or other cheap paint. Really, though, I don't think they look very bad unpainted. They ought to be of a dark color, so as to absorb as much of the sun's heat as possible whenever it shines. This helps brood-rearing in the spring wonderfully. One of the principal arguments in favor of unpainted hives is, that bees build up in them better in the spring. I think this is mostly due to the dark color. With a dark outer case you have all this advantage, and more, as the packing retains the heat."

Rendering Combs with Sulphuric Acid.

When rendering wax with a steam wax extractor, or with the sun extractor, it is well known that all of the wax will not run out of the refuse of cocoons and pollen. Two things not usually employed are needed to extract the wax from this refuse. One is an acid to "cut" or disintegrate the cocoons so as to free the wax, and the other is a press to squeeze out the wax. Mr. F. A. Salisbury contributes to *Gleanings* so valuable an article on these two points that I think best to copy it entire, together with the editor's comments:

"After reading E. France's article on rendering old combs into wax, on page 15, I thought I could give you a better plan, and one which would take that dark-colored wax and make it into as nice wax as any you ever saw. It will be so clear, that, when melted, you can see to the bottom of a dipperful, looking like wine. By this plan you can take the refuse of cakes of wax, that which is scraped off the bottom after cooling, and looks like sand, and make it into as nice wax as can be made. This last season we had a barrel of this dark stuff, which looked like dirt, and you would have said it was not worth the trouble; but I put it through the process, and got from it 60 lbs. of yellow wax, worth at least \$15.

I know that iron or galvanized iron will turn wax a dark color. I went to quite a little expense rigging up steam-pipes, and tanks of galvanized iron for my foundation business. The first melting did not show much, but after melting the scraps over three times I stopped making and tried to find out what was the matter. I knew the wax at first was all right, and concluded, after a while, it was either the galvanized iron or steam of too high pressure. I then went to work, tore down all the fixtures, and went back to melting in a large wooden tub. This wax, which was almost a dark green, I put through my process of melting, and had yellow wax again. My plan, whereby I can render 100 lbs of wax from old combs in three hours, is as follows: Get a barrel that

is good and strong, and $\frac{3}{8}$ " steam-pipe, long enough to reach from a steam-boiler to the bottom of the barrel. Copper pipe would be better, but I find the small surface of the pipe touching the wax does not make any appreciable difference. You want a valve to shut off the steam, four pieces of pipe five inches long, an elbow, a cross, and three caps. In the pieces of pipe five inches long drill three 1-16-inch holes, spaced about two inches apart: screw an elbow on the bottom of the pipe coming from the steam boiler; then one of the short pieces of pipe in the elbow; now screw on the cross, then the three pieces of pipe, and put a cap on the end of each. Turn the pipes until the small holes point all one way, so the steam in issuing will et the water whirling. Now fill the barrel one-fourth full of clear water. Put in one pound of sulphuric acid: turn on the steam, and when boiling put in the old combs. Let all boil until heated thoroughly, and stir with a large stick at the same time.

Now you will want a press. Mine is simply a box made large enough to hold three racks, made of $\frac{3}{8}$ " x $\frac{1}{2}$ "-inch square sticks 15 inches long, nailed to two end pieces 15 inches long, so there will be $\frac{1}{2}$ " inch between the slats. In the bottom of the box I have a tin dish one inch deep, and it just slips down inside nicely. At one side the tin is turned down, and a hole is made in the bottom of the box for the wax and water to run out. Get a rim two inches wide and twelve inches square made from $\frac{3}{8}$ "-inch stuff, and three pieces of burlap three feet square. Lay one of the racks in the tin dish in the bottom of the box; on this the two-inch rim: over this one of the pieces of burlap. Press the burlap down in the rim, and dip the melted wax over into it until full to the top of the rim. Bring the burlap over the top: take out the rim; lay another rack on top of this, and so proceed until you have the three filled; then place a follower on top of all, and a common jack-screw on top of the follower. Make a frame out of 2x4 scantling to go under the box and come to the top of the jack-screw. You will want two bolts to go through the top and bottom pieces of the frame. Have them of $\frac{5}{8}$ " round iron, and screw the nuts up tight. Put the top piece of the frame over the jack-screw, and turn the screw slowly so as to give a chance for the wax to run out. After it has stopped running, take out the refuse, and you will find the wax nearly out. You could not get out of a barrel of comb, after pressing, if it were possible to get it out, over a teacupful of wax. We have tried a number of ways, but the above is the best.

I tried an arrangement inside of a barrel to continually stir the comb: and over the comb, under water six inches, I had a screen to keep refuse from rising. I thought all the wax would in time rise to the top, but more stayed under the screen than came to the top. I also tried keeping two barrels of comb, that was thoroughly broken up, moist with water for two years, to see if I could not rot the cocoons and pollen so it would be like dirt. If I could rot it, I could get out all the wax, and not make me a press, but simply melt it in water, and the dirt would

settle. This was a failure. The smell of the stuff when melting would fairly knock a man down at ten rods. I was very sick with malaria shortly after. Some thought I caught it from that bad-smelling boiling mixture. The wax I did get out of it was all right. I had to use the press to finish up. No more jobs like that for me. I can take cakes of wax that come to me dark, and, after rendering, they will be a nice yellow color. You simply want to melt them in the acidulated water, cover the barrel over tight, and throw an old horse-blanket over the whole; let it stand five hours, and then dip out in pans carefully, so as not to disturb the dirt at the bottom. Save all the refuse from scraping the bottom of cakes, and put through the same process.

F. A. SALISBURY.

Syracuse, N. Y., Dec. 5, 1890.

[Thanks for your valuable article. When I visited the Dadants a few weeks ago I learned that they treated their refuse, that would not refine by ordinary methods, with sulphuric acid. I do not remember just exactly the proportion of sulphuric acid they use with the water, but I think their method and plan was very similar to the one you describe. If I am wrong they will please correct. Mr. Dadant told me when they first used sulphuric acid, the man who used it earned for them \$75 the first day, and a smaller amount the second day, until all the cast-away wax refuse which could not be refined by ordinary methods was used up. The price at which wax now sells renders this a very important matter. Mr. C. P. Dadant told me not to throw away old refuse: that a great deal of first quality of wax can be gotten from it by the use of the solar wax-extractor and sulphuric acid. The action of the acid seems to be to rot or disintegrate the cocoons and other matter, so as to free the wax.] E. R."

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Largest Bee-Hive Factory in the world. Best Goods at lowest prices. Write for Illustrated Catalogue.
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Don't wait until the busy season before you order your queens, as it sometimes causes delay.
12-9-4f A. L. KILDOW, Sheffield, Ill.



**A GLIMPSE
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Now making
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Dovetailed
HIVES

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We can furnish, at wholesale or retail, everything of practical construction needed in the apiary; and at **Lowest Prices**. Satisfaction guaranteed. Send for our New Catalogue of 51 illustrated pages, free to all.

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Please mention the Review.

Bee-Keepers' Supplies.

Before placing your orders for supplies, send for our Illustrated Catalogue. We are now making best goods at lowest prices.

PAGE, KEITH & SCHMIDT CO.,
12-50-5t New London, Wis.

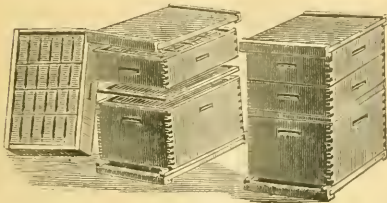
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Names of Bee-Keepers.

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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

W. Z. HUTCHINSON Flint, Mich

1891 Early Italian queens from bees bred for business. Each \$1.00; six \$1.50. Order now, pay when queen arrives. W. H. LAWS, Lavaca, Ark.



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I have bought the Hearn queen that, together with her bees took the **FIRST PREMIUM** last fall at the Detroit Exposition. Her bees show five yellow bands, with no dark bands between, are very gentle and great workers. Next season I shall offer her daughter's at \$1.00 each, or 6 for \$5.00. I also have 20 tested queens, reared last season by Alley, from his "hundred dollar" queen, that I will sell at \$2.00 each. Get up a club, and secure a good paper and your

Queens

at a reduction. To secure a few orders EARLY, I will make the following offer. To each person sending me \$1.75, I will give one year's subscription to the REVIEW and one queen; for \$2.75, the REVIEW one year and one of the Alley queens; for \$5.50, six queens and the REVIEW one year, or 6 queens and 6 copies of the REVIEW one year for \$10.00. This offer will not hold good after May 1st. The REVIEW will be sent on receipt of order; tested queens the last of May, and untested in June. Orders filled in rotation. Make money orders payable at Flint.

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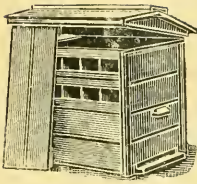
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Clark, cold blast smokers, each, 50 cents; five for \$2.00. Bee veils, best on earth, 35 cents each. Parker foundation fastener, 25 cents. Japanese buckwheat, 60 cents a bushel; big 18 cents extra. Foundation, medium brood, 43 cents; twin for surplus, 48 cts. Alsike clover seed, \$8.00 per bushel. Extractors, books, etc., in stock. Circulars free.

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 Until June 1st **Either** Journal we will send **trial trip for 6 mths 25 cts.**
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Its Methods and Management.

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125 colonies that have been wintered in the cellar and are in good condition, are offered for sale; the sale to take effect from the 1st to the 15th of April. Write for particulars.

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I breed from choice, imported stock. Leather colored. Write for price list.

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Samples free. Send your beeswax and have it made up. Highest prices paid for beeswax.

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Ho for California!

For sale, 100 colonies of bees, full colonies, at \$3.50, and supers thrown in. Stanley extractor, Vandervort mill and other fixtures. Send for descriptive price list and realize the bargains.

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QUEENS FROM THE SOUTH,

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APRIL 10, 1891.



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Five Banded.

I have bought the Hearn queen that, together with her bees, took the **FIRST PREMIUM** last fall at the Detroit Exposition. Her bees show five yellow bands, with no dark bands between, are very gentle and great workers. Next season I shall offer her daughters at \$1.00 each, or 6 for \$5.00. I also have 20 tested queens, reared last season by Alley, from his "hundred dollar" queen, that I will sell at \$2.00 each. Get up a club, and secure a good paper and your

Queens

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ELMER HUTCHINSON,

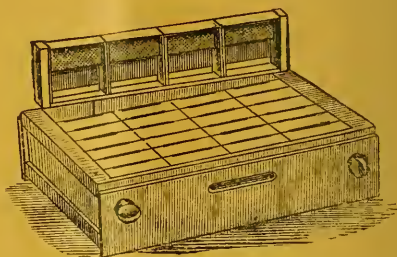
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XX THIN FOUNDATION,

from white wax, which every one wanted last year. See what Mr. Hutchinson says in the Feb. REVIEW, page 45.

Wm. W. CARY,

(Successor to Wm. W. CARY & CO.) Coleraine, Mass.

2-91-f

Please mention the Review.

The Missouri Bee-Keeper

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4-91-12t

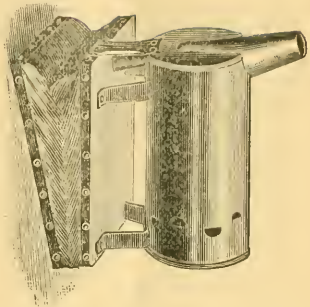
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Smoker, 3 inch barrel, freight or express each, \$1.20. By mail, \$1.40. Per dozen, \$10.80. Feeders, one qt. frt or express, per pair, 30 cts., by mail, 40 cts.; per dozen, \$1.60. A. G. HILL, Kendallville, Ind., or H. M. HILL, Paola, Kansas.

These smokers and feeders are kept in stock by Thos. G. Newman & Son, Chicago, Ill.; G. B. Lewis & Co., Watertown, Wis.; W. H. Bright, Mazeppa, Minn.; and Chas. Dadant & Son,



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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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

W. Z. HUTCHINSON, Flint, Mich.

Tested Queens \$1.00

Some have complained because queens have been sold at such low prices. While I have no desire to lower the price of queens, I feel that, under the circumstances, I am justified even in offering tested queens early in the season at \$1.00 each. For three years I have practiced introducing young, laying queen, early in the spring, to a large share of my colonies. This was done to prevent swarming. That it is effectual has been proved by the fact that, of all the colonies so treated, only one swarmed, and in this case something was wrong with the queen. To be successful, this change of queens must be made early, before the bees even begin thinking about swarming. I can get young laying queens from the South at \$1.00 each, but the question is, what shall be done with the queens that are taken out? It is to solve this part of the problem that I offer tested queens at \$1.00. At this price, they go off quickly. When the time comes to introduce the young queens from the South, I have enough orders on hand to take all the tested queens removed. The queens offered for sale are all last year's queens, fine Italians right in their prime, and, to those in need of tested queens, are a bargain. Those wishing one or more tested queens, may send in their orders now, and the queens will be sent as soon as the season will admit. Those preferring the young, laying queens from the South, can have them at the same price—\$1.00. Can furnish a few tested Carniolan queens at \$2.00 each.

W. Z. HUTCHINSON, Flint, Mich.

WANTED: BEE-KEEPERS,

To send for our 1891 circular which gives information about SUPPLIES, BEES, etc. Golden, Italian Queens, bred for business as well as purity. Supplies very low. Bees and queens lower. All No. 1. 4-91-11 JNO. NEBEL & SON High Hill, Mo.

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Reference: Editor REVIEW.

ITALIAN QUEENS AND SUPPLIES FOR 1891.

Before you purchase, look to your interest, and send for catalogue and price list.

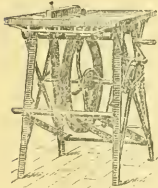
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4-91-6t Please mention the Review.

Barnes' Foot and Hand Power Machinery.



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4-90-16t

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Pratt's Perfection Queen Cage

Is the best shipping and introducing cage in use. Only \$10.00 and \$27.00 per 1,000. Sample free to any queen breeder. We manufacture a full line of bee-keepers' supplies, and send catalogues free to any address.

C. W. COSTELLOW,

8-90-tf Waterborough, Me.

TIMPE'S NEW POTATOES

TOOK THE LEAD

At the Mich. Agricultural College

For Five Years,

As the "BEST EARLY POTATOES," Bulletin No. 70, just out, praises them. See description in my ad. on page 53 of Feb. REVIEW.

In addition to my offer therein, I will give to the second, the AMERICAN BEE-KEEPER one year; or, if preferred, and the order amounts to \$2.00 or over, the REVIEW one year.

Up to the time of writing this ad., only nine states have sent in orders. As Mich. has sent in one order, I will give to the NEXT ONE, a *Select, Tested Queen, FREE!* Who wants it? And to EVERYBODY I will give a certificate which will be accepted as part payment on an order for queens as follows: For \$1.00 I will send two lbs. of my No. 4 potato and a 50 ct. certificate. For \$2.00 I will send one lb. each of Nos. 1, 2 and 4, and a 75 ct. certificate. For \$3.25 I will send one lb. each of Nos. 1 and 2, two lbs. No. 4, and certificate for \$1.00. All charges will be prepaid by me. Give express office. Order at once. Can ship by return mail if you will be prompt.

JACOB T. TIMPE,

3-90-16t Grand Ledge, Michigan.

APROOF MEDINA O
BEE SUPPLIES
 CATALOGUE FREE. PUBLISHED BY GLEANINGS IN BEE CULTURE. SAMPLE COPY FREE.

SUPERIOR WORKMANSHIP AND Low Prices

Have brought us many thousand customers. We do not claim that our prices are below all others; there are some parties we cannot compete with. They do too poor work—but quality of goods and workmanship considered, our prices are "way down." We "guarantee perfect satisfaction." We have built up our business on this guarantee, and shall continue to stand by it. If you have not received one of our 1891 Catalogues, send for one, and also for a sample copy of the "American Bee-keeper," a 20-page monthly magazine, illustrated. Every bee-keeper should subscribe. Only 50 cts. a year. **W. T. FALCONER Mfg. CO.,** Jamestown, N. Y.

CARNIOLAN QUEENS A SPECIALTY.

That Andrews man has just the bees, That he manipulates with ease, And will the most exacting please.

They're bred from pure and gentle stock, With tempers even as a clock, And seldom rise at any shock.

Now please remember, if you will, These bees are bred at Patten's Mill, In New York State, just down the hill.

And if you want one, two, or more, Send on your orders as before, And you will find your needs in store, At THE appointed time.

Last August, tested queens, June 1st,	\$2.00
Untested queens	1.00
Tested queens, July 1st,	1.50
Untested, after July 1st, six for	5.00

JOHN ANDREWS,

9-90-tf Patten's Mills, Wash. Co., N. Y.

SOMETHING NEW, AGAIN, IN BEE-HIVES.

SEND FOR HEDDON'S CIRCULAR FOR 1891.

Address JAS. HEDDON,

Dowagiac, Michigan.

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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. IV.

FLINT, MICHIGAN, APRIL. 10. 1891.

NO. 4.

The special topic of this issue is

"Introducing Queens."

That of the next issue will be

"Adulteration of Honey."

A Sermon on Introducing Queens.

W. F. CLARKE.

I CALL this a "sermon," not because I am going to preach or "talk shop," but because I wish to preface what I have to say on the text with an "exordium," after the manner of sermon-makers. A sermon is supposed to require a vestibule, or preface, like a modern railway car, or a book. "By way of introduction," as preachers are in the habit of remarking, I want to express my admiration of your method of "introducing" a topic. It is one of the features that have helped to make the REVIEW unique. True, you are apt to go over all the ground, leaving others little else to do but fulfil the injunction, "let all the people say, 'Amen!'" A sermon is edifying in proportion to the extent in which it voices better than we can do it, our own views. So is an editorial. The pulpit does not so much mould the opinions of a congregation, as express them. If a preacher fails to do this, he will soon get his walking ticket. He is the mouthpiece of the people. So with a journal and an editor. I hope, therefore, that you will not follow Mr. Hed-

don's advice in last REVIEW, and "simply ask questions." Henry Ward Beecher used to say, the true use of advice is to make us more set in our own way. If Mr. Heddon's advice has this effect on you, I for one, shall be glad. Personally, I dislike question boxes and catechisms.

You have given us a discourse on introducing queens, under two heads: the condition of the colony, and the condition of the queen. It reminds one of a preacher who once announced to his congregation three divisions of the subject he was going to treat: I. What I know, and you don't. II. What you know, and I don't. III. What neither you nor I know. You have told us what you know about queen introduction, and what certainly many bee-keepers do not know. It will now be in order for Dr. Miller to tell us what he does not know, and quite a long article might be written on what none of us know, for there are "mysteries in bee-keeping" yet, that none of us know. I would specially emphasize what you say about the condition of the queen. Almost the only thing that justifies the retention of the term "queen" for the mother-bee, is the regal majesty with which she marches over the combs. As the old Latin proverb has it: "*Ille incedit regina*,"—"she walks a queen!" Democratic as they are, the bees appear to admire this queenly air. It is like the reverence many Americans have for foreign titles and aristocratic manners. Now, as you say, if a queen behaves like a common bee when she is introduced into a

hive, the bees are apt to take a "sconner" at her, as the Scotch say. After a queen has been confined for some time in a little box, tumbled about in mail bags, and then suddenly exposed to the light for awhile, it must give her a kind of shock to find herself in a populous hive again. She is still kept a prisoner for what must seem to her a long interval. She wants to promenade, but cannot. She wants to lay, but there are no cells within reach. Her instincts are completely repressed. When, at length, she is liberated, is it any wonder that she is disconcerted at first, and acts unnaturally? It is for these reasons that I have come to the conclusion not to buy any more queens to be sent through the mails. When I get a queen, I want one that is tested and choice, that I may improve my stock. I have so many times had them arrive in an enfeebled and languid condition, and needing to be nursed and invigorated, that I have pretty much concluded never to order a queen any more except in a nucleus. The bees do not want their hive turned into a royal hospital. They are nervous and excitable. They have been longing for a worthy occupant of the vacant throne. If "Her Majesty" is flurried and acts strangely, they will probably be similarly affected. The aspirant does not behave as a queen should. They regard her as a pretender, and do not care to crown her.

Prolificacy is a great point in a queen. Our seasons are short, and we want the hive stocked with workers in the shortest time possible. Must it not be a severe check on a laying queen, and likely to injure her powers of reproduction to put a sudden stop to her egg-laying function? I do not think it hurts a queen for egg-laying to be gradually lessened, and at length suspended. She is used to that. It is one of the laws of her being. But it is "agin natur" to call a sudden halt just when all the energies of her being are concentrated on egg-production, and I do not see how it can be done without temporary, and perhaps permanent injury to the very function which makes her most valuable. Of all the methods of queen introduction, I prefer that of taking a comb with adhering bees and queen from a nucleus, and hanging it in the queenless colony, as described by you so well in the first paragraph of second column, page 75. So I would have my nuclei composed of frames the same size as those of the work-

ing hive to facilitate this plan of introduction. The next best mode, in my opinion, is to use a large cage, as described in the second paragraph of the same column. I have sometimes made a cage of wire cloth more spacious than the Peet, and placed it where it would cover empty cells, and cells with some honey in them. This gives the queen a chance to walk around, gratify her laying instinct somewhat, and prepare for the auspicious moment when she is given a larger liberty.

I do not see any "mistakes" in your program, and if I thought any opinion expressed erroneous, would have some hesitation in saying so, but would be inclined to bow to the superior editorial wisdom of one who is an experienced, practical bee-keeper, and as Mr. Heddon says, "a successful dollar-and-cent honey producer." I also approve, under befitting circumstances, of all the methods of introduction specified, save and except that of chloroforming. I think that whatever stupefies bees so that they drop down on the bottom board, is objectionable. When they recover from such stupefaction, they feel somewhat as a man does on sobering off after a drunk. In early days of bee-keeping experience, some of us tried tobacco and Devil's puff-ball as bee-controllers. I did, and found it made the bees irritable. They were up in arms on a repetition of the dose. Insects and the lower order of animals are not like man. One drunk suffices them, and as a burnt child dreads the fire, so they shrink from another ordeal of the same kind. Old Aristotle sang: "He found it a foretaste of heaven to get drunk, but a foretaste of hell to get sober." A single lesson of that kind is enough for them. Would that it were the same with man!

I believe that in all our operations with bees, we should conform to nature as closely as we can. Some bee-keepers deride the idea of being at all swayed by considerations of what is natural in the case of bees. They are going to bend this insect to their will, and whatever in their habits does not suit them, they are going to obliterate. If I believed that the bee was evolved by accident or some blind material force, I should see no reason why we should not amend, change, and revolutionize them at will. But every existent being is made conformable to certain laws, and I firmly believe that the Creator knew what he was about when he made the honey-bee. Hence I am

averse to imprisoning bees in a little cage during a honey flow; have no faith in the inversion of combs; and think it best when it is necessary to transport laying queens to a distance in the working season, to do it in full colonies or nuclei.

GUELPH, Ontario. March, 19, 1891.

Introduction of Queens, Viewed in the Economics of the Hive.

F. H. AND E. H. DEWEY.

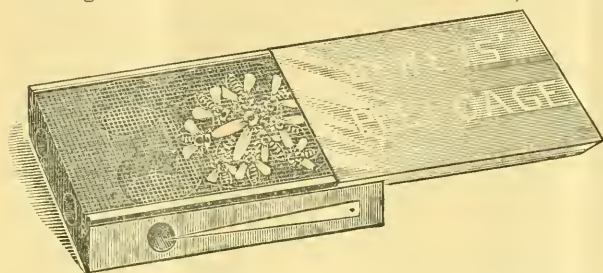
THE word economy primarily and literally means housekeeping, and in that sense we may do well to examine how the economy of the hive is related to the absence of its familiar directress, and amidst a jostling of furniture, the sudden appearance of a new and perhaps alien mistress. There is the same touch in a bee hive as runs through the kinship of the world. Why does a stranger attract about him a staring crowd as he alights at the depot in an idle town. The same number of persons in a manufacturing place pass him to their shops without a thought or a glance. In the curious community the good people had no absorbing occupation on their hands. Suppose this stranger to be an object of suspicion as in times gone by an Easterner was in a raw town of the West, his stiff hat might be saluted by a volley and his shining wardrobe assimilated without leave or ado into the prevailing styles of the region, because the people there had no all-absorbing business. In the bee hive we find less pilfering, less vain ornament in burr-combs, generally speaking a more forbearing temper and quicker adaptability at the time of the honey flow than in any other season. Passion and energy are engaged and devoted. When we disarrange the economy of the bee hive, supplant not a chief servant, a head steward, but the very mistress herself, unless the passion and energy of a race all energy and all feeling be diverted from the savage, can we expect anything else than an irascible condition? Some all-possessing influence must prevent a fatality, whether it be stupefaction by drugs, the despair of self-preservation which makes a promising queen, though a stranger, acceptable, or some other state of self-complacency or indifference.

A queen's "expectations of life" may be improved if a colony is fed a day or so before dequeening and on until the new queen is accepted and installed, unless nectar

comes with a strong flow from the fields. Care must be taken against robbing. Let none suppose that the practical affairs of the hive ever can become so absorbing by the storage of sweets, that a queen may be removed or a new crowned head come in unremarked or unsaluted. There never was a business in the hive or out so entrancing that a common calamity did not shock each individual and move the whole body politic; but the new conditions are more charitably viewed and new elements more cordially accepted when we are occupied in other ways with golden blessings. Life is full of compensations, and we should not tolerate even in a hive utter despair or utter malignity. We may then conclude that a happy diversion by generous feeding, though not an infallible course of successful introduction, yet may still be the agreeable handmaid of other means.

Whatever the method of introduction facilitated by feeding, the most annoying and time-devouring part, the preliminary capture of the old queen, will be yet as difficult as ever. Perhaps the following procedure may be deemed worthy of trial. The first move is always to close the adjacent hives by zinc. Slide a zinc strip before the entrance inside the operated hive after all the combs have been removed from the same and hung near by in some receptacle. The bees are all brushed to one side of the hive and a space sufficient for two combs encloses them there by means of a zinc partition. There two combs are placed, which might well be of unsealed larvæ. Two or three combs of the fewest bees should then be brushed off into the compartment, hung beside the zinc in the main part and covered with enameled cloth supported now by these combs. The remaining bees may be brushed with a little smoking upon the cloth and into the smaller compartment, the combs to be hung with the others under the cloth. The old queen can be caught there at leisure and found without much trouble as if in a two frame nucleus. In a day or two the bees beyond the zinc will be anxious for a queen to replace the hatching brood and a new mother may be introduced as seems best, a regulated self-releasing cage adaptable to the period desired, is quite generally satisfactory. Each veteran has his own way, rapid and easy, particularly if he owns Italian queens; others, who must spend an hour or more peering about for a small

black queen among bees that habitually clump together in festoons, may be assisted by the use of zinc. All will find advantage in feeding.



DEWEY'S IMPROVED PEET CAGE.

This is a standard Peet cage, save in the facts of a guaze slide beneath the tin slide and three openings upon the edge into the candy. The original cage gave just cause for complaint. We lost time, occasioned robbing, mutilated combs and hazarded queens, and sometimes found them chilled in transit. So the Benton & Pratt cages recently came into quite general use. The Benton cage is a good shipper, but for introducing it presents to the bees only one circular face one inch across. It must lie upon the combs and offers only one avenue to the queen: there is no expedition with this cage, only a few bees can tunnel into it at a time. The new Peet cage is lowered into the heart of the colony, two faces of guaze the size of a dollar afford rapid acquaintance—a slow release is effected by uncorking one opening, or more speedy work by opening two or all three approaches; a paper between the slides gives protection in bad weather. The tin tongues remain, and the cage may be fastened upon the combs by the old method, if this is desired.

WESTFIELD, Mass.

March 6, 1891.

Introducing Queens with Hatching Brood—
Correspondents Don't all Agree with the
Editor—Continue the Leaders.

C. C. MILLER.

NOW you have gone and done it. Covered the whole ground so thoroughly that, like Heddon, I can only endorse what you've said, with a single exception. You say when a queen is introduced into a hive with only hatching brood, "in a week the hive may be given a stand in

the apiary, and the entrance opened," &c. I have opened them in five days and on that day I've seen them bring in pollen.

Now, a comment or two. A little better plan, if you don't care for a little trouble, is to put the hive of hatching brood, just mentioned, over a strong colony, with a two-inch hole in the bottom board that separates them. A piece of wire cloth covers the upper side of the bottom board, at least covers the hole, and another piece

is put on the under side. This allows the hatching brood to have the benefit of the heat arising from the strong colony, and you don't need to carry the hive into the house at night.

When you smoke a ball of bees to release a queen, don't hold the nozzle of the smoker too near the bees. The heat, instead of frightening the bees away, will make them sting. Try it some time when a bee is on your hand.

Now, I've said all that you left for me to say about introducing, and here's the private letter you want from each of your readers. You can publish any part of it that you think of general interest, if such part there be.

I haven't quite forgiven you for going on and making a good paper without any consultation with me, when I *knew* you would be sure to suspend publication within 18 months. True, you asked me once whether I would write for you if you started a bee journal, and I didn't know whether you were in fun or earnest, but, for fear you might be in earnest, I didn't make any reply, for I didn't want to say anything to encourage you in any such foolishness. But you had the audacity, not only to go ahead, but to keep on at it after the regular time for giving it up as a failure.

Well, I've just leafed over the March number pretty carefully, and one of the things specially noticeable is the very familiar way in which you talk to your readers. I like that. It makes a body feel so much at home.

The only other thing that particularly attracts my attention is Heddon's say and your remarks thereon. I suspect that squib of Heddon's is only his sly way of saying you couldn't do anything better than to con-

time those advance leaders. If bee-keepers were a set of ninnyes and could only repeat parrot-like whatever some one else might say, then the leader business would not do. No one would dare to disagree with you, and there would be no independent expression of opinion. But your correspondents seem to have opinions of their own which they do not hesitate to express. If they differ from you, they say so; if they have additional light, they give it.

Let's see, how would it be, supposing you should cover the whole ground correctly. Then some fifteen correspondents, one after another, say "I agree." Isn't that better than for the reader to have to wade through fifteen different articles to get the same ideas. In other words, isn't it better to have the thing boiled down? After all, when you have gone over the whole ground never so carefully, there still seems to be enough left for the correspondents to say to fill up each number. How would it be if each one, in addition, should go over the whole ground covered by the leader? No, whatever you do, don't give up writing a leader each time which you *try* to make exhaustive.

Long life to the REVIEW and the reviewer.

MARENGO, Ill.

March 16, 1891.

Queens Injured by Hot Smoke—Getting Two Queens in a Hive—The Peet Principle Enlarged Upon.

J. A. GREEN.

THE USE of smoke to compel a ball of bees to release the imprisoned queen is not advisable. I have known queens to become so stupefied by a heavy volume of hot, damp smoke poured upon them at the nozzle of the smoker, that they never recovered from it. Likewise I have seen queens so scorched by a single hot blast from a smoker full of live coals that they died from the effects of it.

You say you believe there are times when a colony with a laying queen will accept another laying queen simply by having her placed upon the combs. Last summer I introduced a queen by caging into a colony where I supposed a virgin queen had been lost. Two days later she was released by my assistant, who remarked several hours afterward that there were eggs in that hive. On examination I found both queens going tranquilly about their business of egg laying.

The principle of the Peet cage is a very good one, but in practice it is a very poor cage for introducing, and I think many queens have been lost by relying on it. A much better introducing cage is made by taking a piece of wire cloth four or five inches square, having the edges turned up all around about seven squares from the edge. Ravel out one wire all around the edge. Put the cage on a square piece of tin having two adjoining edges slightly turned up. Out of the corner opposite the turned up edges cut a piece about $\frac{3}{8}$ in. square. Slide one corner of the cage out over this opening and bees and queens are readily put in. Usually it is best not to put any bees with the queen, especially if they have come from a distance. Select a place where there are both hatching brood and honey, lay the cage on it, remove the tin slide and press the wire cloth slightly into the surface of the comb. If this is carefully done the bees will seldom dig under the cage too soon. Last summer a queen that had been overlooked remained thirty-one days in such a cage before I found and released her. If desired, the cage may be made large enough to cover the whole side of a comb, thus putting the queen in the most favorable conditions. The plan of introducing by having the bees eat out a plug of candy, I have used mostly in introducing virgin queens. I have had a number of failures, which is probably no fault of the method. Doolittle's plan of introducing has been much used by me in introducing virgin queens, and I think I have never had a failure with it.

DAYTON, Ill.

March 27, 1891.

Protectors for Single-Walled Hives.

A. G. HILL.

TRAVELLED in Northern Indiana about seven seasons, selling bee-keepers' supplies, and during this time there occurred two or three unusually heavy losses of bees during the winter. Whenever I came across colonies of bees successfully wintered I availed myself of the privilege of making the closest examinations in regard to how such exceptions come about, as indeed some springs the live colonies were so few that they could be called by no other name. I found the hives protected in all manner of ways, and some colonies alive that had no protection at all. I am not expected to give a detailed account of all I saw, but rather

what my conclusions are after so long a time for thought and investigation. I soon found that cold cellars, houses above ground of any kind where an even temperature of 40° to 45° could not be maintained throughout the winter, were usually more destructive to colonies of bees than when left on summer stands without any protection except the inch walls of the hive. I discerned that such a colony in a common box hive, sealed up tight on top and raised up $\frac{3}{8}$ of an inch from the bottom board by blocks under each corner, would stand cold weather much better than when set tight down on the bottom board, and the reason for this I discovered was that cold did not kill the bees, but the melting of the frost, during the first thaw, that had accumulated in the hive in four or six weeks of zero weather, was what chilled the brood and killed the bees. You always put the lid on if you want the cream to freeze in an ice-cream freezer, and you should be just as careful to raise up from the bottom a hive that contains frost, that the frost may melt without freezing the bees. I protect colonies on summer stands to prevent frost forming on the inside walls of the hive and between the combs. A little straw or corn fodder set up around a hive, or a box set over it, does not amount to anything at all for this purpose during zero weather, but rather has a tendency to kill the bees quicker than if nothing of the kind had been put around the hives, because if we have two weeks of very cold weather followed by a slight thaw the hives exposed to the sun get rid of the frost within them, while that in the slightly protected one remains, and the following periods of cold weather keep adding to it, until when the warm weather comes there is so much frost that it chills the brood and kills the bees while melting. Damp air and damp frost at 31° to 33° around a cluster of bees will reduce its temperature faster than dry air and frost at 25° below zero: because the former condition is an excellent conductor of heat and the latter is not.

To protect colonies of bees on summer stands by means of boxes, chaff quilts or cushions sufficient to keep all frost out of the hive, is too much work and expense to be profitable or practicable, hence I give a large opening at the bottom of the hive with protection sufficient for fall and spring, and depend on the snow banked around the hives during December, January and February to

keep the frost out. New York, Wisconsin, Michigan and Canada are excellent States for wintering bees, because the snow comes in the fall and remains all winter. Ohio, Indiana and Illinois are the very worst localities because the snow cannot be depended on, and more protection must be used than farther north or south. An outer case sealed air-tight on top, surrounded two or three inches thick with dry clover chaff is the least that can be used with any safety in such a latitude. I find by a test of eleven consecutive years, which involved the careful weighing of 537 colonies of bees, that the average shrinkage on summer stands when protected in this manner from November 1st to April 1st was 12 pounds and 14 ounces. During three years I put about half of the bees in an excellent cellar and I found the average shrinkage for the same time to be about 1 $\frac{1}{2}$ pounds less, but the bees wintered out of doors were more thrifty and seemed to have more brood. I do not think the cellar has any advantage over out door wintering when properly done.

KENDALLVILLE, Ind. March 1, 1891.

The Wax Experiment.

OHAS. DADANT.

I WAS glad to see, in the February number of the REVIEW, that Mr. Hasty is a better chemist than I had inferred from his unfit comparison of evaporating molasses with the production of wax; yet I cannot receive, without rejoinder, the lesson on manners that he gives me, and which he closes with the phrase: "Let us have one more inch of reform about the shanty." It seems to me that a professor of deportment ought to give a good example first: while Mr. Hasty can copy the old parson of my village, who used to say: "Do as I say, don't do as I do."

If I was deficient in good manners in saying that he was not a good chemist, what am I to think of his manners when he writes that we have supported a falsehood for our self interest? Besides, in his article of December 10, page 213, he writes: "The current statement that it takes 20 lbs. of honey to make one of wax is not, if I am right, the result of an agreement of experiments. It is the result of a mere substitution of the ratio of twenty to one for a very much higher ratio which the experiments gave. . . . By common consent the writer came down to the twenty to one ratio, in,

order to secure belief." And on page 214, he accuses "the wise men who wrote the American bee books, the serene philosophers who wrote the British bee books, the profound thinkers who wrote the German and French bee books, . . . of having jumped to conclusions without reasonably reliable experiments."

Let us open the books of these writers, so much condemned by Mr. Hasty, in order to see whether they agree as to 20 lbs. of honey to produce one lb. of wax.

Huber, who was the first to experiment, found from 12 to 17 ounces of sugar, according to quality, to produce one ounce of wax. He says that honey produces less wax.

Donhoff and Berlepsch, in Germany, found from 10 to 13 ounces of honey when bees had pollen, and from 15 to 19 when they were deprived of it.

Langstroth wrote from 13 to 20 oz. Quinby says: "I am satisfied, from actual experience, that every time the bees are obliged to renew their brood comb, they would make from ten to twenty-five pounds of honey in boxes."

Cowan says, thirteen to twenty.

Prof. Cook says that, according to his experiments, bees consume 20 lbs.

Dumas and Milne Edwards, in France, found 19 lbs. of sugar and 25 of honey; but as their experiments were made in winter they are unreliable.

Collins, in France also, found two or three lbs. of honey for one of wax, but I have demonstrated, in the French bee-journals, that his experiments were of no value.

In my *Petit cou'is d'apiculture*, published in France in 1874, I wrote that although it is conceded that a pound of wax does not cost the bees less than 10 lbs. of honey, it is about certain that it does not cost very much more than 6 lbs. The experiments of Messrs. Viallon, Simmins and De Layens prove that I was not far from the truth.

These so diversified quantities do not prove any agreement between the writers to substitute the ratio of 20 lbs.; they do not prove any more than that these experiments gave a higher ratio than 20 lbs., but they show that Mr. Hasty had relied more on his imagination than on the facts, when he accused, not of error, but of falsehood, the experimenters, the writers, and the manufacturers of comb foundation.

I would have let all this matter rest, but for some affirmations of Mr. Hasty, which I

desire to review. He writes: "A swarm is pleased to have their new home without brood, pleased to begin comb-building with all their might in an empty domicile, and would be displeased to have things otherwise."

According to my experience, if you hive a primary swarm on comb foundation, bees are so much displeased that, within an hour, you will find honey and eggs in some already lengthened cells.

If the queen of the swarm is young and not yet fecundated, the bees will follow her when she flies out to mate, unless you take the trouble of giving them a comb containing unsealed brood. Is not that a proof that they are far from being displeased with the brood, as Mr. Hasty presupposes?

No doubt, he saw some swarms leaving or refusing to take possession of a hive in which he had inserted a comb of brood, and he came to the conclusion that a swarm disliked to find comb in its domicile. I have seen such occurrences, but I studied the matter and discovered the cause of such conduct. (See our Langstroth revised, page 216.) When you take from a hive a comb of brood, this comb always contains some cells filled with honey, which, in time of scarcity, attracts the robbers, and these, not the brood, are unpleasant to bees. Hence the precept that we give in our book, to give the comb in the evening of the day when the swarm was hived, not before.

Mr. Hasty is a very agreeable writer, but I think that, his character being too much in conformity with his name, he does not take the time to study his subject, and is a little too hasty in drawing his conclusions.

HAMILTON, Ill.

March 5, 1891.

Queens may be Looked After if the Operator is Very Careful.

JACOB T. TIMPE.



THE OPERATOR telling your readers so plainly how to introduce queens, and covering the ground so thoroughly, leaving hardly any chance to "pick a crow," (by your "but's" and "if's") you now wish us to tell you what you have left out, or where you were wrong. I shall differ with you only in one part and it may be that the condition of my colonies account for it but I think I have introduced queens under all sorts of conditions and have yet to find one cause of complaint,

I cannot agree with you on the "letting alone" plan, for as soon as I think (and I can tell very nearly) that my queen is released I examine my colony to see how she is accepted. The letting alone plan will do where anyone has more money than time, but I always have lots of time. Strange to say, I have never yet introduced a valuable queen except to my most vicious colony. Many no doubt would not do it but the only reason that I can imagine why I do so is to supercede the pesky hybrids. I have yet to find the first queen "balled." Probably if you were to call upon me and see how my hives are fixed and how I handle them you would do as I do and put a "provided" in your advice. For the inexperienced or beginner your advice is best, but I say there is no harm in looking after a newly introduced queen in *one hour* after she is released *provided* you can be careful; yes, *very careful*. Your frames should not snap and crack, nor should you kill a bee. I know old bee men that have never witnessed the laying of the queen, yet it is nothing uncommon for me to lift the frame that the queen is on, and she keep right on with her laying all the time. If you can be that careful, do not hesitate to look after a queen no matter if she is not worth more than \$1.00.

Probably one secret of my success is that, as a rule, I never leave a colony queenless more than two hours and do not give them a chance to construct cells. By this method I have never lost a queen even when she was "jaded" as you say. It is customary for some writers to advise people to have their colonies queenless for several days before they intend to introduce a queen; in my opinion it is the worst possible advice that can be given. The worst cases that I have ever had were where the bees had once had a virgin queen (but were broodless) and she was lost. It seemed as if she would never be accepted. Don't say that it was caused by the hive being opened too soon, as I am satisfied that was not the case, as I found the queen on the bottom of the hive in a ball, and she was there before the hive was opened.

The condition of the colony is of more importance than anything else, and the right conditions are just as apt to be present when no honey is coming in, if the hive is opened carefully without a jar.

If a queen will be accepted it can be told very easily by taking your cage containing

the queen and placing it on top of the frames of the colony after having the old queen removed for one hour. If the bees stick tight to the cage, there is danger, and no provision should be made to release the queen till the following day; but if only a few are inclined to bite on the wires you can let the bees begin liberating the queen, at any time. For the novice it might be best to feed, but I never have, and have never lost a queen on that account.

The best all-purpose cage in my opinion is the Peet, and the best method to use it is by clinching it on the comb and letting the bees release the queen by cutting away the comb; that is, if the comb is old. If placed over honey, it has a tendency to sweeten sour bees before they reach the queen; but it is not a success when the bees are inclined to "show their temper" towards the queen; nor is it safe at any time to place the cage on new comb, as the queen might be released too soon. In my estimation, the candy plan is too rapid, unless there is a plug of an inch in depth to be eaten out.

The best method of introducing a virgin queen is to let her run in loose, after queen cells are started. She should be taken as soon possible after she emerges from the cell, although I *have* had good success in letting two-days-old virgins run into colonies that had been queenless only one hour; still the chances are against success in such cases. (Henry Alley makes a sure thing of this method of introducing old virgin queens by first partly stupefying the bees with tobacco smoke. Ed.)

Always try and see how well a colony would like a queen, then, if you can be careful, don't hesitate in looking at them when you think she is released; and never unqueen a colony before you have another queen on hand to give it.

GRAND LEDGE, Mich. Mar. 13, 1891.

Honey Just as Salable and no "Grumbling"
When Separators Are Not Used—Dealers
Must Learn How to Handle Bulged
Combs.

MRS. L. C. AXTELL.



WE HAVE used separators, but not very extensively, for the past six years. We have less in use each year, until we have now almost wholly discarded them.

We began using them when we used the 2-lb. section that was two inches wide, and found their use of great benefit. Then we used a $4\frac{1}{4} \times 4\frac{1}{4}$ section that was $1\frac{3}{4}$ inches wide and wider, and still we found it necessary to use separators; but after we began to use the $4\frac{1}{4} \times 4\frac{1}{4}$, 7 to the foot, we found but little use for them.

The greatest reason for leaving them off, was they made so much more unnecessary work. In all our shipping honey no complaint was ever made to us of bulged combs.

We found that if the starters were put in true in the center and the bottom ends of the starters pointed to the center of the bottom bars of the sections, we generally got straight sections.

If any were badly bulged, they were sold at home. The worst bulged went upon our own table or were sold at the house, and those slightly bulged went to our home groceries; and we have sold year after year to the same commission man in Chicago, who made no complaint of our honey, and some of it had to be packed with care in the same position in which it came out of the hive, or two slight bulges would come together, causing breakage.

Too much stress is laid upon its becoming "injured and unsightly before being sold," for if one buyer injures a comb by pulling it out and scraping it, so that it breaks, he will not be likely to do so again, and will caution his clerks, or the clerks will be likely to learn the lesson of carefulness in handling honey the same as the producer does. At any rate, there has never been a year but what we could have sold much more honey than we had to sell, and some years more than twice the amount, and that built without separators.

Our home grocery men who buy of us from year to year learn to handle it carefully, so as not to scrap the bulged side (a section is seldom bulged on both sides), and when wrapped up in paper the bulged side can be kept uppermost. For my own table I prefer a bulged comb, as it looks so fat and generous. Combs built between separators look so lean and thin, especially the small sections of an inch and a-half to an inch and three-quarters wide.

It is a little more trouble to pack them for shipment, but when we are packing them we generally are not rushed, and as it takes less time to scrape a section that has been built without a separator, because we can wedge

them up tighter together, we can on the whole prepare them for shipment just about as quickly.

The expense of separators is no small item, and if we can do just as well without them, produce honey that sells readily, Mr. Axtell and I can see no reason why we should use them.

In the use of tin separators we often cut our hands in handling, both in the hives and in scraping the wax off the tin, which was one unpleasant feature of tin separators.

ROSEVILLE, Ill.

Feb. 18, 1891.

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. ~~The~~ The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, APRIL 10, 1891.

JACOB T. TIMPE writes that his offer of free queens and papers will be withdrawn twenty days after the date of this issue of the REVIEW.

ARTICLES, upon "The Introduction of Queens," are yet on hand from W. J. Ellison, J. H. Larrabee and "Rambler." If anyone else has an idea to offer upon the subject, now is the acceptable time.

MR. AND MRS. E. R. ROOT are rejoicing over the advent of an eight-pound boy. Grandpa Root, yes, and I guess all the rest of "Rootville," is rejoicing with them. Leeland Ives, is the baby's name.

THAT THE NEW SMOKER put upon the market by Bro. Hill of the *Guide*, is a good one, I feel just as sure as I can be without having put it to actual use month after month in the apiary. I shall try it the coming season

A BEE-KEEPERS' CONVENTION will be held in Ionia, Mich., May 6th. Special attention will be given to the exhibition of hives, bees, fixtures, etc. The editor of the REVIEW expects to be present and read a paper on "Increase, its Management and Control."

TO PREVENT bees from finding their way back into the supers through a bee-escape, is the great difficulty to be overcome in the use of escapes, says Mr. Dibbern in *Gleanings*. He says it is practically impossible for them to return through his latest escape. The Porter spring escape is perfect in this respect.

T. K. MASSIE, of Concord Church, W. Va., favors the REVIEW with a copy of the *Farm and Fireside*, containing a well written article which he contributed to that journal. While there are a few points upon which I should feel like taking issue with him, the article as a whole shows that he is "well up" in the bee business.

J. A. GREEN writes that no one will use long thin cushions more than two or three times in packing bees, as advised by Ernest Root, before deciding that they are utterly impractical. That is the way it seemed to me. He also says that bottoms to packing cases add to the expense and increase the labor of packing and unpacking.

A BILL for an act to protect bees from poison through the spraying of fruit trees while in bloom, is before both the Illinois and Michigan Legislatures. It ought to become a law. Even fruit growers, if well informed, will vote for its passage; as the spraying of trees while in bloom fails to accomplish the desired results. After the blossoms have fallen is the proper time.

CLOTH INSTEAD OF TIN FOR COVERING HIVE COVERS.

Some styles of bee hives are so large that the covers must be made of more than one piece. To prevent leakage, they have been covered with tin. This is expensive, and some bee-keepers have been trying heavy cotton cloth instead of tin. The cover is first painted, then the cloth laid on, and another coat of paint put on over the cloth.

A NEW VARIETY OF BEES—THE PUNIC.

In the *C. B. J.*, "A Hallamshire Bee-Keeper" describes a new variety of bees—the Punic—*Apis Niger*. This variety is from Africa, is very difficult to obtain, but,

according to this "Hallamshire Bee-Keeper," who has tried it, no other bee is its equal. He is going into the business of importing them, but the price will be high at first—\$40 for an imported queen.

OPEN END FRAMES.

When at the Ohio State convention, Ernest Root said there was no difficulty in finding a name for closed end frames, they were *closed end* frames, but he was at a loss for a name for frames that were not of the closed end style. It would not answer to call them hanging frames, as some of the closed end frames are also hanging frames. Why not call them *open end* frames?

BEES, NOT HONEY, WANTED IN THE SPRING.

In the *Am. Bee-Keeper*, Mr. Doolittle says it is *bees*, instead of honey, that we need in the hives in the fore part of the season. Too many stores in May and June will just as surely spoil a colony for section honey, as it will to keep the bees so short of stores that they keep their brood in check all the spring. There is no such thing as having the combs full of honey during the fore part of the season, and then having the sections filled with clover honey.

THE MISSOURI BEE-KEEPER.

Those Western fellows seem to have a disposition to name their bee-journals after the State in which they live. *The Missouri Bee-Keeper* is the last example. "Vol. I. No. 1." lies before me. It is published at Unionville. The price is 50 cents a year, and E. F. Quigley is editor. With the exception that the type is rather coarse, it is well gotten up, and shows the "ear marks" of considerable editorial work. The REVIEW welcomes it to its exchange list, and wishes it success.

STONES ON BEE HIVES.

J. A. Green lays stones on the covers of his winter cases, to prevent the wind from blowing them away. He says, in *Gleanings*, that he considers a stone a necessary part of a hive's furniture, summer and winter. Ernest Root quotes the editor of the REVIEW as dispensing with stones. He (the editor of the REVIEW) does not use them for holding *shade boards* in place, preferring to replace

the shade boards when they are occasionally blown off, but it will not answer to leave a packing box cover without some kind of a fastening, because the consequences would be far more serious if the covers should be blown off in a storm, than would be the case if simply shade boards were blown off. In the spring and fall I sometimes use a stone on a hive, if the cover has recently been loosened, but in warm weather no stone is needed, as the propolis holds on the cover. If a fastening is needed, nothing is so cheap, simple and convenient as a weight of some kind—a brick or stone.

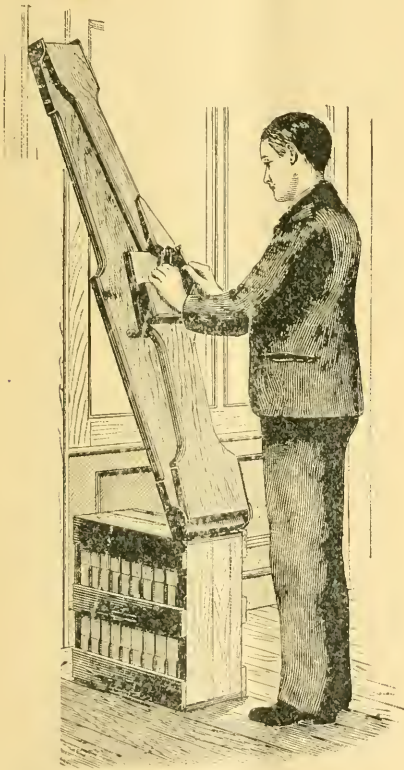
Hubbard Press it is only necessary to bring the notched ends together, give the section a push outward from the person, taking care that the section strikes the press in the proper place to receive the pressure, and the work is completed instantly. The engraving explains the matter so fully that little more need be said, except that the machine is nicely made, costs only \$2.50, and can be obtained of G. K. Hubbard, Ft. Wayne, Ind.

PRINTERS' INK.

Business can't be done without advertising. The better the advertising, the better the business. To advertise costs money. How to secure the best returns for the money expended is the problem. Those interested in its solution should read *Printers' Ink*, a weekly journal for advertisers, at \$2.00 a year, published by Geo. P. Rowell & Co., No. 10 Spruce St., New York. It is bright, breezy, wide awake and practical. It overflows with advertising ideas. Its publishers have managed an advertising bureau more than twenty-five years. Its correspondents are experienced advertisers. Its brief, concise editorials contain information that may be put to some use. Even its advertising pages are helpful. They are unique object lessons from which the shrewd advertiser may gather many a hint. The man who spends only \$10 a year in advertising will be the gainer by first investing two of those dollars in *Printers' Ink*, and many a publisher would find it to his advantage to furnish each of his advertisers with this same stimulus to intellectuality in advertising.

MAKE ADVERTISEMENTS SO COMPLETE THAT
GOODS MAY BE ORDERED DIRECT FROM
THEM.

Whenever possible, it is better to have an advertisement so complete that goods may be ordered direct from the advertisement, without the delay, expense and annoyance of first sending for a circular. A dealer in a great variety of goods cannot attempt to give in an advertisement, a complete description and the price of each article he has for sale. The only place in which these can be given is in a catalogue or price list. But when a man has only one class of goods for sale, as smokers, or queens, or sections, for instance, it is better to give a brief and concise description, together with the prices. Other things being equal, such an advertise-



THE HUBBARD SECTION PRESS.

One by one the little helps, comforts and conveniences come along. Among the late arrivals in this line, is the Hubbard, Section Press for putting together one-piece sections. As usually put together, the notched corners must be forced partly into place by the hands, then a mallet must be picked up and the corner driven firmly together. With the

ment will bring more custom than one that omits the prices and simply says, "send for circular." It is well enough to have a circular in which descriptions are given more in detail, and the queries of would-be-customers are anticipated.

Don't think friends, that I am giving this advice to induce you to make your advertisement larger, in order that I may be able to send you larger bills. Many a time have I figured to cut down the size of an advertisement and yet leave it just as effective. It *pays* to do this, even from a selfish motive. No business relations are long sustained unless there are profits at *both* ends, unless each party finds it to his advantage. That my advertisers make a profit upon their advertising is fully as much to my interest as to theirs, hence it would be folly to give any advice the following of which I did not believe would be of mutual advantage.

MAKING A SWARM CLUSTER AND STAY UPON A STAKE IN FRONT OF ITS HIVE.

Every bee-keeper knows of the disposition of bees to crawl *upwards*. To induce a queen to leave a cage, turn the opening *up*. Those who have watched the motions of a clipped queen in front of the hive from which a swarm has just issued, have probably noticed her disposition to crawl *up* a spear of grass or anything of this nature that she can find. At the recent meeting of the Huron, Tuscola and Sanilac Co. bee-keepers, a Mr. West told how it was possible to take advantage of this climbing disposition on the part of the queen, to induce a swarm with a clipped queen to cluster and remain upon a stake in front of the hive from which it had issued.

This discovery was the result of an accident, or rather of a lucky "happen so." In front of one of his hives a mullein had been allowed to form a stalk. Coming home one day he found a swarm from this hive clustered upon the mullein stalk. He at once reasoned that the queen, as she alighted in front of the hive, found and climbed the mullein stalk, and the swarm, upon its return, found and clustered about her. Taking a hint from this he cleared away all rubbish from in front of all the hives, and a few inches in front of each hive he thrust into the ground a branch of an apple tree. He used branches perhaps an inch in diameter and two feet long with a few short twigs at the top. The twigs were

cut off to a length of four or six inches. The branch was not planted in an upright position, but leaning away from the mouth of the hive. Then it was not in the way of the workers as they passed out and in the hive, while a swarm clustered at the top would be held so far from the entrance of the hive that there would be no danger of its being enticed back into the hive.

This plan proved a perfect success. He had practiced it for three years, and one year had as many as sixty swarms, and it had *never failed*. It seemed to me that the queen might not always find the tree to climb, but would crawl off in some other direction, but he said not; that the stake was planted just about where she would naturally strike the ground when leaving the hive, and she *invariably* found and climbed the pole, and that the bees clustered about her and *remained*. As the queen could not take wing and the bees would not desert her, it naturally followed that they would remain until removed by the bee-keeper.

If this plan only proves as successful as represented, it will be a great thing for the bee-keeper with a small apiary who cannot always be present with his bees in the middle of the day.

THE "PUBLIC PULSE."

To give each reader of the REVIEW an opportunity of seeing how the other readers regard the REVIEW and its management, I give the following scraps selected from the letters of those who have so kindly replied to the request in the last REVIEW. Some are from those who are regarded as leaders in apiculture, others from the rank and file. As I promised to regard these communications as confidential, no names are given. I only wish that more would write.

"I feel inclined to advise you to take nobody's advice. Don't allow yourself to be advised clear out of yourself.—Go right on and do as you have been doing.—Don't give up your leaders. Your last one was as nearly exhaustive as possible, yet you will have plenty of good articles. See if you don't.—I should not like to see you give up those lengthy leaders. They bring to one's mind many things that would otherwise be overlooked.—Can't say which number suits me best. They *are all best*. Why not give a special number on the production of extracted honey in the South? Our seasons, re-

sources and management are quite different than those at the North?—[T'ell u how the management differs. Ed.] Your leaders are all right.—I would like to have some information from extracted honey men about tanks for evaporating and storing honey before barreling it.—[See June REVIEW for 1888. Ed.] Keep tobacco, whisky, religion or anything not pertaining to bees, out of the REVIEW.—By all means continue your method of reviewing in advance, as at present. It is just the right key. A great many of our most practical apiarists are not skilled as writers, and your elaborate leader acts as an outline by which may be drawn out the most practical ideas. If you state all there is to be said upon a given subject, it is very easy for your correspondents to say: 'them's my sentiments.' This gives the same information in a smaller space.—The subject of fastening foundation (full sheets and starters) in brood frames has been, and is still, a perplexing and unsolved problem with me. I have yet to find a method by which it can be rapidly fastened in the frames, and fastened so firmly that it will not fall down, especially when hired help do the work.—[If any of the readers of the REVIEW can help this brother, let them allow their advice to appear in the REVIEW. ED.] If I were a writer, like Mr. Heddon, I should hate to have you go over the ground so thoroughly in advance; but, as I have but little time for reading, it will suit me if you 'lead,' 'sum up' and 'boil down', as then a busy man can get at the meat of the matter in less than no time.—Keep the REVIEW as it is as nearly as possible, unless you can enlarge the editorial department. For those who are keeping bees *as a business*, you come very near to publishing an *ideal journal*.—Keep up the "special number" idea, and treat in advance, editorially, even if it does make it hard work for some to add to what you say.—Your list of contributors is a good one. Add to it from time to time.—If possible keep out of the supply business. The absence of the supply trade certainly gives greater weight and force to what you say.—As most of the wide awake bee-keepers take nearly all the journals, the 'Extracted' department should be kept within limits. You don't know how much I prize the REVIEW, nor what a real help it is to me.—You can count me as in favor of the leaders.—Double your subscription price, if necessary, rather than deal in supplies—I would like a

lot of extracted items boiled down, so as to give the current monthly news. This with the special topic would make the REVIEW about perfect.—I would suggest that you discuss the inferiority and superiority of close end frames in a case *a la* Heddon, or the Quinby style, compared with open end frames—I am in love with the REVIEW. The topical plan is 'boss.' So very convenient for reference: when you find the numbers wanted, it is *all there* and summed up too.—I read every editorial. Don't care for more correspondence unless it be the "cream"—Am glad you put up the price of the REVIEW, for the REVIEW has gone up with it.—The REVIEW doesn't come often enough, but no doubt greater frequency would destroy some of its best features.—I am interested in fixed distances with less manipulation of frames and more of hives.—The number devoted to 'the removal of the queen during the honey flow' was extra good. It gave me the key to a grand success. I used it last season and 'astonished the natives.' In the spring give protection every time. Get all the bees possible in each hive in time for the honey flow, then take away the queens and work the bees to death. Let each colony re-queen itself.—Leave out the 'Extracted,' (We get all that in the other journals) and give us more editorials.—Don't give us any less editorials, they are the main thing.—I do not suppose there is a reader of the REVIEW that would be willing to have the editorials on special topics omitted. But sometimes, as one vainly tries to think of some point that has not been gone over in those exhaustive leaders, he wonders how it would do to reverse the present order and after allowing the correspondents to have their say, to let the editor review the whole. You see, that in that way you would get rid of two classes of grumblers—those who believe as Heddon does, that you have already shaken all the plums off of that particular tree and those who complain that the REVIEW is not true to its name.—I try to get my neighbors here (Tex.) to take the bee journals but they say there is nothing in them but how to make cellars, winter bees, 'spring,' them, etc. etc., and they don't want to read them. The moth make sad havoc with our empty combs, and even with our beeswax and foundation and we should be glad to know how to protect them. We should also be glad to know how we can induce the commission men in New York, Chicago and other cities to stop

calling our honey "Southern strained" when it is extracted and put up just as other folks do it—I don't see how the REVIEW can be improved, as it is the best paper on the subject that I read.—My preference is, first, editorials; second, correspondence; third, extracts. The first number of the REVIEW was good, and every change has been an improvement.—When using a shallow frame, isn't there trouble from pollen being carried into the sections? Would not that be a good topic for discussion?—By all means let us have the leaders. It might make it a little easier for *some* of your correspondents if the leaders were left out, but I hardly think any of your readers would wish them excluded."

Friends, I know this little "by talk" is interesting, but it must be cut off for this month, at least. That leaders are needed there is no question. In my leader of last month, I omitted to mention the plan of covering a large surface of comb with a wire cloth cage, the same as with the Peet cage, only on a larger scale. More than *half* of the articles sent in, mention this plan, and go into details. There is no use in publishing several such descriptions. No correspondent can know what the others will say, but no one will describe in detail what has already appeared in the leader. The leaders will be continued, covering the ground as clearly and concisely as possible and also as exhaustively as space will admit. Then I wish the readers of the REVIEW to review the leaders. If there are mistakes, errors, omissions or fallacious ideas, point them out. In return I will review the work of my reviewers, giving a general summing up. In this way we shall get at nearly all of the facts in the case.

I am grateful to those who have written so kindly, and I wish more would do so. The advise of one correspondent, "that I don't allow myself to be advised clear out of myself," is timely; but there is no danger of that. A man might be *capable* of making a journal that would suit a large class of people, yet fail from a lack of knowledge of what this class of people *desired*. It is an advantage to an editor to be in touch with his readers, to know when he is pleasing them and *why*.

Another thing. I wish each reader would write to the REVIEW the moment he finds something with which he does not agree; write when he is reminded that he knows

better, than the one who is writing, how this thing should be done; write when he wishes information upon any point, be it ever so small; write when information is asked for that he can give. Oftentimes, all that is necessary can be written upon a postal. Readers, the REVIEW is as much yours as it is mine, and if you will only allow me to be one among you, to become so near to you that I can *feel* your needs, the REVIEW will be the more helpful for such acquaintanceship.

THE ADULTERATION OF HONEY.

The suggestion of a "trade mark" has again brought this topic uppermost. Before touching upon the trade mark, let us try and get at some of the basic principle underlying the whole question.

Why is honey adulterated? Simply because there is a profit in the transaction. If honey is ever raised at so little expense that it can be sold as low as glucose or as sugar may yet be sold, adulteration of honey will at once cease. I believe this point has been reached in California. I once thought that we were paying too much attention to methods of management for cheapening the production of honey, as compared with our attempts at improving our methods of marketing and the maintaining of high prices. Probably it would be a difficult matter to convince some of us that we were ever getting too much for our honey. But the point I wish to make is this: Large crops of honey sold at low prices are more desirable than small crops that cannot be sold at prices that are higher in proportion to the diminished quantity of honey. In other words, honey is a luxury, and the price *will not* advance in proportion to its scarcity. Supply and demand affect the price of honey in the same manner that they do other commodities, with this exception: after the price has gone up until it has reached a certain stage, it can be forced no higher, let the quantity be never so small. People simply do without it. Not so with flour, butter, potatoes, coal, or any staple commodity that people *must* have. Hence it will be seen that large crops of honey, cheaply raised, are more to be desired than small crops raised at a greater expense. Although it is not the usual practice of essayists to state their conclusions at the beginning of their essays, I am going to say right here that I have more faith in *cheap honey* to prevent adulteration than I

have in anything else that can be employed. I presume many of my readers are now all ready to spring to their feet and shout, 'Mr. Chairman.' Yes, I know very well that we can't raise either cheap or high-priced honey, if *none* is to be gathered, but many and many is the year and locality in which fair crops are secured, and in thousands of apiaries twice as much honey might have been secured if enough bees had been kept, and enough might have been kept if it had not been for the labor of caring for them. There is no other factor in the production of honey that can begin to compare, in expense, with that of *labor*. I think few realize this. If our appliances and methods were so improved that one man could manage several apiaries of 150 colonies each, and our knowledge of wintering was so perfect that losses were the exception, what chance would glucose stand against honey? I may be a visionary enthusiast, but I firmly believe that cheap honey will be the only thing that will effectually put a quietus on its adulteration; and all of our talk, and resolutions, yes, and conviction of adulterators, if any have been convicted, are so much mis-directed energy. The injury that bee-keepers have suffered from the actual adulteration of honey, is but a drop in the bucket compared with that resulting from this everlasting clack about it. If adulteration could be stopped it would be an advantage to bee-keeping, but the advantage would be very slight compared to what would result if, by some hocus pocus, the public could be made to *forget* all it ever read or heard about adulteration.

Why are bee keepers opposed to the adulteration of honey? It isn't because they dislike to have the public cheated. It doesn't seem to arouse their opposition to any great extent, because other articles are adulterated. It isn't because they are so solicitous for the dear public. It is almost wholly upon selfish grounds, if not wholly so, that bee keepers are opposed to the adulteration of honey. In what way does it injure the business of bee keeping? In the first place it increases the amount of honey (?) on the market. This has a tendency to lower the prices. Next, these adulterated goods can be, and sometimes are, sold for less than "straight" goods. In short, the principal objections, almost only, objections to adulterating is that it has a tendency to lower the prices. "What about its effect up-

on the consumer?" says some one. "Will not this 'vile stuff' disgust the consumer and cause him to discontinue the use of honey?" In some instances I think it might. But, let's be honest, friends, even in this matter of adulteration. For one, I will say that I have several times tasted of samples of adulterated honey, or of honey supposed to be adulterated, (I am well satisfied that some of it was adulterated) and I have yet to find any that tastes as bad as *some* gathered by the bees from natural sources. (That from boneset for instance.) I would much rather have any adulterated honey I ever tasted than to have that from buckwheat honey. If I were an unsophisticated purchaser of a bottle of buckwheat or boneset honey, it would be quite a shock to my belief in the deliciousness of honey. Glucose mixed with buckwheat honey would actually improve it for me, and it would for many others. No, I am not pleading for adulteration. You ought to know me well enough for that. I am simply trying to clear away some of the rubbish, so that this matter may be viewed in its true light. Bee-keepers are opposed to adulteration, because it has a tendency to lower the price of honey, that is *the* reason, but the stir that has been made about it, a stir that has reached the ear of the public, has caused a prejudice or fear in the mind of the public, which has lessened consumption to a more injurious extent than actual adulteration has lowered prices.

Shall we oppose adulteration? Yes, if a man finds that adulterated goods are in opposition to his own, let him go quietly to work and bring such forces to bear as will rid him of this competition. In this State we have sufficient laws upon the subject. It may be difficult to secure conviction. To prove that a sample of honey is adulterated, is exceedingly difficult. If this can't be done, what good comes of making an outcry? None, it simply says to the public: "Beware, there are adulterated goods on the market."

It may seem strange advice, but I honestly believe that the wisest course is to keep perfectly still about the matter of adulteration. But very little honey is now adulterated. Two factors have combined to bring about this state of affairs. Producers are putting their goods upon the market in smaller packages—suitable for the retail trade. Honey does not pass through the hands of packers to the extent that it did.

The difficulty of securing glucose in small quantities out in the country, and the danger of detection where "everybody knows everybody's business," leaves but little inducement for producers to "mix," when the price of honey is so little above that of glucose. It is just as I have already said, *cheap honey* is the most efficient weapon with which to fight adulteration.

If this project of a "trade mark" were put into execution, it would not *prevent* adulteration, it would simply *advertise* it. Very poor honey, pure at that, would be sold under its cover, and the reputation of this vaunted "trade mark" would soon be "N. G." If a bee-keeper did not use the "trade mark" then *his* goods might be liable to suspicion. The whole thing would soon be in a muddle.

Under the circumstances, the best thing we can do is to just keep quiet, and bend all our energies to raising honey so cheaply that no one can afford to adulterate it. If any of my readers differ from me, I shall be glad to hear from them, and will make this subject the special topic for May.

EXTRACTED.

Carniolans Are Prolific, Great Swarmers, but Good Workers.

Dr. S. W. Morrison writes *Gleanings* :—

"I am not now and do not expect again to be in the queen-rearing business. Having also sold my entire apiary of Carniolans at Oxford, Pa., I can now give my opinion of Carniolans as a disinterested person: the only fault that has been urged against them with any show of reason at all is, that they swarm too much. Well, the same has been charged to every other race with just as good reason, as I well know from experience. I am very sure it is a more prolific race, and they are better honey gatherers. Give a colony twenty, or, better, thirty brood combs in a Simplicity hive about the middle of April, and on the first of July extract all, and compare with any other race as to honey gathered: and if the start was fair, the product of the Carniolans will be ahead."

Sheds for Shade.

Wm. G. Hewes, of California, advises permanent sheds for shade for bees and beekeepers. He writes to *Gleanings* as follows:

"One 5 feet high in the front, 4 feet at the rear (which should be to the south), 3 feet wide, and 75 feet long, can be built for \$5.50, reckoning lumber at 3 cents a foot

and shakes at \$14 per thousand, allowing 50 cents for the nails, and charging nothing for putting it up, the roof to be one layer of shakes. This makes enough shade, but does not shed rain. By moving the hives to the southern side of the shed in the spring, they will get the desired sunshine. In summer, place them to the north side, and they will be in the shade all day. Under sheds, however, in order to economize, we are apt to put our hives nearer together than is good."

Ventilation Not Needed in Bee Cellars.

In telling the readers of *Gleanings* how he built and managed his bee cellar, Mr. Doolittle says:

"When I built my cellar, I constructed a sub-earth ventilator 150 feet in length, in connection with a direct upward ventilator of the same size. Either of these could be controlled at will, and every change of weather found me changing these ventilators. After a little I began to leave the upper one closed all the while for a month, while the sub-earth ventilator was often closed for days together. Not seeing that it made any difference with the bees, I now left them closed all the while; and as this gave me a more even temperature in the cellar, neither ventilator was opened at all during the winter of 1889; so this fall, when I came to re-roof my cellar with flagging, I left out the upper ventilator entirely, allowing the sub-earth ventilator to remain, but it has been closed all winter so far. In this way I have no trouble with the temperature, as it will vary only from 41° to 43° during the whole winter, or only two degrees."

Whose Experience is Most Valuable?

The editorial department of *Gleanings* has improved wonderfully of late. It is no uncommon thing now to be able to cut out wisdom in solid chunks like the following :—

"We do not despise the small bee-keeper—oh, no! He often gives us some of the best ideas and short cuts; but when a large bee-keeper, who owns over 500, 600, or, if you please, over 1,000 colonies, is enthusiastic over a certain device, and he knows from long, practical experience of its successful working, we feel as if his statement could not be lightly esteemed. Editors have been accused of overlooking the little bee-keepers, and seeking articles from the big bees. There is some truth in it, but they naturally go where they can get the best information—that which rings with *experience*, and is redolent of the aroma of honey and the wax, and the much-despised propolis. If a man with his thousand colonies finds a thing to be a success that is a money maker, it will *probably* work pretty well, even with as small a number as ten colonies; but, mind you, you cannot reverse this. What gives good satisfaction with ten or even a hundred colonies may not necessarily do for several hundred stocks."

Glue for Labeling Tin.

Oliver Foster sends *Gleanings* a recipe for making a glue that will hold a label on tin. He obtained the recipe of D. E. Brubaker. Here it is:—

“Stir two ounces of pulverized borax into one quart of boiling water. When dissolved, add four ounces of gum shellac. Stir while it boils, until all is dissolved. Apply with a brush in the usual way.

I prefer using a little less water, especially if the labels are small and stiff: then if it becomes too thick to apply readily, warm it a little or add a little hot water. After applying the label I press a damp cloth over it to press out and wipe off any surplus glue that may come to the edge.”

How Water May Get Into the Dovetailed Corner.

In *Gleanings* for March 15, I find the following editorial:

“Said our painter, who had just finished up a lot of Dovetailed hives, ‘Those joints will never gap to the weather, like halving and mitering, and hence they will outlast any other joint ever brought out. Keep the weather out of a joint, and it will never rot.’ There is a good deal of pith and point in this.”

This reminds me of a conversation I had a few days ago with a bee-keeper of this city, Mr. M. S. West. In his opinion, the dovetailed joint was a very poor one to “keep out the weather.” Lumber does not always shrink and swell alike. This brings in openings, and the worst of it is that these openings are *horizontal*, and the water, as it runs down the side of the hive, soaks into the openings and *stays* there. It does not run down and out as in the case of a straight, *up and down* joint. I have often noticed, in sidewalks, bridges, and the like, that are alternately wet and dry, that decay creeps in the soonest at those points where two pieces of timber *cross* each other in contact. If two pieces of wood are in contact in such a manner that the grain of each is *parallel* with the other, decay is much slower in coming. I suppose the dampness is retained longer where the grain crosses. For the reasons given, it seems to me that the dovetailed joint would be a difficult one from which to keep the weather or dampness, and one in which the dampness would be long retained. Mr. West suggests that the dovetailed corners be painted before they are driven together, and I think the suggestion a good one.

Having Apiaries Readily Movable.

How we do advance! Years ago a great step was taken by the invention of movable combs. During the last few years some of us have been trying to manage our apiaries by manipulating *hives* instead of combs—using “readily movable” hives, as Mr. Heddon calls them. At last we are beginning to talk about movable *apiaries*! In a recent issue of *Gleanings* there was an editorial from which I clip the following:

“Experience has shown, in many instances, that a yard that has in years gone by furnished tons of honey is now practically worthless, or so nearly so that the moving of the bees to some location more favorable is a necessity. For instance, four or five years ago an apiary furnished an abundance of basswood honey: but the basswoods have all been cut off: there is no clover, and the field is worthless. Again, a locality has once furnished immense quantities of white clover; but extensive agriculture has set in, and clover pasturage has given way to immense wheat-fields. The inroads of civilization sometimes damage the honey-bearing resources of a locality; and, conversely, sometimes makes them more valuable. There are a few locations in York State that formerly gave but very little honey; but the farmers, in recent years, have introduced buckwheat to such an extent that these are now splendid buckwheat countries: and the yield of this dark rich honey plays a considerable part in the net profits of the season. In a word, we want our apiaries so we can load them up at a moment's notice, and move them at practically little expense to any new field that may be more inviting. We can not always tell at first whether it will be a favorable location or not. If it does not come up to our expectations, we can ‘pull up stakes’ and try elsewhere again. If you can locate near swamp land you are fortunate.”

Prevention of Swarming.

Geo. F. Robbins, in *Gleanings*, calls attention to a discussion of this subject that took place in *Gleanings* for 1889. The gist of that discussion is well given by Mr. Robbins in the following paragraph:—

“The swarming impulse is the general restlessness of prosperity and enterprise, and the consciousness of powers within, which are not being fully occupied. The thing that most induces swarming is a turgid condition of the vessels in the bee-anatomy in which are stored the supplies for future brood-rearing. This turgid condition is due to the fact that there is an undue proportion of house-bees to brood requiring feed, caused by the bees storing honey in the brood-nest. Meanwhile, this state of things causes a check of egg-production, which in turn causes the blood of the queen to assume a

peculiarly enriched character—intensity, I should say. These are some of the conditions that impel bees to swarm out—a sort of hydraulic pressure.”

Mr. Robbins then takes the ground that large hives alone will not prevent swarming, but it is the giving of empty comb that accomplishes this object. He says:—

“Now, don't you see where the value of empty combs comes in? Why, there is a vast system of storehouses above, already built, ready to garner the inflowing riches. And what can make a field-bee happier than a copious flow of nectar and plenty of room to receive it? It is not the disposition of bees to hamper the queen. That bees, when given combs above at a time when they are crowding the brood-nest with honey, will remove it and store it above, even much of that which they have already sealed, I have ample proofs. Hence the queen is allowed her full capacity; and to feed the larvae, carry the honey above, ripen and seal it, seems to give the house bees sufficient employment. Thus the swarming fever is allayed, or prevented altogether. Does it not all look reasonable, probable, all but certain? This system, over a small brood-chamber, might not prevail to prevent swarming; but I am very certain that a large hive, and working for comb honey, would not do it.”

A Wooden Wax Boiler With a Tin Bottom.

Here is a description of an inexpensive wax boiler, that will not discolor wax. The description is from *Gleanings*:

“After reading E. France's experience in melting beeswax I feel inclined to give your readers an account of a much cheaper boiler that answers the purpose very well. I have been using for some years, for a wax-rendering boiler, a wooden box about two feet square and one foot deep, with a tin bottom. The box was made several years ago, as part of an outfit for making foundation on plaster-of-Paris casts. It is made of pine lumber; and in order to get the corners water-tight, the end pieces are let into gains or grooves, across near the ends of the side pieces, and well nailed.” The tin bottom should be about an inch larger all around than the outside of the box. To put the bottom on so that it will not leak, paint the bottom edge of the box heavily with thick white lead and oil, before nailing on the tin. Then turn up the projecting margin of tin and tack it securely to the wood, having previously used a liberal supply of white lead in this joint also.

The box, or boiler, is used on an old cook stove in the shop. The combs and cappings are put into a sack of strainer cloth. And I may remark here, that a large bulk of combs can be put into a moderate-sized sack when the lower part of the later is immersed in boiling water. After the comb is all in and much of it melted, the sack should be tied up, and a slatted honey-board placed over it. This can be kept down under water, and a

strong pressure brought to bear on the sack of comb by the use of a small pole or prop cut just long enough so that, when one end is pressed down firmly on the honey-board, the other end will rest against the ceiling above. At this stage of the proceedings, if the water is boiling, I remove the fire from the stove, as a precaution against the wax boiling over, and leave it to cool. The wax can be re-melted in more clean water—the more water the better—and allowed to cool slowly, if a very light color is desired.

Farina, Ill., Jan. 6. T. P. ANDREWS.

[We used to employ the same method of melting wax in a common second-rate wash-boiler. A boiler could be made in the way you describe, and such a receptacle would be a capital thing in which to scald foul-broody hives. A boiler made entirely of tin, and large enough for the purpose, would be rather too expensive.]”

Queen-Excluders and Bee-Escapes.

In a paper written by J. H. Martin, and read at the Vermont convention, I extract the following:—

“When I wish the storing of honey to commence, I remove the upper cases, put on the queen-excluders and the extracting supers, and get solid combs of honey. From actual experience I know that the bees will store at least one-quarter more honey than where the queen has free access to all the cases.

If I have reduced the queen to only one case, I enlarge the brood chamber by inserting another case below the queen-excluder at any time, preferably, toward the close of the harvest of white honey. The queen-excluder is kept below my extracting supers until I wish to remove them. I then remove the queen-excluding board, and insert a board with a bee-escape, and the next morning walk out with my wheelbarrow and wheel in the full cases, with scarcely a bee in them; and here I wish to say that the best escape I have thus far found is the invention of E. C. Porter, of Lewistown, Ills.

The Heddon hive, the queen-excluder, and the bee-escape, enable me to conduct an out-apiary with much less labor than with old methods.”

Dr. Mason says that *he* has secured more extracted honey when using queen-excluders. I think the explanation is that the queen-excluder curtails the amount of brood-rearing during the harvest, and the amount of surplus is thereby increased.

Does Foundation Ever Contain Live Spores of Foul Brood?

From the reading of a well-prepared article, written by S. Corneil and published in the *C. B. J.*, one would be led to fear that there might be danger of introducing foul brood into the apiary from the use of

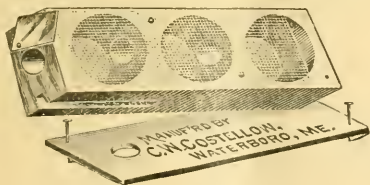
foundation made of wax rendered from foul broody combs. The article shows much thought and research, and there are frequent references to scientific works, but Mr. Jones says:—

"Science and practice do not always accord, and I am willing to believe that they do not in the present instance. I am not prepared to say that the heat ordinarily required for the boiling of honey or wax will kill the foul brood germs or spores, which may be in them, but I do say that in all my experience, and I have had a good deal, I have never had a case of its return, after submitting them to this heat. I have often taken foul broody honey and put it into a dish, suspending the dish in boiling water, but not allowing any water to get mixed with it. In this way I have rendered infertile all germs of disease which were in it—at least there were none ever appeared afterward. I have also made similar tests with wax, with the same results. Wax melted in the sun, or at a lower temperature than the boiling point of water (212°) may, perhaps, not be true from the fertile spores. I should not care to risk it. My beliefs in this direction have suffered no change since I put myself on record at the Michigan convention some years ago, as stated by Mr. Corneil."

The Pratt Perfection Cage.

Last summer I described the Pratt Perfection queen cage, and, in so doing, I said it was practically the Benton cage. In the *Api.* for March, Mr. C. W. Costellow explains in what ways it differs. Among other things he says:—

"To Mr. Frank Benton is due the credit of giving the idea which led to the construction of the best shipping-and-introducing-cage now on the market. Benton's cage was figured in 1884, was designed for shipping queens across the ocean and as such it was a perfect cage, but it was not at all suitable for introducing, and the cost to manufacture was too high; but to Mr. E. L. Pratt is due the credit of modifying this cage, so as to make it practical for general use, which he did about five years after the publication of Benton's cage.



THE PRATT-BENTON CAGE.

Perhaps some assistance came from myself, but I am sure I should not have thought of it if the idea had not been presented and myself requested to do so by Mr. Pratt. As many have wondered why the cage was called the "Pratt perfection" I

have given the above. The modification of Benton's cage was as follows: First, the cage was reduced very much in weight, thus reducing the carrying postage. Next, half the boxing was dispensed with, thus reducing the cost. The hole made by the worm of the bit was done away with, thus making smooth surface at the bottom of the holes. Another important point gained here is that the candy cannot leak out and daub the mails.

The cage is now made as follows: Sizes $\frac{3}{4} \times 1 \times 4\frac{1}{4}$ inches; three 1-inch holes bored from one side nearly through. A $\frac{3}{8}$ hole bored from one end connecting all the inch holes; this hole is to put the bees in by, also for a passage way from one chamber to the other and to give them access to the candy. This $\frac{3}{8}$ hole is covered by a small tin slide on the end of the cage. A small saw kerf is made in the corner of this end opening into the chamber—for ventilating purposes. So far as I know, this idea was original with me; if it was not I shall not lose any sleep on account of it. The inch-hole at the opposite end from the tin slide is filled with good candy; a piece of wire cloth is tacked over the top, covering all except about $\frac{3}{8}$ inch of the candy; this is left for introducing purposes, and, by the way, this idea, I think, belongs to our friend Mr. Alley. A thin piece of wood, having a $\frac{3}{8}$ hole opening into the hole near at the tin slide, is fastened with wire nails over the wire cloth covering the cage. Thus prepared, it is ready for the mails, without any wrapping, tying or other preparation.

A cage on this plan is also made only one-half inch thick. This latter requires but one-half the postage of the thicker cage and is also more cheaply made."

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To Trade, bees for building material, good books or offers B. T. BALDWIN, Marion, Ind.

Italian Bees and Queens for 1891. Send for price list. 3-91-2t D. E. JACOBS, Longley, Wood Co., Ohio.

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Largest Bee-Hive Factory in the world. Best Goods at lowest prices. Write for Illustrated Catalogue. G. B. LEWIS & CO., 1 - 0-tf Watertown, Wis.

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If business sent me, I will work it up into foundation at the lowest price in the world. For samples and price, address 3-91-3t JACOB WOLLERSKEIM, Kaukauna, Wis.

Wanted at Once,

Your address, that I may send you my astonishingly low prices on Hives, Frames, Sections, Crates, etc. 1-91-6t C. F. WILLCUTT, Exira, Iowa.

Our Catalogue of Bee Supplies is not Lost

But the bee-keeper who fails to send for one will be ; especially if he wishes to buy the best Hives, Frames, Sections, Crates, Foundation, etc. Our Italian Queens and Bees are the best—none are better. Buy them, try them, and you'll need no other.

An article on **BEE MANAGEMENT** is an interesting feature of our Catalogue, that will help the novice. Send your address for a free copy to day.

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4-91-12t

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6 Warranted Queens, \$5.00.

Send - for - Circular.

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The Bee World.

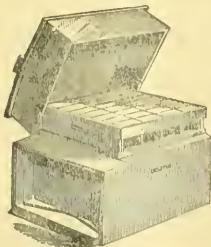
A journal devoted to collecting the latest apicultural news discoveries and inventions through out the world, containing, as it were, the cream of apiarian literature. Valuable alike to the amateur and veteran. If you wish to keep posted, you cannot afford to do without it. Subscribe now. It is a 20 page monthly at 50 cts a year. Stamps taken in one and two cent denomination. The Bee World is published by

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1891

Early Italian queens from bees bred for business. Each \$1.00; six \$1.50. Order now, pay when queen arrives. **W. H. LAWS,** Lavaea, Ark.



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All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue. 2-91-tf

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alogue for 1891? Fifty-one illustrated pages, sent FREE to any bee-keeper. Our new factory, four times larger than ever before, is now turning out **CARLOADS OF DOVETAILED HIVES** and large quantities of other styles. Alternating Hives, Improved Langstroth-Simplicity, Plain Langstroth, Simplicity and Chaff Hives, Sections, Smokers, Foundation, Italian Bees; in fact, **EVERYTHING** needed in the apiary, at lowest prices, always on hand. Established in 1864.

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2-91-tf

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CHICAGO

Bee-Keepers' Supply Company,

(J. B. Kline, Secretary.)

65 CLARK ST., ROOM 14, A TOPEKA,

CHICAGO, ILL., N D KAN.

Manufacturers of and dealers in bee-keepers' supplies. For prices of bee hives, sections, shipping crates, frames, foundation, smokers, etc., write for circular and special prices before placing your order. 1-91-tf

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Went to Los Angeles. Many thousands long to use.

UNIVERSAL BATH

Artificial Sea-Bath. Agents wanted every where.

Full, Six to one. Vapor and Water—fresh, salt, Mineral.

Convenient. Awaits Medal and Diploma against the world. Wholesale & Retail. Old Bath? Renewed!

Send for Circulars. **E. J. KNOWLTON,** Ann Arbor, Mich.

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FREE CIRCULARS EXPLAIN ALL.

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If you want **Hybrid or Black Bees**, in April or May, at \$1.00 a pound, give me your order. For ten years I have been successfully shipping bees to the Northern states and to Canada. Safe arrival and satisfaction guaranteed.

Untested Italian queens, after April 1st, \$1.00 each, or six for \$5.00. 75 cts. each after May 1st.
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F. H. and E. H. DEWEY,

ITALIAN
QUEENS.

Westfield, Mass.

Send stamps for instructive pamphlet describing Dewey's Peet Cage and Winter Device.

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Colonies, Nuclei, Queens (tested and untested) at living rates. Send for circular and price list to
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Before placing your orders for supplies, send for our Illustrated Catalogue. We are now making best goods at lowest prices.

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AND THE RACE IS WON BY THE ALBINOS.

They out-stripped even the Italians in gentleness, beauty, honey gathering and prolificness of queens. This race was brought about by the reproduction of an Italian sport; and greatest care has been taken to get them pure, and the result is a race that ranks first in the bee world. Try one of these queens. Descriptive catalogue free.

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FINE WORKMANSHIP. GOOD MATERIAL.

Catalogue Free.

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100,000 Strawberry Plants.

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Crescent,	50	\$2.50
Sharpless, Cumberland, Bubach, Mt. Vernon, Manchester, Warfield, Jessie and Sucker State,	50	3.00
Michael's Early and Haverland,	60	5.00
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Also a full assortment of Fruit and Ornamental Trees, Raspberry and Blackberry Plants, Grapevines, etc. Send for price list. 4-91 1t
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Another Hundred Dollar Queen.

During the season of 1890 we purchased of G. M. Doolittle one of his best queens which one hundred dollars would not buy if we could not get another like her, and we are going to rear 1,000 queens from her this season. Send for descriptive circular.

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Beautiful Bees ALWAYS PLEASE THE EYE.
Good Qualities ARE ALWAYS PROFITABLE.

If you wish for bees and queens that combine beauty and good qualities to a marked degree, write for descriptive circular giving low prices. No circulars sent unless asked for.
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Early Queens From the South.

SOUTH CAROLINA LEADS IN FINE QUEENS AND BEES.

Being nearer the Northern markets, they can be delivered nearly two days earlier than from any other Southern state. Fine tested and untested Italian queens, bees and nuclei a specialty.

Queens sent invariably by return mail, from April 15th through the season. 4-01-14

MENTION REVIEW.

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QUEENS FROM THE SOUTH,

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COLWICK & COLWICK,

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FOUNDATION And Sections are my Specialties. No. 1 V-groove Sections at \$3.00 per thousand. Special prices to dealers. Send for free price list of everything needed in the apiary.

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Please mention the Review.

Send 25 cts for my book of Discovery and Invention, the

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Smokers and Sections,
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LOOK HERE Bee-Keepers.

We have increased our facilities by the addition of the latest improved machinery, and are now in a position to give you as low figures on supplies as any factory in the country. **One-Piece V Groove d Basswood Sections a Specialty.** Send for price list.

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HAS NO SAG IN BROOD FRAMES.
THIN, FLAT BOTTOM FOUNDATION
HAS NO FISH BONE IN SURPLUS HONEY.

Being the cleanest is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

(SOLE MANUFACTURERS),

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Factory in Michigan

Is turning out hives and bee-keepers' supplies at the following prices.

One 8-frame, L. hive, 2 T supers,	\$1.00
Ten ditto,	8.00
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One-piece, V-groove sections, per M,	3.00
10,000 ditto,	25.00

Clark, cold blast smokers, each, 50 cents; five for \$2.00. Bee veils, best on earth, 35 cents each. Parker foundation fastener, 25 cents. Japanese buckwheat, 60 cents a bushel; bag 18 cents extra. Foundation, medium brood, 43 cents; thin for surplus, 48 cts. Alsike clover seed, \$8.00 per bushel. Extractors, books, etc., in stock. Circulars free.

12-9-tf W. D. SOPER & CO.,
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If YOU WISH

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Anything

Anywhere

AT Any time

WRITE TO

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No. 10 Spruce Street,

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THE universal favor accorded TILLINGHAST'S PUGET SOUND Cabbage SEEDS leads me to offer a P. S. GROWN Onion, the finest Yellow Globe in existence. To introduce and show its capabilities I will pay \$100 for the best yield obtained from 1 ounce of seed which I will mail for 50 cts. Catalogue free.

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La Plum, Pa.

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THAT PITTSFIELD SMITH SAYS

He has sold his entire bee and supply business to a man who will fully sustain past reputations, therefore it is with pleasure that he gives his consent to the use of the old name, "That Pittsfield Smith," for future advertisements.

His successor will be prepared to fill all orders promptly and to deal a little better by you than he agrees. 7-90-12t

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Box 1003, Pittsfield, Mass.

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MUTH'S Honey - Extractor,

Square Glass Honey-Jars, Tin Buckets,
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Perfection Cold-Blast Smokers.

Apply to CHAS. F. MUTH & SON,
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P. S.—Send 10-cent stamp for "Practical Hints to Bee-Keepers." 2-88-tf.

J. FORNCROOK & CO.,

MANUFACTURERS OF THE

"BOSS" ONE-PIECE SECTIONS.



Will furnish you, the coming season, one-piece sections, sandpapered on both sides, as cheap as the cheapest and better than the best. Write for prices. Watertown, Wis. 12-90-8t

Did You Ever

Get as low prices and as good workmanship as you can get by dealing with John G. Kunding? He beats 'em all. Ten per cent off on all orders received before the first of May.

Send for his 24 page price list, sent free.

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If so, send your name and address for a Free Sample of the **AMERICAN BEE JOURNAL** Weekly—32 pages—One Dollar a year.

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Chaff Hives, \$1.25

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DOVETAILED WINTER CASE, 25 C.
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1-91-tf

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Bee Journal,

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FREE on Test Trial anywhere.
Any **ORGAN** or **PIANO**
On your own terms
No pay before you see and TRY
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Send at once for our new 20 pp. Illustrated Catalogue. **FREE** to any address
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ADVANCED BEE-CULTURE;

Its Methods and Management.

I am now engaged in writing and printing a book that is to bear the above title. It is to take the place of my other book, *The Production of Comb Honey*, which will not be re-published. Although the new book will contain at least five or six times as much matter as *The Production of Comb Honey*, yet the price will be only 50 cts. The book is already partly printed and will probably be out sometime in April or May. If any of the friends would like to "help me along" in meeting the expenses of getting out the book, they can do so by sending their orders in advance. Such orders will be most thankfully received, and filled the *very day* the book is out. I will send the REVIEW one year and the book for \$1.25. The REVIEW will be sent on receipt of order (I have plenty of back numbers to send it from the beginning of the year) and the book as soon as it is out. Stamps taken, either U. S. or Canadian.

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The new, Automatic Perforator makes the best perforated zinc ever made. Sixteen styles of spacing in opposite and alternating perforations. Makes any size of sheet, with border, up to 24 x 44 inches. Prices very low. Samples for stamp. Also sole manufacturer of two-rows of zinc. Catalogue giving valuable information on hives, sections, etc., sent free.

Send 25 cts. for the New Book, **Bee Keeping for Profit.**

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BEE-KEEPERS' GUIDE. Revised, enlarged, improved, illustrated. Every bee-keeper ought to have it. Price \$1.50. A. J. COOK, Agricultural College, Mich.

BEES FOR SALE.

125 colonies that have been wintered in the cellar and are in good condition, are offered for sale; the sale to take effect from the 1st to the 15th of April. Write for particulars.

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BUY YOUR
Italian Queens
FROM THE
Lone Star Apiary.

I breed from choice, imported stock. Leather colored. Write for price list.

OTTO J. E. URBAN,

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Hunt's Foundation Factory.

Samples free. Send your beeswax and have it made up. Highest prices paid for beeswax.

3-91-6t M. H. HUNT, Bell Branch, Mich. (Near Detroit.)

— I manufacture —

PIECES, SECTIONS,

and everything needed in the apiary. Catalogue free. It will pay you to send for one.

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For Simplicity and Durability,

Bingham Patent Smokers,

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BINGHAM & HETHERINGTON

Honey Knives,



ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3 1/2 inch,	\$2.00
Conqueror Smoker,	3 "	1.75
Large Smoker,	2 1/2 "	1.50
Extra Smoker,	2 "	1.25
Plain Smoker,	2 "	1.00
Little Wonder Smoker, 1 1/2 "	" .....	.65
Bingham & Hetherington Knife,		1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

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MAY 10, 1891.



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Five Banded QUEENS.

My strain of five banded bees and queen were awarded **FIRST PREMIUM** last fall at the Detroit Exposition; Thos. G. Newman, editor of the A. B. J., being the judge. They are the **HANDSOMEST AND GENTLEST** bees I have ever seen. After June 1st I will have untested, five banded queens ready to ship at \$1.00 each, or six for \$5.00. I still have a few of the Alley, tested queens that I can furnish at \$2.00 each. Orders booked now. Safe arrival guaranteed. Make money orders payable at Flint, Mich.

ELMER HUTCHINSON,
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BEE - HIVES,

Sections, Comb Foundation, and general Supplies.

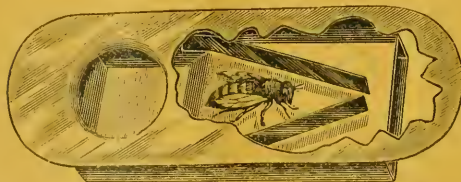
Bees and Queens.

Remember, we are headquarters for the Albino bees. The best in the world. Send for circular and prices.
S. VALENTINE,
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Your address, that I may send you my astonishingly low prices on **Hives, Frames, Sections, Crates, etc.**
4-91-6t
C. F. WILLCUTT, Exira, Iowa.



PRICES: Each, by mail, postpaid, with full directions, 20 cts. Per doz., by mail, postpaid, \$2.25. Send for circular, testimonials, etc. Dealers for wholesale prices. 5-91-3f

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

GOLDEN CARNIOLANS.

The "coming bee" is here. If you want bees possessing all the desirable points, send an order at once for one or more young queens of this wonderful new strain of bees. They are beautiful, gentle, the best honey gatherers, and winter as well as the best Carniolans. The queens are large, prolific and easily found on the combs. The Golden Carniolans have been thoroughly tested in our yards the past season, and we know whereof we speak.

The price is a little higher than for the common races, but at \$5.00 each there is money in them for any beekeeper. For the Golden Carniolan queens, we must ask \$2.00 each; \$10.00 per 1/2 dozen; and \$18.00 per dozen. But one grade is offered and that is A No. 1; strictly first class. Purity, safe arrival and satisfaction guaranteed. Send for descriptive catalogue and price list of bees, queens and apianian implements.

We are making arrangements for the agency of those wonderful

PUNIC BEES,

brought to England by "A Hallamshire Bee-keeper," and we are now booking orders at the following rates:

Imported queen,	\$40.00
Tested, pure home bred,	5.00
Virgin,	1.00
per dozen,	10.00

E. L. PRATT,
5-91-2t Beverly, Mass.

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If beeswax is sent me, I will work it up into foundation at the lowest price in the world. For samples and price, address
3-91-3t
JACOB WOLLERSKEIM, Kaukauna, Wis.

BEE - HIVES, SECTIONS, ETC.

BEST GOODS AT LOWEST PRICES. WE MAKE 15,000 SECTIONS PER HOUR. CAN FILL ORDERS PROMPTLY. WRITE FOR FREE, ILLUSTRATED CATALOGUE. G. B. LEWIS & CO.,
5-91-1f Watertown, Wisconsin.

Please mention the Review.

To Trade, bees for building material, good books or offers. **B. T. BALDWIN,** Marion, Ind.

The Porter Spring Bee - Escape.

We guarantee it to be the best escape known and far superior to all others. If on trial of from one to a dozen you do not find them so, or if they do not give entire satisfaction in every way, return them by mail within three months after receiving them and we will refund your money.

PRICES: Each, by mail, postpaid, with full directions, 20 cts. Per doz., by mail, postpaid, \$2.25. Send for circular, testimonials, etc. Dealers for wholesale prices. 5-91-3f

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

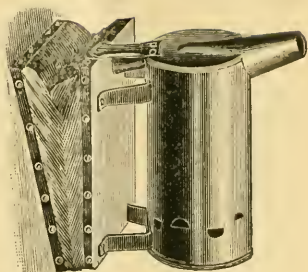
HILL'S BEE-FEEDER AND SMOKER.



This Smoker burns chips or hard wood without any special preparation. Very reliable. Greatest smoking capacity. Easiest to start and cheapest because it saves time. The Best Bee-Feeder. Most convenient for the bees. No drowning or daubing bees. The feed is taken by the bees without leaving the cluster. From two to seven feeders full may be given a colony at one time which will be stored in the combs in ten or twelve hours.

Smoker, 3 inch barrel, freight or express each, \$1.20. By mail, \$1.40. Per dozen, \$10.80. Feeders, one qt. fr't, or express, per pair, 30 cts. by mail, 40 cts.; per dozen, \$1.67. A. G. HILL, Kendallville, Ind., or H. M. HILL, Paola, Kansas.

These smokers and feeders are kept in stock by Thos. G. Newman & Son, Chicago, Ill.; G. B. Lewis & Co., Watertown, Wis.; W. H. Bright, Mazeppa, Minn.; and Chas. Dadant & Son, Hamilton, Hancock Co., Illinois. E. Kretschmer, Red Oak, Iowa. H. McWilson & CO., 202 Market St., St. Louis, Mo. F. H. Dunn, Yorkville, Ill. W. D. Soper & Co., Jackson, Mich. Chas. A. Stockbridge Ft. Wayne, Ind. A. F. Fields, Wheaton, Ind. W. S. Bellows, Ladora Ia. E. F. Quigley, Unionville, Mo. Gregory Bros. Ottumwa, Ia.



BEESWAX
ADVANCED

Three cents per pound, and still going higher, but having secured several tons before the advance, I will sell during the next thirty days, at the following low prices; Brood foundation, 40 to 45 cts.; yellow tin, 50 to 55 cts.; my brand of XX, white, thin, 55 to 60 cts., according to quantity ordered. Write at once for free samples, and state the quantity you want. Will guarantee fdn. equal to any make.

Simplicity hives 70 cents each, and all other goods equally low. Write for 40 page catalogue of bees, queens and all implements for the apriary.

Wm. W. CARY,

(Successor to Wm. W. CARY & CO.) Coleraine, Mass.

2-91-f

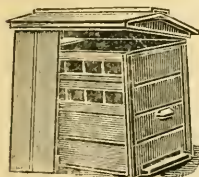
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The Five Banded

Are the prettiest, gentlest, best working and most prolific bees. They will work on red clover. Warranted queens, \$1.25; six for \$6.00. Tested, \$2.00; select tested, \$3.00 to \$5.00 Sample of bees, five cents. Prices will be lower next month. If preferred, I will send, at the same price, three-banded

ITALIANS.

Bees by the pound wanted in exchange for queens. I will give a tested queen in June for every pound of bees sent me prepaid. Bees to be sent at once, as I need them now. Drop me a card if you send any. JACOB T. TIMPE, 3-90-16t Grand Ledge, Mich.



CHEAP ENOUGH!

Our eight-frame, Chaff Hive, nailed and painted, with eight, heavy top-bar brood frames, and one T super, for only \$1.75.

The new, dovetailed, winter case in the flat 35 c. THIN, - ovetailed hive, two supers, or section holders, and eight heavy top bar brood frames, only 70 cents. Agents wanted. Write for price list and terms. 1-91-1f

ROE & KIRKPATRICK, UNION CITY, IND.

Names of Bee-Keepers.

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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

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Wanted: To correspond with parties having Potatoes, Cabbage, Apples or Honey for sale or to consign. Prompt returns. All correspondence promptly answered. Best of reference. EARLE CLICKENGER, 11-90-1f Columbus, Ohio.

Reference: Editor REVIEW.

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FOR 1891.

Before you purchase, look to your interest, and send for catalogue and price list.

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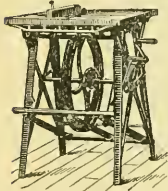
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CARNIOLAN QUEENS A SPECIALTY.

That Andrews man has just the bees, That he manipulates with ease, And will the most exacting please.

They're bred from pure and gentle stock, With tempers even as a clock, And seldom rise at any shock.

Now please remember, if you will, These bees are bred at Patten's Mill, In New York State, just down the hill.

And if you want one, two, or more, Send on your orders as before, And you will find your needs in store, At the appointed time.

Last August, tested queens, June 1st,	\$2.00
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Tested queens,	July 1st, 1.50
Untested, after July 1st, six for	5.00

JOHN ANDREWS,

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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. IV.

FLINT, MICHIGAN, MAY. 10. 1891.

NO. 5.

The special topic of this issue is

“Adulteration of Honey.”


That of the next issue will be

A Continuation of the Subject.

Honey can Never Compete With Glucose.—

The Bee-Keepers' Union Ought to
Prosecute Adulterators.

BYRON WALKER.

S you call on those of your readers, whose views on the adulteration of honey do not agree with your own, to take part in this discussion, and having frequently had my attention drawn to this matter in the last six months, while marketing honey in all of the large cities of the West, east of the Mississippi, and west of Cleveland, lying between and including Minneapolis and Cincinnati: I venture to accept the invitation.

There is no room to dispute the truth of your first leading proposition, that if honey can be produced so as to be sold as low as glucose, or as sugar may yet be sold, that its adulteration will at once cease; but I can hardly agree with you when you tell us that all that is needed in order to secure this result, is to so perfect our appliances and methods that we can winter our bees without loss, and so that one man can handle several times as many bees as he now can with ordinary methods and appliances,

No doubt there are many localities where, in good seasons, an increased number of colonies can be handled with the same labor now employed, and that without overstocking, but it may be safely said that the reverse of this statement, except as to the item of labor, is equally true of just as many localities in poor seasons. During the last ten years, new hives, systems of management, and methods of wintering that were to compass all of these desirable results, have been brought forward only to be discarded by even their inventors. I presume you will admit that Mr. Heddon's new hive and system is as good as any that is likely to be generally adopted in the future, and he tells us, see A. B. J. for April 16th, “that bee-keepers can't afford to submit to any further reduction in the price of honey.”

Now for the sake of argument, let us suppose that the fixtures and system of management adopted, have been so perfected, that in all good localities, with good seasons honey can be produced so as to compete with glucose, what will become of that large class of bee-keepers who are not favored with such localities when their markets are supplied with this cheap honey; and what about competing with glucose, such seasons as we have had lately in nearly all localities? Does it require any argument to show that when bee-keepers if ever *must have* a good price for honey, the markets will be filled with glucose honey, and they must sell for glucose prices? You have showed us that the price of honey will not rise in times of

scarcity above a certain point. Let that price once be lowered to that of glucose and it will not be an easy matter to raise it again as high as it once was.

But we are told that bee-keepers are opposed to the adulteration of honey almost wholly on selfish grounds. This may or may not be true, but I know of at least one bee-keeper who has been quite prominent of late in opposing this business, that has made himself equally notorious in this community as a grocer who would not sell tobacco, glucose-sugars and syrups, adulterated baking powders, etc., and I have no reason to believe that he is more conscientious in this respect than numerous others of the craft that I could mention. Be that as it may, bee-keepers would be more than human, if they did not oppose a traffic, which threatens to ruin the occupation they depend upon for a living. Right here may I be permitted to ask, what better reason any bee journal can give for its existence than that it is published to promote the interests—the selfish interests if you please of bee-keepers?

Let it be understood hereafter, that we do not ask that the sale of these goods be prohibited, so that you and others who prefer them to buckwheat and certain other kinds of honey, can't buy them; but that when offered for sale, that the packages shall be labeled, just as butterine is stamped, to indicate the character of the goods. Good dairy butter has been selling at retail in Detroit, at from 25c. to 30c., per pound, and often hard to get at that. Does any one believe that this would have been the case, if, when the markets were flooded with butterine, farmers had concluded to just keep quiet and bend every energy to raising butter so cheaply that no one could afford to produce butterine? You ask us to believe that nearly all the loss that bee-keepers have suffered in consequence of the adulteration of honey, they have themselves to blame for, because they would talk when they should have kept quiet. Now is it reasonable to suppose, that a market can be flooded with such goods year after year, without consumers finding it out, and talking freely about it too? I do not remember that I ever heard a bee-keeper discuss this matter before those not posted, without pointing out the means whereby the purchaser can commonly distinguish between the pure and the impure article. The resolutions passed by our late State convention, that have been referred to in this connection

in rather disparaging terms, were carefully worded with this end in view; and it is not very complimentary to the intelligence of city people, to assert that either they cannot or will not make this distinction, when the characteristics of each are so clearly pointed out; neither has this assertion but little foundation in fact. Previous to the meeting of the Detroit convention, I had one sample of what proved to be adulterated honey, tested by Health Officer Duffield, and the appearance of the package was so accurately described in one of the daily papers, as to result in entirely stopping the sale of these goods to retailers, to whom up to this time, a large quantity had been sold; but who soon found their customers would not buy such goods. My own honey, a sample of which had been tested at the same time as the other, and published as pure, in the article alluded to above, now found a ready sale. Quite a number of grocers who had previously refused to buy, as they said they had plenty of honey (referring to the stuff I had analyzed and described) now bought mine in quantities and sold it too; while the factory goods were either returned to the wholesale, or for the most part yet remain on their shelves. No doubt the label I used helped to secure this result. It read in part. "If your chemist finds these goods adulterated, publish B. Walker, Capac, Mich., (who puts them up,) as a swindler, in your daily paper." Now friend H, if your view of this matter is a correct one, how will you explain the fact, that my sales of extracted honey in Detroit this season—mostly taking place soon after this publication occurred, have been nearly five times as great as any previous season for ten years although my comb honey sales were only about equal to those of last season. Bear in mind, that it was mostly fall honey, such as you would doubtless pronounce inferior in flavor to the adulterated product, and that it brought several times as much per pound as the glucose mixture could be sold at profitably at the time. So much for "everlasting clack."

Again we are told "that very little honey is adulterated now, since producers are putting their honey on the market in smaller packages." Are you quite sure that you are correct in this statement? I can hardly believe you have reached this conclusion through personal observation. At any rate, I have reached just the opposite conclusion through a somewhat extended use of that

method. In fact, the only large city that I found well supplied with pure extracted honey is Cincinnati. It is needless to mention to whom belongs the credit of this state of the honey market in this instance. Suffice it to say, that there are very few grocers indeed in that city, who do not handle the goods put up by Chas. F. Muth & Son, whose sales must be immense, although no attempt is made to compete in price with glucose goods, which are met with so seldom as to be regarded as a curiosity.

Now friend H, if you are correct about there being but little adulterated honey, and about the reason why there is but little on the market, isn't the remedy you suggest for getting rid of what *little* there is likely to prove a rather dear one for bee-keepers to adopt? You say: "If a man finds adulterated goods are in opposition to his own, let him go quietly to work" etc. Fancy a man trying to carry out this plan in the Detroit market for instance, at the present time. In order that his honey may be in shape for the retail trader it must of course be put up in small packages. These should be of glass, if the honey is white, and as he must buy glasses in small quantities, while his competitor buys these as he does his glucose, in car lots; he will commonly pay about twice what the other man does for his. Now, if the goods are put up for shipment at the apiary, he must be to the expense of packing carefully and pay a high rate of freight to reach the market. If he ships in bulk to the city, and puts it up in packages there, he must rent a room at no trifling expense for the purpose. If he has once tried putting such goods in the hands of commission men, he is not likely to repeat the experiment now. In canvassing the grocery trade, he will find nine out of ten dealers, either supplied with the other man's goods, or else they are too suspicious of being gulled, to buy of one whom they do not know, and as you must say nothing about adulterated goods, it won't do to make any comparisons with the other fellow's honey, and of course you can ask no more for your goods than he does for his.

Now suppose he actually succeeds in getting a few orders each day. These as a rule will be small ones, and as the parties who order will commonly be located miles apart, the expense of delivering the goods, will be very apt to use up what little margin there is remaining, after paying railroad fare,

freight, board and rent bills: especially as there are always some who are more ready to give orders for goods, than to pay for them when delivered. On the other hand, the seller of adulterated goods takes his orders while selling a great variety of equally desirable food products, selling and delivering at the same time (from wagons which call on each customer twice a week) as small quantities as the grocer sees fit to order, and selling on time to insure sales. As these wagons would run whether any honey was sold or not, the expense of selling is a small item?

May I not safely affirm that for every pound of honey that a bee-keeper can produce and market in this way under these conditions, his competitor can produce and sell twice, often three times as much of his goods for the same amount of money invested.

Now friend H, if you know of any silent forces that can be set in motion to rid us from such competition, you will be doing your readers a great service by telling them what they are and how to engineer them. For my part I haven't a particle of faith in such a course. Bee-keepers have tried this "say little, and do nothing" policy quite long enough. What we need is a bee-keeper's *Union* of at least five thousand members: then we can compel these corporations to respect the laws enacted for our protection. We need, also, in every large city, an establishment devoted to the interests of bee-keepers and having sufficient capital and enterprise to handle such of their products as may seek a market there. Another reason given for not making an outcry is, "that it is exceedingly difficult to prove that any sample of honey is adulterated." If this statement is a correct one, how does it happen that the leading encyclopædias tell us that even the best specimens of the glucose of commerce, *always* contain some sulphuric acid, and any chemist will inform you that the presence of this acid can be *invariably* detected by means of chloride of barium.

Several suspected samples that I submitted for inspection to Dr. Duffield, formerly State chemist, were subjected to this test, and pronounced mixed with glucose, in about as little time as it has taken me to write this mention of the fact. In conclusion, while you may be right and I may be wrong about this entire business, I assure you that whenever I am convinced that such is the case,

I will have no other use for bee-journals, than to help me advertise a lot of bees for sale cheap. Then, if you will kindly furnish me the names of a few large cities where but little adulterated honey is sold; as soon as I can get rid of what promises in this instance to be a rather troublesome conscience, I expect to locate in the city and engage in business, when if you conclude to publish your leader on the subject of this article in pamphlet form, I will order a few thousand copies for distribution among my prospective customers.

CAPAC, Mich.

May 5, 1891

**First-Class Goods Must be High Priced.—
The Policy of Silence Disapproved.**

W. F. CLARKE.

“**G**OT him at last!” was the naughty, gloating expression that rose to my lips on reading the April leader. Here, now, 39 times I have read these plaguey leaders, and could not find a flaw sufficiently glaring to call for correction. This is too one-sided altogether! Editors ought to give their critics a chance once in a while. Well, I have got one at last, after waiting over three years; and I mean to make the most of it, lest I should not get another in a hurry. You tell us that adulteration of honey is practiced because there is profit in it. “Right you are!” But what proof have you that if honey were as cheap as glucose or sugar, adulteration would cease? None whatever. There would be just as much honey on the market when the yield is meager as when it is abundant. It would be as it is in regard to port wine, the production of which is equally abundant when the vineyards fail as when they are laden with grapes. Most of the port wine of commerce never saw Oporto, or any other place in Portugal. Your argument if it were sound, should presuppose that honey is put on the market *cheaper* than its rivals. At the same figure, glucose and sugar would be its rivals still. Only by cut rates could it run the adulterated products off the field. That would give the honey business its final quietus, for to sell it as low as glucose or sugar, would entail a dead loss. It would be like cut rates on railroads. Wealthy corporations cannot stand that sort of thing long, and it would soon deal a death blow to bee-keeping.

There is a kind of “Eureka” air about your leader. Yes, you have found it, and you are in such a hurry to exhibit your discovery that you cannot wait to introduce it by due process of argument, and so the conclusion arrived at is given at the beginning of the article. It is done too in a gladiatorial fashion. “I am going to say right here that I have more faith in cheap honey to prevent adulteration than I have in anything else that can be employed.” Well, I am going to say right *here*, that I haven’t a particle of faith in that way of preventing adulteration, and farther, I don’t think W. Z., when he comes down to hard pan, has any more faith in it than I have. Let us see, coffee is adulterated with dandelion and chicory. How do we guard against adulteration? By cheapening down Java and Mocha to the price of the inferior articles? No, but by taking more vigilant precautions against imposition. Cloth and silk fabrics are adulterated. How do we guard against this evil? By getting the best woolen goods and the richest silks down to the price of shoddy? Not much. But by obtaining the goods from direct importers who order them from the manufacturers, and can give a guarantee of quality. There is no line of business in which a pure and genuine article can compete at the same figures with the inferior imitations. A gullible public, caught by flaming advertisements, will waste its money at cheap stores where it is pretended that the best goods are sold at less than cost, and low as the lowest, but sensible people know that a really good article must be paid for, and that in all honest trades, quality settles value, and fixes price. The mercantile world is chockful of this kind of humbuggerly that preys on the credulity of customers who are made to believe that a good and genuine article can be offered as low as inferior and worthless goods. There is no “hocus-pocus” by means of which this can be done.

We had a discussion in one of the bee-journals not long since as to the actual cost of honey production. I cannot take time to hunt it up, and can only give my general impression on the subject, which was, that there is only a very moderate margin of profit, at current prices. Now, talk about cheapening production, and finding out methods by which one man can take care of several apiaries of 150 colonies each, no man knows better than the Editor of the REVIEW

that this is romance. He almost admits it for he gives expression to a passing thought which flitted across his mind, and which he ought to have detained for close examination. "I may be a visionary enthusiast." That's what your are, Mr. Editor, in this particular, without a doubt. I am down on all superficial, hurried, slipshod ways of doing business. Whatever is worth doing at all is worth doing well. I do not want to see our apiaries filled with all kinds of cheap gim-crackery, hustled up for the purpose of pouring out floods of low-priced honey on the market; and running out glucose, but I want to see them respectable business establishments, fitted up with the best appliances for producing the highest quality of honey and putting it on the market in the most attractive shape. I doubt if the actual cost of honey production can be got down much lower than at present, and I am sure it cannot be got down low enough to run the bogus article out of the market.

How does the Editor of the REVIEW propose to outrival the cheap adulterated bee literature of the day? By making the best as low as the worst? By so reducing the cost of getting up a bee-journal that he can give us cream at the price of very blue skim milk? No, indeed.

I think you do the bee-keeping public injustice in saying that it is almost wholly on selfish grounds that they oppose adulteration. It is not selfishness to demand honest dealing between man and man. When this is denied, there is that in human nature which bristles up and becomes indignant. A virtuous anger is awakened. Right is right, truth and equal justice ought to prevail. I shall make no apologies, and take no blame to myself for hating all mean frauds, all lying cheats, all attempts to deceive the public. Adulteration is just what the word means; a contamination, improper, unlawful mixture; and I believe the great mass of bee-keepers oppose it because it offends their moral sense, as well as because it touches their pockets. They want a clean, honest world to live and do business in.

Neither do I believe in the policy of silence. It is to my mind a species of hypocrisy to keep mum about the evils that there are in the world. There is an element of cowardice in it as well. Either it is a fact that honey is adulterated or it is not. If it is, proclaim it with the voice of a trumpet. Shout it from the house-tops that every buyer of a

pound of honey may know it. Tell the people to mind where and of whom they buy their honey. Warn them not to get it from Tom, Dick and Harry, who concoct it in hole and corner glucose factories, but to buy of reputable bee-keepers, who can be found, who are not afraid to put "Lindenbank Apiary," or some other well-known name on their product, and who are ready to pay a big fine if any adulterated article can be traced to their doors. I like the principle embodied in Mr. Heddon's idea of a trade-mark, but it is itself so easily adulterated, rather counterfeited, that I fear it would not have the desired effect. I see nothing for it but for bee keepers to enlighten the public, unite to denounce and frown down adulteration, take pains to produce as perfect an article as possible, put their names to their wares, make a live and proclaimed business connection with those who sell for them, supply their own home market in person, and trust to quality, which is like blood, and "will tell."

I like the way in which Dr. Tinker advertises his beautiful white poplar sections. He does not pretend to sell them as low as the inferior brands. They are worth more, and he wants more for them. In like manner, I would have bee-keepers frankly tell the public: "We cannot afford to sell this A I honey at the low price at which others offer a nondescript mixture of concocted stuff. It is worth more and we want more for it. The great majority of people will get the best if it does cost more. That is what we ought to educate the public up to. Put me on record as opposed to going it on the cheap. I am willing to pay fair value for what I buy, and I want it for what I have to sell.

GUELPH, Canada.

April 18th, 1891.

**Cheap Honey Easily Sold—Cane Sugar now
as Cheap as Glucose—Cheap Honey
Will Kill Adulteration—Trade
Mark "No Good."**

GEOR. K. WELLER.

YOUR statement of basic principles leaves little more to say. I don't like adulteration because it curtails our market, and casts suspicion on our product. Cheap honey will stop it, by rendering it unprofitable, it also will enlarge our market indefinitely. I can

sell with about equal ease, 100 lbs. of good extracted honey at $12\frac{1}{2}c$, or 500 lbs. at $10c$, or 2,500 lbs. at $7\frac{1}{2}c$, or 12,500 lbs. at $5c$, or 62,500 lbs. at $2\frac{1}{2}c$; the question is, to make a profit at these lower prices, and the question will be answered in the affirmative in time. There is as much profit at $7\frac{1}{2}c$. now as some years back at $15c$.: each year is lowering the cost of production. With granulated sugar, the standard of sweets, selling at $5c$. a lb., there isn't a big show for glucose, and honey must come down too. There is no use kicking, exclusive of labor, $75c$. per swarm per annum, will cover all cost of maintenance and I believe it can be reduced to $50c$.: that leaves good room for a profit, if the labor can be kept down.

For every five cents we have lost because of actual adulteration, we have lost \$5.00 because of the talk incident thereto. For every \$1.00 worth of honey sold here, there is \$25 worth of glucose sold *as such*: the price does it. Most persons prefer the honey, but can't afford it. I have eaten lots of glucose, and when pure, it is as healthy as honey, their composition being identical. While the flavor of good honey is incomparably superior, many inferior kinds are not so good. It would seem therefore that the less said about this adulteration, the better. The proposed "trade mark" remedy would only advertise the evil gratuitously, and unless a standard of excellence was agreed on, and every package examined by inspectors, the remedy would be worse than the disease. There is no way to prevent members of the trade mark federation from "glucosing" honey, if there is money in it, except through our statute laws, and it would be no aid in enforcing them. It would be a fine cover, under which to dispose of inferior but pure honey, creating a suspicion of adulteration in all who ate it. The idea that all actual bee-keepers are honest in this matter, is like the idea that all farmers are honest in the produce they sell, yet, last week, my neighbor got seven half-formed chickens in 25¢ worth of eggs she bought.

In such a union, the ignorant, careless and dishonest, would reap the gain incident to any reputation it might have, and the honest, conscientious, careful ones would lose. Success means the cheapening of production, which means less labor. After all is said, labor is the one thing that can, and will be cut down.

BERLIN, Mo.

April 16, 1891.

It is Impossible to Produce Honey Cheaper Than Glucose.— Keeping Still not the best Policy.

C. C. MILLER.

WITH the exception of one point, I think I am in accord with your leader. A half crop of honey does not double the price per pound. Perhaps it is well, also, to notice the other side, for I do not believe that a double crop would cut in two the price per pound. I think it is also true that when the price of honey sinks so low that adulteration is no longer profitable then such adulteration will cease. But suppose such a point were reached to-day, would not the production of honey also cease? How many bee-keepers do you think would continue in the business if they were assured that for the next twenty-five years the average annual profit in bee-keeping would be no greater than it has been for the past five years? And if you assure them that the price will come down and stay down so that adulteration will be no longer profitable, I strongly suspect that you would make a clean sweep of the whole business, for the whole crowd would be so poor that five would have to club together to subscribe for a single copy of the REVIEW.

I know that you combine with that the idea that so much advance may be made in methods of production that we can afford to come down. But now what reason have we to expect that? What great advance have we made toward competing with an adulterant that costs less than three cents per pound? I know very well the talk that has come up at different times about improved methods and short cuts that would revolutionize the whole business, but I notice that the men who have been doing that kind of talk do not show their own faith in it, to any very alarming extent, by their works. Please tell us *when* the time will come when we can undersell the adulterators, and please don't forget that the adulterators have just the same chance to improve on *their* methods of production, so that when you meet their 3-cent mixture they will smilingly come forward with a two cent mixture.

Now if I am right about this, let us see where your position places us. The only hope of preventing adulteration is to bring down the price of honey to that point where adulterators will find there is "no money in

it." That point can not probably be reached in our time, so that really all there is for us to do is to let the adulterators severely alone, say nothing about it, but grin and bear it.

Now suppose that it is thoroughly understood that adulteration can go on without let or hindrance, that openly and above board there can be put on the market pure glucose labeled "Pure Honey," and I know as well as you that there are thousands that cannot tell the two apart, don't you think adulteration would largely increase? Have you forgotten that a little stirring up made one large firm come out publicly and confess and promise not to do so any more?

How is it in other lines of business? The man who sells a pound of glucose for a pound of honey is in a business of precisely the same kind, different only in degree, as the man who passes a piece of pewter for a silver dollar. One is counterfeiting as much as the other. Now, is the kind of policy we have been talking about adopted in the case of the man who is detected handling counterfeit money? Do we talk after the following fashion? "Well, it does no good to say anything about it, there is not such a great amount of spurious money in circulation, and if this man is prosecuted for counterfeiting it will only make people suspicious of all money and the consequent lack of confidence will militate against the public interest. The best policy is to say nothing about it." Do we talk after that style? Do we say that it is so hard to convict of counterfeiting that we better not try it? Do we say, "What good comes of making an outcry? It simply says to the public: "Beware, there is counterfeit money in circulation?" So far from that, we make the penalty so severe that when conviction is secured it serves as a wholesome restraint.

Friend Hutchinson, I give you credit for trying to be perfectly fair, but in this case it looks to me as if you had started on a theory that your good sense and kind heart would not allow you to follow out to the bitter end. You say, "I honestly believe that the wisest course is to keep perfectly still," and in the very next paragraph preceding you say, "If a man finds that adulterated goods are in opposition to his own, let him go quietly to work and bring such forces to bear as will rid him of the competition." No matter if you do contradict it in the very same paragraph, there stands good advice, and if it's right for one man to follow it, it

is right for two men, or for any number of men combined.

No, I don't believe in a policy that says we must keep still and help deceive the public into the belief that glucose is white clover. I believe in letting the whole thing come out. The interests of the public are identical with ours. Say to them if you will, "Beware, there are adulterated goods on the market," and then ask them for their own interest as well as yours to help prosecute the counterfeiters, making better laws for it if necessary.

MARENGO, Ill.,

April 15, 1891.

Adulteration of Honey.

PROF. A. J. COOK.

I WRITE WITH some hesitation on this subject as I differ with many whose opinion and judgment rank, in my mind, among the first, of whom, Mr. Editor, I include yourself. But I have thought a good deal upon this subject, and believe it is a matter of much importance, and one that we should consider.

I think we saw enough at Detroit to convince us all that adulteration is extensively carried on. This is never the work of beekeepers—the real producers of honey, but of some middle man: some "manufacturer" whose stock is in Detroit, Chicago, or some other usually large city. A little honey and very much glucose which often sells for half the market price of honey is mixed and all is sold as "pure strained honey." This is sent out in such large quantities that the business is very profitable. Thus men will engage in what they know is unlawful and fraudulent, because there is money in it. As long as we have saloons and worse places, just so long will men engage in such nefarious work as adulteration, unless we say them no, so emphatically that all will listen and heed. I do not believe we should ever defend any such article. I regret Mr. Editor, that you and one other of our honored and justly loved editors have done so. You say it may be better than honey. I say never. Honey is honest; this a lie? A lie never can be as excellent as truth. But this "pure strained honey" is sold under a false name. We do not know what it is. It may be poison. Because a mixture is sweet and pleasant to the taste is no surety that it is

either good or safe. I fully believe that we were all better off if fraudulent or even secret compounds like patent medicines were all hurled into the bottomless pit, which would be in a very fit receptacle for them. Such stuff is not safe; its manufacture is not right; its sale is iniquitous. I speak strongly but I feel that every word is the truth.

Again, I do not believe we can gain by smothering the truth or hiding evil. So many say, don't talk about it, it will hurt sales. Sin never takes rebuke kindly, but the rebuke is good nevertheless. To hide evil practices that we know exist and are injurious to society, is really cowardly and wicked. The better way as it seems to me, is to face the evil, bring it to the light and squelch it.

But is it bad policy? In the highest sense, doing right is never bad policy, and decrying fraud is right. But, again, as long as such manufacturing is carried on people will know it; many will go without honey rather than risk the purchase of, they know not what. I have a case in point. A wealthy gentleman in Detroit sends to me each year for his extracted honey. He says he wishes to know what he is eating. Thus many refuse honey because of this fact. I say fact for it is a fact, and there is no need to disguise it. Others will blazon forth the fact even if bee-keepers open not their mouths.

Is it not then wiser to acknowledge the evil and try to cure it; or else counteract its effects? I believe this to be our wisest course.

THE PROCEDURE.

I believe that we should all publish far and wide that honey is adulterated, but never by bee-keepers. They can not afford to do it. It is never policy for a bee-keeper to practice such fraud, never safe or profitable. Thus let us spread the information that honey stamped with the name and locality of the producer is sure to be pure. Such knowledge will help not hinder our sales. Again if we have not laws against such adulteration and fraud—Michigan has a good law—let us have them. Let us see that any man who sells any product under a wrong name is rendering himself liable to fine and imprisonment. If he stamps his product "glucose and honey" or "manufactured honey," no one will be wronged, and he is welcome to his profits. Then having a good law, let us set the law to work, through the *Union* to stop the nefarious business.

We had a good chance in Detroit last winter. I would have the *Union* employ a good lawyer and have the matter pushed to the bitter end. A few convictions would not only stop the frauds but would educate the people to the truth that only pure honey could be sold as such. The *Union* through its able manager has done right royal service already. There is here a grand opportunity to win even brighter laurels, and to confer, as I believe, a greater benefit upon the bee-keeping industry.

AGRICULTURAL COL., Michigan, Apr. 22, 1891.

The Part That Odor Plays in Queen Introduction. The Manum Hive.

J. H. LARRABEE.

THE removal of one queen and the introduction of another to a colony of bees is one of the most delicate operations of the apiary. Its success all depends on the condition of the bees and the action and scent of the queen. That the bees distinguish their queen by the sense of smell there is no doubt. That the bees notice any unusual actions on the part of the queen and that the queen is not slow to observe the same in the bees, has been observed by many.

I think that perhaps I can best state my belief on the subject of queen introduction by giving the plan I have many times used successfully.

I remove the old queen (or rather the former queen) and cage her in a small, round, wire cloth cage, such as is described in the editor's leader, and carry her to the honey house, run her out and run in the queen to be introduced. The mouth of the cage I close with a cork or with wax and hang it between two combs near the brood and on the honey. In 24 to 48 hours I take off the cover carefully and, removing the stopper, insert a chunk of soft candy in the mouth of the cage and close the hive. Of course if the bees are clustered around the cage and are smoked away with difficulty I delay the candy for another day, but this is seldom necessary. The only thing about this differing from the common method is in placing the new queen in a cage scented by the former queen.

Perhaps this looks to you like a small point but I believe it is one worth considering. The extremely delicate scent of the

queen is noticed by the bees blended with that of their own sovereign. I know that I have been extremely successful by this method. I have not found it necessary to feed colonies to which I have been introducing queens and cannot see why it should be necessary. If there is plenty of food in the hive and the colony in a normal condition, with plenty of young bees, the colony should be in just as amiable a disposition, except when resenting man's intrusion, as at any time.

The idea that a cage giving the queen access to the cells is superior to the round cage is all right in theory, but my experience has been that in practice there is very little difference; the main idea being to accustom the colony to the changed scent of their queen.

The cheap outside wintering case described in the REVIEW for March, by H. L. Hutchinson, is almost exactly the outer case of the Manum hive or Bristol hive as it is called. If Mr. H. will make an entrance to his hive through the *bottom board*, arranging a stand and sloping alighting board underneath he will avoid the necessity of a "bridge" with its other contrivances, and will have the Bristol hive.

My own bees in Vermont, wintered as usual out of doors, are through the winter with a loss of only two in about one hundred. I cannot tell exactly how the bees here at the college have wintered as they are yet in the cellar. I anticipate but little loss, however, as the thermometer has stood at between 43° and 40° about all winter. There has been considerable moisture in the cellar and it has condensed upon the interior of the hives so that I have noticed it to run from the corner of a hive cover just raised.

AG'L., COL., Michigan, April 6th, 1891.

Getting Large Yields by Raising Plenty of Bees and Preventing Swarming.

DURING the past few months I have been in correspondence with a "Western man," (and that is as near as I have liberty to say who he is) and his writings have been so graphic, and his success so wonderful that I begged him to write for the REVIEW. With the following article came the information that the writer was managing bees for another man, and the

owner objected to his giving the locality in connection with the report, as many would conclude that that locality was a bee-keeper's paradise, and would flock in there and over stock the locality which was well stocked now. As this article shows how to get plenty of bees at the right time, and then hold them to their work, I think best to publish it, even if the writer's name and locality must be withheld.—ED. REVIEW.

As our experience may help some of your readers to attain success in the matter of getting large honey yields from their apiaries, I will try to make plain, as briefly as possibly, how we made a success last season.

The bees were wintered on the summer stands, or rather packed in chaff in long rows made up as follows: Place 2x4's on the ground, or on blocks just high enough to be dry. Set the hives on these about six inches apart. Board up all around with rough lumber, with 4 to 6 in. space at back. Boards in front, against hive, just above entrance and leaning out at top to give packing space of 2 or 3 inches in front. Chaff under the hive. Scraps of boards split up to about $\frac{1}{2}$ square, placed on top of frames, 2 sticks to each hive. Two to three ply of burlap, (gunny sack) spread over the chamber. An empty brood chamber set on top, and about $\frac{1}{2}$ filled with chaff. Then put on lid, with a chip under to let out the moisture, but not enough to let mice in. Then all is packed full of chaff about the hives clear to the top. The packing left about them until in May. If a colony began to hang out we gave more ventilation.

Last of March, or first of April, every colony was examined to see that they had stores. As the weather became warmer, we would remove some of the packing about top of the hive, to facilitate work. We finally left the chaff out that was in the upper chamber, and placed the lid down on the quilt. The last packing removed being that immediately about the brood chamber. But all were kept packed in whole or in part—enough for protection—until weather was warm and hives full of bees.

When a colony could spare brood, it was made to help the weaker ones. By the last of May we had lots of bees, and many colonies would rear drones, if any drone cells could be found, but we "cut their heads off," ditto queen cells if any were started.

The last of May and fore part of June, we spared no pains to get large quantities of

brood. If a colony was short of honey, we gave them a card or two. About once a week, or perhaps ten days, every colony was examined, and brood spread, "drones shaved," and honey given if needed. About the 10th of June, (chaff had now been all removed) some colonies seemed bent on swarming, but we nipped the cells. We now lifted each brood chamber and placed a chamber underneath, some entirely vacant and some having one or two combs, just for climbers or ladders. This was done to give room to cluster, and to keep them cool. No comb was built in these lower chambers, because no honey was in the fields.

Up to this time, the bees had not made a living, but were dependent on the honey within the hive, but, by evening up stores and feeding about 1000 pounds of honey, we had kept all in good shape. Honey, however, was very nearly gone in the whole apiary, and our reserve in the honey house nearly exhausted. We expected the flow to begin about June 15 to 20th, or possibly later. We wanted each colony to have one or two supers on before the flow opened, so they could get acquainted. chink up cracks, etc., so we put on one super to each hive. Now observe, we were stretching them *both ways*; an empty brood chamber below, and a super above. We used but nine frames in the regular ten-frame Simplicity hive, so you see there was lots of room in between the combs and in empty cells, for bees to cluster.

The supers we put on at this time were arranged as follows: Of last year's unfinished sections, "extracted and dried," two rows against side of super, then a separator, then two rows of new section with full sheets of foundation, then a separator, then two more rows of old sections, and all wedged up with a follower. Thus we had sixteen sections all ready to put honey in, and twelve new ones. June 15 and 16th, the bees made their living. The 17th the flow opened and then there was some flying around done. Every brood chamber had to come out from beneath, (those emptys I mean) and more room given on top. We gave another super full of new sections and full sheets of foundation, lifting up the one already on, and putting the new one under it.

We had taken cards of brood from the more prolific, placing them in the hives of less prolific and failing queens, so that, with very few exceptions, each colony had about

eight combs of brood, some having the whole nine filled, some having but seven; but the average was between seven and eight solid combs of brood. All cells in brood chamber free of brood, were at once filled with honey and lengthened. The old sections in the supers ditto, while the foundation was being drawn.

The thickening of the combs and the increased activity and heat only crowded more bees into the supers, so we had to add more supers, until four and five supers would not keep some colonies from lying out. The weather was not exceedingly hot, seldom going above 95° in the hottest part of the day; the nights always being cool. We also gave ventilation, by blocking up the hives in front, $\frac{1}{2}$ to $\frac{3}{8}$ of an inch; $\frac{3}{8}$ however, is too much, because some combs will be built under frames.

By clipping cells we thought to hold them perhaps ten days longer, but in this we made a mistake, for after the cells were clipped, they would swarm without waiting to rebuild the cells. The bees were in three apiaries, and to make sure that no swarms would get away, we had previously clipped the queens' wings. When we saw we could no longer hold them we at once began to remove queens, killing some and making nuclei with others, building the nuclei up to full colonies as the season passed. Nine or ten days after removing the queens (every cell being carefully clipped at time of removing) all cells, save one, were clipped from each hive, and each colony allowed to requeen. After the final clipping of cells, we would remove finished supers and put on emptys, always putting the fresh one at the bottom, until toward the end of flow, when some were added at top; much depending on strength of colony.

No sections were handled singly, each super being left on until finished. As supers were finished they were removed to the honey house and stored just as taken from the hive. At the wind up, whatever sections were unfinished were extracted and kept over for the next season. If a colony failed to requeen itself because of losing a young queen, we took away the honey and let the bees work themselves to death laying in a new supply of honey or trying to do so.

Here is the result of our work: Bees were in three apiaries; home yard, No. 1, and No. 2. Home yard run for extracted honey. Nos. 1 and 2 for comb honey.

YARD NO. 1.		65 COLONIES.		
2	Colonies	gave	each	28 pounds
2	"	"	"	56 "
12	"	"	"	84 "
14	"	"	"	112 "
21	"	"	"	140 "
10	"	"	"	168 "
3	"	"	"	196 "
1	"	"	"	224 "

Average 127 lbs. (Increased to 80 colonies.)

YARD NO. 2.		60 COLONIES.		
23	Colonies	gave	each	212 pounds
23	"	"	"	140 "
9	"	"	"	168 "
4	"	"	"	224 "
1	"	"	"	252 "

Average 140 lbs. (Increased to 70 colonies.)

Took some extracted from increase in both apiaries. Average for the three yards, 150 pounds, spring count. The total crop was twelve tons and brought us \$2,700 last fall at wholesale.

Now, don't say this success was because of location or an extra honey flow. It was not. The flow lasted about fifty days. The bees never made a living up to the opening of the flow; neither did they after the close of it. All the surplus and their living for the succeeding ten months, was put in during that time. If it had been the result of an extra honey flow, why did not other apiaries in the same fields show it? The very best yields from other apiaries were only about one-half the above. Summed up, here is what gave us success. Winter and *spring protection*, getting rousing colonies by spreading brood, evening up and feeding when necessary, allowing no colony to swarm, removing the queens during the honey-flow and by doing everything at the right time.

Remember that "work well done is twice done." Observe in the report, that 2 colonies gave each 28 pounds. One of these swarmed and skipped (we must have missed queen in clipping) and the other superceded its queen just when the queen ought to have been doing her best. Had all swarmed; how it *would* have lessened the yield. There was lots of work about this, but the increase in yield more than paid for all the work done securing the whole crop.

Don't slight your work. When you get a strong colony don't divide or allow it to swarm. Those bees that would be kept at home in the new hive should be sent to the fields to gather honey and the expense of a new hive saved. Double gain, do you see? Take away queens during the flow, you can't hold them unless you do.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, MAY 10, 1891.

BEESWAX is going up, but Wm. W. Cary writes that he shall not raise the price of his foundation during the next thirty days. Three cents a pound is worth looking after.

THIS ISSUE OF THE REVIEW is a little late because I have been devoting so much time to that forthcoming book, "Advanced Bee-Culture" which will be out before I begin work on the JUNE REVIEW. The JUNE REVIEW probably will also be late, but, after the book is out, I can then "catch up."

A COPY of the last edition of Prof. Cook's *Guide* is added to my library. The price of this book is now only \$1.00. Those who bought this book a few years ago have but little idea of what may be found in the last edition. It contains the latest in science and practice, and is really the choicest book for American bee-keepers.

WM. F. CLARKE is the projector of a Bee-Keepers' College, at Guelph, Ontario. An apiary of several different varieties of bees will be kept, and modern appliances and methods will be in use. The Institution will be conducted very much after the plan of a Commercial or Business College. Those interested will please address Mr. Clarke for further particulars. The REVIEW hopes the new scheme will be a success.

MARTIN'S PROLIFIC BUCKWHEAT.

Wm. Martin, of Cass City, Mich., in 1888, noticed one plant of buckwheat in his field of Japanese buckwheat, that was taller and heavier loaded with grain than the other plants. He saved the seed from this, and sowed it by itself ever since. This sport has retained its original good qualities; and its fortunate owner now has enough of the seed so that he can offer some for sale.

THE ADULTERATION OF HONEY.

If the last two issues of the REVIEW have done nothing else, they have shown most conclusively that fear of opposing the editorial opinion does not prevent a free and full expression of opinions by correspondents. It is as I would have it. I wish to be able to freely express my views with the feeling that any mistakes I make will be as freely corrected. I am glad that correspondents have been so outspoken, although I fear that I have been slightly misunderstood on one or two points. When I said that bee-keepers were opposed to the adulteration of honey almost wholly upon selfish grounds, I did not have in mind a sordid, grasping selfishness, but one that is wholly honorable, the selfishness that prompts a man to attend to his own business instead of that of his neighbor.

There also seems to have been a sort of *feeling*, almost unconsciously expressed, that I failed in my duty by not condemning adulteration as *wrong*—by not saying that it ought to be opposed because it is *wrong*—by not admitting that keeping still may be “winking” at an evil practice. Why bless you! friends, of course, it's wrong, but not so much so as hundreds of other practices against which we, as *bee-keepers*, give ourselves little or no concern.

Mr. Walker gives the first instance of which I have learned in which newspaper notoriety of adulteration has helped the sale of genuine honey and at the same time worked against the bogus article; but, in this case, it was possible to *describe* the spurious and the genuine honey. And right here is where lies the greatest difficulty in fighting adulteration—*describing the adulterated article*. Does any one suppose that the public would buy adulterated honey if there were some easy way of detecting it? Government chemists have analyzed pure honey and pronounced it adulterated; and Prof. Cook has repeatedly said that he believed it impossible to say positively that any certain sample of honey is adulterated. This is why I have considered the conviction of adulterators almost hopeless. Counterfeit money, butterine and other substances that have been mentioned, *can* be distinguished, at least, by experts. Mr. Walker says that encyclopædias agree that all commercial glucose contains sulphuric acid, and that its presence can be very easily and quickly detected by chloride of barium.

Past experience makes me a little sceptical in regard to the correctness of encyclopædias, but I should be glad to know that they are correct in this instance.

Right here comes in another point. A syrup of granulated sugar can now be made that will cost no more than glucose. This will contain no acid. Can it be detected? Perhaps some will think I am trying to aid adulteration. No, I am not, but, as bee-keepers, we cannot afford to shut our eyes to *facts*, even though they are unpleasant.

If there is some method by which the adulteration of honey can be detected, I am in accord with the views expressed by several correspondents, that the Bee-Keepers' Union should assist in prosecuting adulterators. As I understand it, a change in the constitution of the Union would be necessary before money could be used for this purpose; but, if the Union *could* put an end to what adulteration there is, and, what is of far more importance, *convince the public* of this accomplishment, I believe its usefulness would be increased a thousand fold, and members would flock to it in about the same proportion—they could then see where its existence was of some benefit to *them*.

I wish to explain more fully my views in regard to the “policy of silence.” I do not advise that adulteration shall be denied, or even an attempt made to conceal the fact. Perhaps, I can best illustrate my meaning by relating one or two incidents. At a Chicago meeting of bee-keepers, a certain man, styling himself a Dr. Somebody, (I have forgotten the name) said that he was engaged in selling honey, but found that he was obliged to compete with adulterated goods, and he was very persistent that some sort of resolutions should be adopted, a committee appointed, etc. He brought up the subject on two different occasions, occupied an hour or more each time and finally carried his point by the “skin of his teeth.” Of course, reporters for the daily papers were present, and everything of a sensational nature was carefully jotted down and then spread before thousands and thousands of readers. After the meeting was over Bro. Newman said to me, “This fellow with his adulteration business has done bee-keepers more harm than ten such conventions can do them good.” He was correct. This is the kind of “clack” to which I object. In this connection it would be well to remember, also, that the discussion in the bee journals

of adulteration does not reach the general public, hence can do no harm—nor good—in that direction, but these garbled reports of “resolutions,” appearing in the dailies of large cities are read by consumers, and often reach as many people as all of the readers of the bee journals combined and then multiplied by five. Besides, articles appearing in this class of papers are likely to be copied far and wide.

When attending a bee-keepers' convention held May 6, at Ionia, Mich., Mr. Harm Smith told me that upon learning that a can of adulterated honey had been sent a grocer of his town, he went to him and said, “The first pound of that stuff you sell, I'll prosecute you.” The “stuff” went back to the mixer. There was no blow nor bluster—no publishing of the matter in the papers. It was a case of “silent influence.”

This holding up of the hands in holy horror, and exhausting the vocabulary in denouncing the “vile adulterators,” may have a very righteous sound, but it *doesn't stop adulteration*. Adulteration will cease only when it is no longer profitable: but it would be greatly lessened if those who practice it could be detected and punished.

I have little faith in teaching consumers to discriminate between pure and adulterated honey. We cannot tell them to buy only granulated honey, as pure honey does not always granulate, and glucosed honey often does. Neither do I believe that it would help matters much to advise the purchase of only such honey as bears the name of the producer. In the first place, it will be well nigh impossible to convince people that bee-keepers are more honest than other folks. In the next place, injustice would be done honest dealers. Who of us would believe that Chas. F. Muth would adulterate honey? I will say this much, however, that the public might be told to view with suspicion all honey put up in retail packages without any name or address whatever, either as producer or dealer. With the *present* condition of things, I know of no better plan than that of each bee-keeper, or dealer, marking his goods and then establishing a reputation for them.

There are many arguments brought up by correspondents, to which I would gladly reply, in fact, I feel as though I could write all day upon the subject and then leave unsaid much that I would like to say, but lack of space prevents, and, as this subject proves to

be broader than I anticipated, I think best to devote another number to its discussion.

If the REVIEW can be instrumental in helping to rid bee-keepers of the evils arising from adulteration, it will have done an act of which it may well be proud; and if there are any who can help in the matter, let them not hesitate to write, even if they have written before. If there is little more to say, then there will be room in the June REVIEW to give some valuable correspondence, upon a variety of topics, that has been crowded out for some time.

EXTRACTED.

Secretion of Wax.

“Wax scales are found, plenty of them, wasted on the bottom boards, when a swarm is hived in an empty hive without foundation or comb. Few or no wax scales are found on the bottom-board of a colony run for extracted honey, if they have abundance of empty combs. The case should be exactly reversed, if bees secrete wax whether needed or not.”—*C. C. Miller in Gleanings.*

Bro. Miller, the explanation is just this: A swarm always goes with a lot of wax scales already protruding from the wax pockets. Not only this, but the sack of every bee is filled with honey. It seems as though the bees intended to carry all the material possible with which to furnish a new home. When there is no comb nor foundation in the hive, then wax scales “get ripe” if the expression is allowable, and drop to the bottom of the hives, before there is opportunity to use them. If the bees are hived upon combs, the scales are stuck upon the combs. Didn't you ever notice how *white* the mouths of the cells of an old black comb appeared soon after bees had been hived upon it? This comes from the scales of wax that have been stuck on it, for a lack of somewhere else to put them.

Our Bees are big Enough.

Every little while somebody starts the inquiry if it would not be an advantage to have larger bees; those that could carry bigger loads, fly farther and faster, and forage on red clover. It has been suggested that comb foundation be used having cells a trifle larger than those of natural comb, in order that the bees may have more room to grow. This matter of developing a larger bee is now “up” in the *Api*. This whole question has been so thoroughly, soundly

and sensibly treated by Cheshire that I believe it will be wisdom to quote what he has to say upon this point.

"The last point (size) is one upon which great misapprehension abounds. The idea that it is desirable to increase the dimensions of our bees is all but universal, and, since I have ventured, more than once, to stand alone in condemning it, I must give my reasons for so doing. *Apis dorsata* has been hunted up, although it is known to be a useless savage, simply because it is big, and that by the very persons who claim that the smaller hive bees are the best, in that they give their vote generally to the yellow varieties. Fortunately, it is in the very nature of things impracticable to 'hybridize' our hive bees with *dorsata*, over which we may inscribe '*Rebuiquesat in pace.*'

But it is still necessary to point out that the smaller the creature, the greater, relatively, are its powers, both for a mechanical and physiological reason. First, other things being equal, as an animal is enlarged, its weight increases as the cube, and its strength as the square only, of the ratio of the lineal increase. Thus, if a man could be developed until his 6ft. stature became 18ft., his weight would be increased no less than twenty-seven times; while his muscles, because three times their former width and thickness, would have only nine times their former power. Such a man would be just able to stand; but if he were to stoop to pick up a pebble, he would be too weak to rise again to the erect posture. This aspect of the question is quite mechanical, and may be further illustrated thus: An ordinary lucifer match, supported horizontally at the ends, will bear about 7000 times its own weight suspended from its centre; but by enlarging it 240 times, it becomes a great balk of timber, which would be broken by once its own weight similarly suspended. Here we have the reason why ants can build nests, which, in relative size, utterly transcend anything bigger creatures can accomplish; why some insects can jump even a hundred times or more their own height, while the gazelle can, at a push, do twice, and man and the horse once theirs, leaving the elephant to disdain jumping, as unsuited to his ponderous dignity.

The economies of the question must not be overlooked. In gathering from clover, it has been shown that about 1-350th grain is secured at each visit. Let us imagine that our bee is enlarged twice, by which its weight has grown eight-fold. As it flies, carrying its large body from clover-bloom to clover-bloom, an amount of wear and tear is involved which is eight times as great as that accompanying similar movements in the normal bee. This wear and tear is replaced by food—of course, proportionately augmented, and which has to be deducted from the 1-350th grain secured. The net increase to the stock is, therefore, less at each visit, in the case of the large bee, than in that of the normal one. The former, however, has the advantage of being able to decrease its return visits to the hive to unload, because its honey-sac is larger; but this is the only

gain, and it is much more than counter-balanced by the fact that, with normal bees, eight independent gatherers would be at work simultaneously for only the same wear and tear that would permit of the efforts of one if the bulk were increased as supposed. Selection has gone on for ages regulating the proportions of the wondrous insect between those extremes in which the loss by excessively frequent returns to the colony, and the loss through excessive bodily weight, balance each other, and has thus given us a bee whose size yields the best possible results.

The botanical reason for desiring no alteration was expounded in Vol. I. Flowers and bees have been constantly interacting. The build of every floret is adapted to that of its fertilizer, and, could we suddenly increase the dimensions of our hive bees, we should throw them out of harmony with the floral world around them, decrease their utility, by reducing the number of plants they could fertilize, and diminish equally their value as honey-gatherers. Mechanics, physiology, economics, and botany alike, show any craving after mere size to be an ill-considered and unscientific fancy, for which it would be even difficult to find an excuse."

Manum's New Methods of Running Several Apiaries Alone.

Some have been inclined to laugh at me because I was so visionary as to think that the time would yet come when one man could care for several apiaries; but even *now* Mr. E. A. Manum proposes to care for six out-apiaries and one at home, and no help to be hired. From an article in *Gleanings* I clip that part that tells how he proposes to manage.

"First, I shall do all in my power, through the month of May—by contracting and feeding—to stimulate brood-rearing, in order to get a large force of workers hatched out by the time clover blossoms, which is usually about June 10th; and as then is the time swarming commences, I shall remove the queens from such colonies as have started queen-cells, or that show any signs of preparing to swarm; then in eight days I remove all queen-cells found in these hives, except, perhaps, from one or two that I wish to rear queens from. In these I allow the cells to remain until they are old enough to transfer to the queen-nursery to hatch, and perhaps at this second visit I remove fifteen or twenty more queens, and in six or eight days more I again visit this yard and cut out queen-cells as before, both from the first lots where the queens were taken out—should there be any—and the second lot and remove queens from as many more as I find preparing to swarm. Now, by the time I make the third visit I shall find a lot of young queens hatched in the nursery; and the colonies from which I removed the first queens will be in condition to receive and accept a virgin queen, so that I will run in a virgin queen in each colony. All this time I must manage

to have a supply of virgin queens on hand, to introduce at each visit until I have gone over the whole yard; and, besides, I have all the other work to do in each yard, such as putting on and taking off sections, looking after the nuclei in which I have many queens fertilized for the market, caging and mailing queens, etc. In this way I can attend to six out-apiaries by going to each once a week. The seventh, being the home apiary of only 60 colonies, I can look after nights and mornings, or as I can best catch the time. By this method I can prevent swarming and dispense with high-priced help; and, moreover, I am sure that each colony has a young queen in the fall."

Mr. Manum proposes to sell a good share of the queens that are removed. It is possible that where the queens can be sold readily, the removal of the queens to prevent swarming can be made profitable. In his foot notes, Mr. Root thinks that Mr. Manum will not get along very well if the flow should be bounteous and long continued. Mr. Root refers to an apiary of 100 colonies that he saw in Wisconsin where the bees were crowded out of the hives because the combs were so full of honey, and the owner could not take it away fast enough. It is not necessary, usually, to *take away* honey to give bees room, simply raise up the supers and give the bees more surplus room. If the supers were all ready, the sections in the cases, and foundation in the sections, as it ought to be in the case where one man is to manage so many bees, every colony, in an apiary of 100 colonies could be supplied with a super each in *one hour's time*. I doubt if bee-keepers, in general, fully realize the possibilities in the way of managing a large number of bees by using the right methods and appliances.

Side Packing Apparently of Little Value in the Spring.

You know that I have been very vehement in urging the spring protection of bees, but I earnestly desire that the truth shall be known, that both sides shall be heard, hence I copy the following from *Gleanings*:

"In the spring of 1890 I concluded to test thoroughly the advantage of spring protection for single-walled hives. My bee-yard is laid out in three circles of 50 feet diameter with a smaller circle within each large one. The hive-stands, holding two hives each, are placed around these circles, 16 on the outer circle, 8 in the inside smaller one, and all facing outward. This is the most satisfactory arrangement I have ever tried, as it gives a distinct individuality to each stand. In setting out the bees in the spring, I selected one of these circles and filled the 24 stands with 48 of my best swarms as nearly equal

in quality as possible. I then took lath and made 12 handsome outside cases large enough to set over two hives, with four-inch space on all sides for packing, and six inches on top. I placed one of these cases on every other stand, leaving one-half of the hives unprotected. The cases were then filled neatly with excelsior sawdust from the section machine. There were double bottom-boards, and bottom protection to the packed hives. The cases were made in four pieces, so that, by tacking four small finishing nails, one in each corner, the whole case could be knocked down in a moment and laid away in the flat when not in use; and when the 12 stands were packed in their neat cases and securely covered with a waterproof roof, I said to myself, "Well, this is just splendid." The 24 other hives were left entirely unprotected, except that each hive was covered with a shallow rim three inches deep, with building-paper nailed on one side for a bottom. Each of these shallow boxes were filled with sawdust. A square of burlap was spread over each hive, the boxes set on these and covered with a good roof. The spring was exceedingly cold and late—just such a one as would give spring protection its best chance to prove its value. I then gave watchful care to all alike, and awaited results with great interest. I resolved at the start that I would let all those bees swarm naturally, and then keep strict account of the time of swarming as well as the honey produced by each class of swarms. They all did swarm somewhat late, as the season was the poorest for honey in all my 45 years' experience.

I will not lengthen this article by giving details of the results of this experiment. It is sufficient to say, that, while the cost of material for making the cases was only 25 cents each, and the work of making them was not very great, yet the increased result was not great enough to warrant this small outlay. I shall try the same experiment with some new ones again this year and again note results. But my present impressions are, that plain hives, cellar wintering, with spring protection in the shape of warm bottom-boards, and warm covers for the top of the hives, are the thing. The bottom is where the cold enters, and the top is where the heat escapes. Both of these points should be carefully protected. My observation has led me to fear that the danger of enticing the bees to leave their warmly packed hives on unsuitable cold days, and perishing in the cold winds will counterbalance all the good they will do.

BARNETT TAYLOR.

Forestville, Minn., March 23.

[Look here, B. Taylor. You have given us the result of a very valuable experiment just now; but as you prepared your bees, I am sure they all wintered pretty well, for, in fact, both those that were chaff-packed and those that were not, were in very good shape for winter. You have omitted to say to our readers that you have them in these shallow half-depth frames; but the fact is, in those shallow brood chambers, with a good warm bottom-board, and your chaff packing on

top, you really have a pretty good chaff hive; and I should not wonder that, with such good protection for both top and bottom, and then allowing the sun to strike directly on the sides of the hives whenever it shines we shall have an arrangement pretty nearly as good as a regular chaff hive.]”

Mr. Taylor is one who makes a specialty of bee-keeping, and never makes the mistake of conducting experiments upon too small a scale. Mr. Taylor writes me that he is extending his experiment this spring by packing 150 colonies. He adds: “I have the means to experiment; and I am going to know what’s what. After I know, the REVIEW readers shall have the benefit.”

Be-Escapes and How to Use Them—Will Their use Enable us to Indulge in House Apiaries?

Mr. C. H. Dibbern sends to *Gleanings* such a valuable article on bee-escapes that I copy nearly the whole article.

“The first thing required is the escape itself; and it should be so made that it will fit into a board without any projections, and no empty boxes or supers should be required.

The next thing is the escape-board, to cut off the bees in the super from the main hive. This should be made of boards not more than half an inch thick, and should be provided with bee-spaces, so that, when it is placed under the super, there will be a bee-space on both sides. The escape should be removable from the board, so that a piece of board can be substituted for the escape when desired. There must be neither brood nor queen in the super, or the escape will not clear it entirely of bees. If a wood-zinc honey-board is used, there will be no trouble on this point. The escape should be made with not too many or too large openings, as the bees are no fools, and readily find their way back through them where there is a fair chance. The escape should also be so placed that there will be no more than a bee-space under it, for the bees to cluster in, for I have learned that where they can cluster on the cone, they are much more apt to find their way back through it. I have also found that bees can not cluster and hang on to a piece of smooth tin as they do on a wire-cloth cone. If cones are made of wire cloth I would place them on the upper side of the board, with a piece of tin, with small holes punched in it, for the bees to pass out, for the lower side. This is a form or escape I shall experiment with this season. I have many other experiments in view on this line having no less than a dozen forms of escapes ready to try as soon as there is any chance to test them.

I do not see that there can be any doubt as to the advantages of the bee-escape. It makes it not only easier and pleasanter for the apiarist but irritates the bees much less than any other method. The escape-board can be slipped under the super in less than

a minute, and the bees will escape into the super or hive below, so gradually and peacefully that they do not seem to know what has happened. Cases can be placed over the escapes, and in a few hours the honey can be carried away without disturbing the bees from their work in the least.

The escape is particularly useful in the management of out-apiaries. Last fall, when I got ready to remove what honey there was in the supers at my out-apiary, I found that robbing was “just fearful,” as there was no honey coming in; and as I had neither shop nor honey-house there, I hardly see how I could have managed without the bee-escape. I was digging a “bee-cave” at the time; and as I had many other things to look after when out, I had to make good use of my time. When I got out there in the morning I would place these escapes under as many supers as I could haul in my light wagon, and then go about my regular work. When I got ready to go home I would load up my honey, with scarcely a single bee to bother. Once I placed the escape-board under a super that had a small knot-hole in it, that had escaped my attention. A few hours after, I heard the shrill note of the robber, and soon found that the bees were robbing through this knot hole, there being no longer any bees there to defend it. I fully believe that the escape will prove as valuable for extracted as for comb honey. What we want is to get the “hang” of the proper management. Last year some of our California friends objected, on account of the honey becoming too cold if left over night on hives over the escapes. But why not put the escapes on in the morning, and at intervals during the day, so that there would be a succession of supers that the bees had just vacated? The sun, which I believe nearly always shines there, would certainly keep them warm enough. Of course, the bee-escape presupposes a super of some kind; and such bee-keepers as remove their honey in single wide frames or sections, like Doolittle, will not find much use for them. It is not strange that all bee-keepers do not take readily to the bee-escape. When we remember that we are not at all agreed as to the advantages of comb foundation, the extractor, and many other things, it is not to be wondered at. All the same, the bee-escape has “come to stay” and many who are now shaking their heads will “come into the agency” by and by.

There is yet another use for the bee-escape besides removing the surplus, that is in hiving swarms, that promises good results. Last year I tried a sort of combination Heddon-Tinker bee-escape system, that pleased me greatly. I simply hived the swarm on the old stand and removed the partly filled super to it from the old hive. I then put on the escape-board, with escape in place, and the old hive on top of that, giving them a small entrance of their own. I would leave it there for seven days, during which time bees were constantly escaping to the new colony. On the seventh day the old hive was removed to a new stand, and a hive-cover laid on the escape-board, still leaving the small entrance for the returning bees to

enter the bee-space under the cover, and escape to the new colony below. To my notion this works much better than the Heddon system, as you are not required to shift the hives every day, and having them standing around in all sorts of awkward positions. Then, too, the bees from the old hive are never at a loss to know where to go, and the old hive is so reduced in bees that the chances of any further swarming are very small. Perhaps there are yet other uses for the bee-escape. Time only can tell.

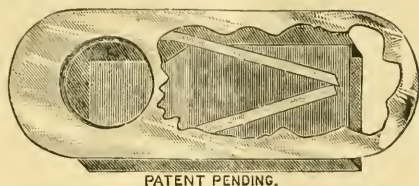
Milan, Ill., April 1. C. H. DIBBERN.

[Years ago, neighbor Dean and myself rode 20 miles to see a house-apiary all complete and in running order. The thing seemed to work very well with the exception of the difficulty of taking honey from the bees. During that whole twenty-mile ride we two talked the plan over, with the view of getting the honey away from the bees, without shaking or brushing them off. My neighbor thought it might possibly be done by waiting until cold weather drove the bees out of the supers. He said he didn't believe it could be managed profitably in any other way. I presume such a thing as a bee-escape was at that time used to some extent; but we did not think of it, or did not know one could be made to do the work that they are now doing. Who knows but that bee-escapes may finally revive house-apiaries? I suggest in the A B C book that one might have a hive of bees in one corner of the pantry, letting them go out through the wall of the house. Then the good wife can take a section of honey right out of the hive and put it on the table, provided she can get it without getting the bees also. Can't a bee-escape be arranged so as to accomplish this?]

At the last meeting of the Ohio State Bee-keepers' association, I tried to get somebody to tell me why home-apiaries had been abandoned, but as nobody knew what I was driving at, the replies were far from satisfactory. At last I explained that, as I understood the matter, the principal objection was that the bees were let loose in the room when removing the surplus, and I had often wondered if the bee-escape would not remedy this objection. Ernest, did you go home and tell your father what I said, and that is where he got his idea of bee-escapes reviving home-apiaries? I presume you didn't. It is simply a case of "great minds—you know the rest. Candidly, though, I have for nearly a year had this thought in my mind, that bee-escapes might allow us to operate house-apiaries successfully; in fact, I have several times almost decided to make house-apiaries the subject of special discussion, and I may yet. What do my readers think?

After the above was in type, along came a sample half dozen escapes from Mr. E. C.

Porter of Lewistown, Ill., accompanied by this engraving.



THE PORTER, SPRING BEN-ESCAPE.

The upper part of tin is partly cut away, showing how a bee can pass down through the opening at the left, and then pass on out between the two delicate springs. It will be seen that it is impossible for bees to return through this escape. From the circular sent by Mr. Porter, I copy the following directions.

"The escape-board should be made from $\frac{1}{2}$ or $\frac{3}{8}$ inch lumber, the former being preferable, of the size of the top of the brood chamber or super and provided with a suitable bee-space or half bee-spaces formed by nailing strips about $\frac{3}{8}$ of an inch wide and of proper thickness around the board and even with its edges, so that when on the hive there will be a bee-space both above and below it. The hole to receive the escape should be in the center of the board, made by boring two $1\frac{1}{2}$ inch holes $2\frac{1}{2}$ inches from center to center and cutting out the wood remaining between them. One escape to the board is sufficient.

When the surplus honey is ready to be taken from the hive, at any time of day, when convenient, raise up the super, bees, honey and all, place the escape-board, with escape in place on the brood chamber or super if one remains on the hive or has been put on after removing the first, and place the super taken from the hive on the escape-board. If this is done early in the forenoon and there is no brood or queen in the super, ordinarily in five or six hours, frequently much sooner, the bees will be practically all out, or if done late in the afternoon, by 8 or 9 o'clock the next morning. If there is brood in the super, a few bees will remain clustered on it for some time, but if they have a queen with them, which very rarely occurs, even though queen-excluders are not used, a large proportion of the bees will usually stay with her and she must either be removed or some other means of getting them out restored to.

Owing to the varied dispositions of the bees of different colonies, under the same conditions, there is a great difference in the length of time occupied by them in passing from the super and with the bees of the same colony, the time of the day, the state of the weather, the presence or absence of a honey-flow all have their influence to vary this time. As a rule they pass out most rapidly when all conditions are such that they are naturally the most active.

Should it be desired to get the bees out of the super as quickly as possible, part of them may be smoked down before applying the escape, and the few remaining will pass out much sooner than if all were left in.

On excessively hot days care should be taken not to have the supers from which the bees are escaping exposed to the direct rays of the sun.

If it is ever found necessary to clean the escape, drop it into boiling water or pour boiling water through it."

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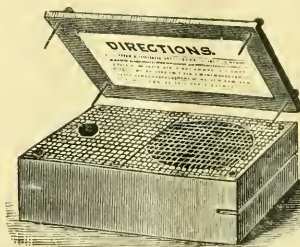
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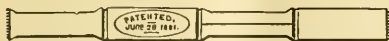
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I mean don't buy queens of L. L. HEARN, Frenchville, W. Va. unless you want the yellowest queens, the brightest, gentlest and best workers, and the reddest drones in the world.

This strain of bees took first premium at the Detroit Exposition in 1890, but were "ruled out" at the Mich. State Fair because they had four and five yellow bands just a little too wide.

Prices in May, untested \$1.25; tested, \$2.50; select tested, \$3.00; after June 1st, untested, \$1.00; tested, \$2.00; select tested, \$3.00; special breeding queens, \$6.00 each.

G. M. Doolittle wrote me in 1890 that of 100 untested queens of this strain, bought of me, not one proved impurely mated. Safe arrival and satisfaction guaranteed by L. L. HEARN,
5-91-2t Frenchville W. Va.

LEATHER COLORED

PRICE LIST FREE ON APPLICATION.

A. E. MANUM, BRISTOL, VT.

ITALIAN QUEENS.

Friends Look Here. The Record Broken;

If you want **Hybrid or Black Bees**, in April or May, at \$1.00 a pound, give me your order. For ten years I have been successfully shipping bees to the Northern states and to Canada. Safe arrival and satisfaction guaranteed. Untested Italian queens, after April 1st, \$1.00 each, or six for \$5.00. 75 cts. each after May 1st.
MRS. JENNIE ATCHLEY,
 1-91-2t Box V, Farmersville, Texas.

AND THE RACE IS WON BY THE ALBINOS.
 They out-stripped even the Italians in gentleness, beauty, honey giving and prolificness of queens. This race was brought about by the reproduction of an Italian sport; and greatest care has been taken to get them pure, and the result is a race that ranks first in the bee world. Try one of these queens. Descriptive catalogue free.
A. L. KILDOW,
 21-90-tf Sheffield Illinois



BEES FOR SALE.
COLONIES
NUCLEI & QUEENS
 At Living Rates. Send For Circular and Price List to
C. C. VAUGHN,
COLUMBIA, TENN.

2-91-4t Mention the Review.

Hunts' Foundation Factory.

Samples free. Send your beeswax and have it made up. Highest prices paid for beeswax
 3-91-6t M. H. HUNT, Bell Branch, Mich. (Near Detroit.)

Send for my 23rd annual catalogue of
ITALIAN AND CYPRIAN
BEES, QUEENS,
 nuclei and full colonies. Apiarian Supplies and eggs for hatching. **H. H. BROWN,**
 9-91-2t Light Street, Pa.

Bee - Keepers' Supplies.

Before placing your orders for supplies, send for our Illustrated Catalogue. We are now making best goods at lowest prices.

PAGE, KEITH & SCHMIDT CO.,
 12-90-6t New London, Wis.
 Please mention the Review.

BEE-KEEPERS' GUIDE. Revised, enlarged, improved, illustrated. Every bee-keeper ought to have it. Price \$1.50.
A. J. COOK, Agricultural College, Mich.



BUY YOUR
Italian Queens
FROM THE
Lone Star Apiary.

I breed from choice, imported stock. Leather colored. Write for price list.
OTTO J. E. URBAN,
 2-91-6t Thorndale, Texas.
 Please mention the Review.

For Simplicity and Durability,

Bingham Patent Smokers,
 AND
BINGHAM & HETHERINGTON



Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3 1/2 inch,	.....	\$2.00
Conqueror Smoker,	3 "	.....	1.75
Large Smoker,	2 1/2 "	.....	1.50
Extra Smoker,	2 "	.....	1.25
Plain Smoker,	2 "	.....	1.00
Little Wonder Smoker, 1 1/2 "		.....	.65
Bingham & Hetherington Knife, .....		.....	1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,
 1-90-tf. Bronia, Michigan

THE SELF-HIVER.

FIRST REPORT FOR 1891.

On Saturday, March 28, 1891, I placed one of Mr. Alley's self-hivers at the entrance of a hive from which I knew the bees would swarm in a few days; near this hive was one prepared to receive the new swarm when it issued. On Sunday afternoon, about four o'clock, in walking through the apiary, I saw the bees at work in the new hive. They had swarmed and hived themselves and were working nicely, without any assistance whatever on my part except to make the necessary preparation for them. This self-hiver will certainly be a wonderful help to beekeepers. Mr. Alley, the inventor, should receive not only the heartfelt but wonderful help to beekeepers. Mr. Alley, the inventor, more substantial in the way of our liberal patronage. By the use of the drone trap and queen cage combined, I secured 48 swarms out of 49, in 1888, without so much as having to cut a single twig in hiving them.
MRS. SALLIE E. SHERMAN, Salado, Bell County, Texas.

Full description of the Self-Hiver mailed free. Sample Hiver, by mail, \$1.00.

1-91-1t **H. ALLEY,** Wenham, Mass.

Our Catalogue of Bee Supplies is not Lost

But the bee-keeper who fails to send for one will be ; especially if he wishes to buy the best Hives, Frames, Sections, Crates, Foundation, etc. Our Italian Queens and Bees are the best—none are better. Buy them, try them, and you'll need no other.

An article on **BEE MANAGEMENT** is an interesting feature of our Catalogue, that will help the novice. Send your address for a free copy to day.

R. STRATTON & SON,
4-91-12t Hazardville, Conn.
Please mention the Review.

Italian - Queens.

6 Warranted Queens, \$5.00.

Send - for - Circular.

J. T. WILSON,
4-91-tf Pink, Kentucky.
Please mention the Review.

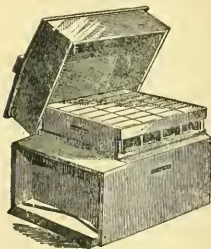
The Bee World.

A journal devoted to collecting the latest apicultural news discoveries and inventions through out the world, containing, as it were, the cream of apiarian literature. Valuable alike to the amateur and veteran. If you wish to keep posted, you cannot afford to do without it. Subscribe now. It is a 30 page monthly at 50 cts a year. Stamps taken in one and two cent denomination. The Bee World is published by

W. S. VANDRUFF,
Waynesburg, Greene Co., Pa.

Please mention the Review.

10 BLACK QUEENS, at 25 cts each.
They are young and vigorous.
5-91-1t **H. LATHROP,** Browntown, Wis.



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa., **One of the Largest Bee-Hive Factories** in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue. 2-91-tf

OLIVER HOOVER & CO., Riverside, Pa.

Please mention the Review.

Have You Seen Our Big Blue Cat-

alogue for 1891? Fifty-one illustrated pages, sent FREE to any bee-keeper. Our new factory, four times larger than ever before, is now turning out **CARLOADS OF DOVETAILED HIVES** and large quantities of other styles. Alternating Hives, Improved Langstroth-Simplicity, Plain Langstroth, Simplicity and Chaff Hives, Sections, Smokers, Foundation, Italian Bees; in fact, **EVERYTHING** needed in the apiary, at lowest prices, always on hand. Established in 1864.

E. KRETCHMER,
2-91-tf Red Oak, Iowa.

SUGAR CHEAP! HONEY DITTO,

By Foster's tested methods. See his new catalogue of Bees, Honey and New Things. 5-91-tf
OLIVER FOSTER, Mt. Vernon, Linn Co., Iowa.

HIGH HILL, MO.

Send for 1891 circular which gives information about **SUPPLIES, BEES, ETC.**
GOLDEN ITALIAN QUEENS, untested, in May, \$1.00; three for \$2.50. Tested, \$1.50; three for \$4.00. 1, 2, and 3 frame nuclei, with queen, \$2.25 to \$4.00. Bees by the pound, brood and full colonies at **LOWEST** figures. Have your **ORDERS** booked early 5-91-tf
JNO. NEBEL & SON, High Hill, Mo.

KNOWLTON'S BATHING APPARATUS.

UNIVERSAL BATH. Full, Size, &c. in one. Vapor and Water—fresh, salt, Mineral. Artificial Sea Bath.

Artificial Sea Bath. A person is shown sitting in the apparatus, and another person is standing nearby. The apparatus is labeled 'UNIVERSAL BATH'.

Weight 15 lbs. Adjustable. Many Thousands long in use.

Centennial Award, Medal and Diploma, against the world.

Wholesale & Retail.

Old Baths Renewed.

Send for Circulars. **E. J. KNOWLTON,** Ann Arbor, Mich.

CHEAPEST AND BEST BATH EVER KNOWN!
FREE CIRCULARS EXPLAIN ALL.

Address **E. J. KNOWLTON,** Ann Arbor, Mich.

1-91-12t *Please mention the Review.*

HIGH Scoring Birds. Blk. Minorca, S. S. Wyandotte, S. S. Hamburg, B. Leghorn. 3 eggs, 75c; 26, \$1.00. C. M., Goodspeed, Shamrock, N. Y.

1872 **KEYSTONE APIARY** 1681

ITALIAN QUEENS AND BEES.

	May	June	July to Oct.
Select,		\$4.50	\$3.00
Tested,	\$3.00	2.50	2.00
Fertile,	2.00	1.50	1.00
Six fertile at one order,		8.00	5.00

Send for circular. **W. J. ROW,**
Greensburg, Pa.

Please mention the Review

F **FOUNDATION** **And Sections** are my Specialties. No. 1 V-groove Sections at \$3.00 per thousand. Special prices to dealers. Send for free price list of everything needed in the apiary.
1-91-tf **M. H. HUNT,** Bell Branch, Mich.
Please mention the Review.

Send 25 cts for my book of Discovery and Invention, the

Queen Restrictor.

C. W. DAYTON,

1-91-12t Clinton, Wisconsin.

LEAHY'S FOUNDATION,
Wholesale and Retail,
Smokers and Sections,
Extractors and Hives,
Queens and Bees,
R. B. Leahy and Company
Higginsville, Missouri.

1-90-tf Please mention the Review.

PATENT, WIRED, COMB FOUNDATION
HAS NO SAG IN BROOD FRAMES.

THIN, FLAT BOTTOM FOUNDATION
HAS NO FISH BONE IN SURPLUS HONEY.



Being the cleanest is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),
3-90-tf Sprout Brook, Mont. Co., N.Y.

Please mention the Review.

QUEENS READY TO MAIL.

Safe arrival guaranteed. Untested Italian queens, \$1.00; 3 for \$2.75; \$9.00 per doz. Tested queens all sold, but will have more, of this season's rearing, at \$2.00 each, by the first of June. Order early but don't instruct us to send queens before you really wish them. Make money orders payable at Clifton. Send for price list of early queens, etc. **COLWICK & COLWICK,**
3-91-tf Norse, Bosque Co., Tex.

ITALIAN QUEENS
A SPECIALTY.

Untested queen, in June,	\$1.00
Six " " " "	5.50
Twelve " " " "	10.00
After June, six queens	5.00
" " twelve " "	9.00

Tested queens double the price of untested
A few hybrid queens at 50 cents each. 5-91-tf

S. A. SHUCK, Liverpool Illinois.

Please mention the Review.

THE LARGEST B. HIVE
Factory in Michigan

Is turning out hives and bee-keepers' supplies at the following prices.

One 8-frame, L. hive, 2 T supers,	\$1.00
Ten ditto,	8.00
Brood frames, per 100,	1.00
One-piece, V-groove sections, per M.,	3.00
10,000 ditto,	25.00

Clark, cold blast smokers, each, 50 cents; five for \$2.00. Bee veils, best on earth, 35 cents each. Parker foundation fastener, 25 cents. Japanese buckwheat, 60 cents a bushel; bag 18 cents extra. Foundation, medium brood, 43 cents; thin for surplus, 48 cts. Alsike clover seed, \$8.00 per bushel. Extractors, books, etc., in stock.

Circulars free. **W. D. SOPR & CO.,**
118-120 Washington St., Jackson, Mich.

Please mention the Review

White Poplar Sections.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,

1-90-tf Bristol, Vermont.

Ontario Bee-Keepers' College.

Circulars sent on application to

Wm. F. CLARKE, Principal,

Guelph, Ont., Canada.



THE universal favor accorded TILLINGHAST'S PUGET SOUND Cabbage SEEDS leads me to offer a **P. S. GROWN Onion,** the finest *Yellow Globes* in existence. To introduce it and show its capabilities I will pay \$100 for the best yield obtained from 1 ounce of seed which I will mail for 50 cts. Catalogue free.
Isaac F. Tillinghast,
La Plume, Pa.

Please mention the Review

ADVANCED BEE-CULTURE;

Its Methods and Management.

I am now engaged in writing and printing a book that is to bear the above title. It is to take the place of my other book, *The Production of Comb Honey*, which will not be re-published. Although the new book will contain at least five or six times as much matter as *The Production of Comb Honey*, yet the price will be only 50 cts. The book is already partly printed and will be out before the June REVIEW is printed. If any of the friends would like to "help me along" in meeting the expenses of getting out the book, they can do so by sending their orders in advance. Such orders will be most thankfully received, and filled the *very day* the book is out. I will send the REVIEW one year and the book for \$1.25. The REVIEW will be sent on receipt of order (I have plenty of back numbers to send it from the beginning of the year) and the book as soon as it is out. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Michigan.

1878 DADANTS' COMB FOUNDATION. 1891

Half a Million Pounds Sold in Thirteen Years. Over \$200,000 in Value.

It is **the best**, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year.

SAMPLES and CATALOGUE FREE to ALL SEND YOUR ADDRESS.

1852 Langstroth on the Honey Bee. Revised. 1891

Those who wish a book in which they will find, without difficulty, whatever information beginners desire, should send for this work. Its arrangement is such that any subject and all its references can be found very readily, by a system of indexing numbers. It is the most complete treatise in English.

HANDLING BEES is a chapter of the Langstroth revised, and contains instructions to beginners on the handling and taming of bees. Price 8 cents.

Bee Veils of Best Imported Material. Sample FREE. Instructions to Beginners sent free with Circular. 4-91-12t

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

Early Queens From the South.

SOUTH CAROLINA LEADS IN FINE QUEENS AND BEES.

Being nearer the Northern markets, they can be delivered nearly two days earlier than from any other Southern state. Fine tested and untested Italian queens, bees and nuclei a speciality.

PRICES FOR MAY: One untested queen, \$1.00; three untested queens, \$2.50; one tested queen, \$1.50; three tested queens, \$4.00; very best, selected, tested queen, for breeding, \$3.00; two-frame nucleus, with any queen, \$1.50 extra. Safe arrival guaranteed.

Queens sent invariably by return mail, from April 15th through the season.

4-91-1t

MENTION REVIEW.

W. J. ELLISON, Catchall, S. C.

1891 Early Italian queens from bees bred for business. Each \$1.00; six \$4.50. Order now, pay when queen arrives. W. H. LAWS, Lavaca, Ark.

IMPORTED AND HOME-BRED
ITALIAN QUEENS. W. C. FRAZIER,
Send for Prices. Atlantic, Iowa.

4-91-6t

Please mention the Review.

JUNE 10, 1891.



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.

Wm. W. Cary, of Coleraine, Mass. has one of the very

Best Strains OF ITALIAN BEES

In America, produced by crossing with queens from all the best breeders, and he is now prepared to furnish you with choice, large, yellow queens, reared in full stocks, at the following low prices:—

Tested queens, each,	\$1.50
Warranted queens, each,	1.00
" " per ½ doz.,	5.00
" " dozen,	9.00
Untested queens, each, .....	.75
" " per ½ doz.,	4.50
" " dozen,	8.00

Safe arrival, by return mail, guaranteed. Send your orders at once and secure these low prices.

Wm. W. CARY,

(Successor to Wm. W. CARY & CO.) Coleraine, Mass.

2-91-f

Please mention the Review.

BEE - HIVES,

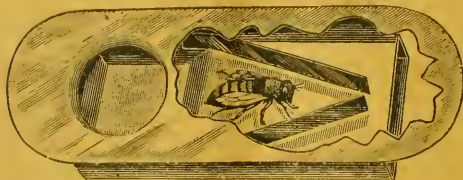
Sections, Comb Foundation, and general Supplies.

Bees and Queens.

Remember, we are headquarters for the Albino bees. The best in the world. Send for circular and prices.

5-91-2t

S. VALENTINE,
Hagerstown, Wash. Co., Md.



The Porter Spring Bee - Escape.

We guarantee it to be the best escape known and far superior to all others. If on trial of from one to a dozen you do not find them so, or if they do not give entire satisfaction in every way, return them by mail within three months after receiving them and we will refund your money.

PRICES: Each, by mail, postpaid, with full directions, 20 cts. Per doz., by mail, postpaid, \$3.25. Send for circular, testimonials, etc. Dealers send for wholesale prices. 5-91-1f

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

GOLDEN

CARNIOLANS.

The "coming bee" is here. If you want bees possessing all the desirable points, send an order at once for one or more young queens of this wonderful new strain of bees. They are beautiful, gentle, the best honey gatherers, and winter as well as the best Carniolans. The queens are large, prolific and easily found on the combs. The Golden Carniolans have been thoroughly tested in our yards the past season, and we know whereof we speak.

The price is a little higher than for the common races, but at \$5.00 each there is money in them for any beekeeper. For the Golden Carniolan queens, we must ask \$2.00 each; \$10.00 per ½ dozen; and \$18.00 per dozen. But one grade is offered and that is A No. 1; strictly first class. Purity, safe arrival and satisfaction guaranteed. Send for descriptive catalogue and price list of bees, queens and apiarian implements.

We are making arrangements for the agency of those wonderful

PUNIC BEES,

brought to England by "A Hallamshire Bee-keeper." Owing to difficulties in getting imported queens we are obliged to advance the prices. To offset this we shall guarantee safe introduction of virgin queens. We are now booking orders at the following rates:—

Imported queen,	\$8.00
Breeding queen,	25.00
Tested queen,	10.00
Pure home bred, mated,	5.00
Virgin,	1.00
" per half - dozen,	5.00

Send for Punic circular.

E. L. PRATT,

5-91-2t

Beverly, Mass.

Please mention the Review

Hunt's Foundation Factory.

Samples free. Send your beeswax and have it made up. Highest prices paid for beeswax

3-91-6t

M. H. HUNT, Bell Branch, Mich. (Near Detroit.)

BEE - HIVES, SECTIONS, ETC

BEST GOODS AT LOWEST PRICES. WE MAKE 15,000 SECTIONS PER HOUR. CAN FILL ORDERS PROMPTLY. WRITE FOR FREE, ILLUSTRATED CATALOGUE. G. B. LEWIS & CO.,

5-91-1f

Watertown, Wisconsin.

WINTER BEES

Safely and Cheaply

By using our **New Outside Winter Case** on your Dovetailed Hives, or with our **New Thin-walled Hive**. The outside case with either a regular Dovetailed hive or our thin walled hive makes the **Cheapest** and **Safest** winter hive made; and our thin walled hive is the cheapest and most convenient. It is the same size as an 8-frame Dovetailed hive containing the same inside furniture. Send for special illustrated circular.

The W. T. FALCONER Mfg. CO.,

Janestown, New York.

Catalogue of all bee supplies and sample copy of AMERICAN BEE-KEEPER free (The AM. BEE-KEEPER is a 24-page monthly at 50 cts.)

Pratt's Perfection Queen Cage

Is the best shipping and introducing cage in use. Only \$10.00 and \$20.00 per 1,000. Sample free to any queen breeder. We manufacture a full line of bee-keepers' supplies, and send catalogues free to any address,

C. W. COSTELLOW,

8-90-tf

Waterborough, Me.

DON'T SLEEP

Until you have sent for my 16 page, illustrated catalogue of supplies. Extra, No. 1 sections, \$3.50 per 1,000. Dovetailed hives, 75 cents each. Italian, Carniolan and Albino queens for sale.

5 91-3t

F. W. LAMM,

Box 106,

Somerville, Ohio.

Please mention the Review.

The Five Banded

Are the prettiest, gentlest, best working and most prolific bees. They will work on red clover. Warranted queens, \$1.00; six for \$5.00. Tested, \$1.75; select tested, \$3.00 to \$5.00. Sample of bees, five cents. Prices will be lower next month. If preferred, I will send, at the same price, three-banded

ITALIANS.

Bees by the pound wanted in exchange for queens. I will give a tested queen in June for every pound of bees sent me prepaid. Bees to be sent at once, as I need them now. Drop me a card if you send any. JACOB T. TIMPE,

3-90-16t

Grand Lodge, Mich.



1872 KEYSTONE APIARY 1681

ITALIAN QUEENS AND BEES.

	May	June	July to Oct.
Select,		\$3.50	\$3.00
Tested,	\$3.00	2.50	2.00
Fertile,	2.00	1.50	1.00
Six fertile at one order,		8.00	5.00

Send for circular. W. J. ROW,
5-91-4t Greensburg, Pa.

CARNIOLAN QUEENS. A SPECIALTY.

That Andrews man has just the bees,
That he manipulates with ease,
And will the most exacting please.

They're bred from pure and gentle stock,
With tempers even as a clock,
And seldom rise at any shock.

Now please remember, if you will,
These bees are bred at Patton's Mill,
In New York State, just down the hill.

And if you want one, two, or more,
Send on your orders as before,
And you will find your needs in store,

At THE appointed time.

Last August, tested queens, June 1st,	\$2.00
Untested queens	1.00
Tested queens,	July 1st, 1.50
Untested, after June 1st, six for	5.00

JOHN ANDREWS,

9-90-tf

Patten's Mills, Wash. Co., N. Y.

What's the Matter WITH LEININGER BROS.?

They are going to raise 1,000 queens this season from one of G. M. Doolittle's best queens. Queens in June, \$1.00; tested, \$1.70; select, \$2.50; the very best, which will produce four and five banded bees, \$4.50. Descriptive circular free.

4-91-6t

LEININGER BROS., Ft. Jennings, Ohio.

Please mention the Review.

75 CENTS each for untested queens from imported or 5-banded golden Italian mothers. Imported golden

W. C. FRAZIER, Atlantic, Iowa.

4-91-6t

Please mention the Review

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. IV.

FLINT, MICHIGAN, JUNE. 10. 1891.

NO. 6.

The special topic of this issue is

"Adulteration of Honey."

That of the next issue will be

"Bee - Escapes."

Producers Can't Afford to Adulterate Honey.—Chemists Can Usually Detect Adulteration.

PROF. A. J. COOK.

IN DISCUSSING this question there are two or three points that should not be lost sight of.

1st. There is no small amount of this nefarious business carried on. Often in the smaller towns, and always in the large cities, it is easy to find adulterated honey on the market, often in large quantities. This is always in liquid form, as comb honey can not be adulterated.

2nd. This work is not done by bee-keepers, but by unprincipled vendors in our cities. No bee-keeper could afford to do it, as with the present low price of honey the profit is so slight that a profitable business must be at the same time a mammoth business. The bee-keeper could not do this without speedy detection. Detection would mean ruin to reputation and business.

3rd. Adulteration may be accomplished by either mixing glucose—grape sugar of commerce—or our cane sugar with the honey.

As both these products are now cheaper than honey, either can be used in this way at a slight profit, and with *large sales*, may make a very profitable business. Thus the outlook for adulteration is too promising to please either the right-minded or the honey producers. Except that bee-keepers step to the front and throttle the business, as I believe they may, we may expect to see it waxing strong and more and more mischievous and damaging to our pursuit.

4th. As I have often said, it is, in my opinion, impossible at the present stage of scientific research to surely detect adulteration in all cases, and as impossible to prove that every special sample is pure. Thus the best chemist may say that a sample of pure, genuine honey is adulterated, or that some sample of adulterated honey is pure. Yet, in many cases, indeed most cases, he could pronounce positively in the matter. You, Mr. Editor, could not in every case detect autumn from summer honey, yet in nearly every case you could decide with no hesitation and with no doubt.

Honey adulterated with cane sugar could be detected in nearly if not quite every case. As nearly all commercial glucose contains a little sulphuric acid, and often some of the lime used to clarify it, in nearly every case the chemist could say at once of honey adulterated with glucose, this sample *is adulterated*.

Thus, while an occasional sample might be beyond detection, so many would be easily determined that, practically, this point

is no hindrance to our detecting such frauds, punishing the perpetrators, and winding up the *whole business*. Suppose an occasional sample were beyond detection. Such glucose would rarely be secured by the man who was engaged in the manufacture, and still more rarely would such samples be seized by the person engaged in detecting the iniquity. Thus the chemist by use of reagents, aided by the polariscope, could and would bring the evil to the light. I tell you the Union can and must kill this arch enemy of apiculture. I believe this is to be its greatest conquest.

AGRICULTURAL COL., Mich., June 6, 1891.

Selling Honey Under One's Own Label.—
The Difficulties When the Crop is
Large.

R. WILKIN.

MR. EDITOR, I am glad you continue this subject of adulteration of honey, which is intimately related to the variations in the quality of the genuine article. I have seen much more hurin from unripe and off grades of honey than from adulteration. So indiscriminate has become the purchase and sale of honey that there is but little encouragement to the bee-keeper here to aim at excellence in his products, as it is mainly sold from all parts of the State through commission men of San Francisco. The main test being that of *color*; strictly white commanding 1 to 1½ cents per pound more than dark amber. It is shipped East by the car load and manipulated there to suit the interests of the dealers. Owing to the variations in the color, flavor and consistency of honey, and the many tastes and fancies to be consulted, it is very difficult to grade according to merit, and when we add to this what seems to me the almost insurmountable difficulty of readily detecting adulteration, it is not strange that the consumer gets his honey in a hap hazard sort of a way. If bee-keepers were convinced that in most cases we could have the experience that Byron Walker had when Health Officer Duffield tested the honey, we could in a short time raise the necessary thousands of members to the Bee-Keepers' Union, which would, if necessary, employ an expert to travel and look after this matter of adulteration. But can we rely on its being so practical?

Last season the man on whose place I kept bees, bought nearly a car load of my honey

to take with him to his old home in Missouri to sell to his acquaintances as honey that he *knew* was made on his farm in California. It did not sell so fast as he expected, and he left it with a commission man in Kansas City to sell for him. Soon after, the commission man reported that he had the honey tested by a chemist who pronounced it 28 per cent. glucose, and consequently sold it at a sacrifice. (I know it is possible that the chemist never saw the honey as it was represented he did.) But from what I understand of the composition of honey, it would be an easy matter to make just such a blunder and bring the force of science to bear *against* the innocent bee-keeper.

Being of the same faith with yourself, that the most practical thing was for each bee-keeper to work up a trade for himself, I have made three efforts at it. In 1879, I went to London, England, with 80 tons of extracted honey. With much labor it was sold at some profit. I formed an acquaintance with Pelling, Stanley & Co., of Liverpool, extensive grocers, who expressed themselves inclined to deal in California honey, but were discouraged by their experience in buying from Cutting & Co., extensive packers of honey in San Francisco, as they found both good and bad honey under the same label marked orange blossom honey. (?) But in 1881 I succeeded in getting their order for 10 tons in 2-gallon tins with my label. The next season they ordered 32 tons, and the third year they ordered 48 tons, one-half in 1-gallon tins, the other half in 2-gallon tins, but here set in trouble. In this region, honey was scarce and none of it so fine as I had been furnishing. I informed them of the fact, but they had their demand created, and I filled the order as best I could, but it was not satisfactory; and about that time honey poured into London from all parts of the world, running the price away down, thus killing our trade there. In 1881 the price of honey came down to 3 cents here; 4 in San Francisco. I took a car load to Boston, where I sold it at an average of 6¼ cents per pound. Taking the cost of transportation and my expenses from it, reduced it to 3 cents, while the cost of package and hauling from the mountains, reduced it one cent more. But Boston was far away, making it difficult to follow up the trade already started.

In 1886 honey was very abundant and exceedingly fine, but only brought 3¾ cents in

San Francisco. I put my honey in 10-gallon tins with my label on it, showing it to be from the producer in California, and took it with me to Texas. I had no difficulty in persuading dealers that they were getting a genuine article, and thus created a good demand for our honey.

The next season the orders came in freely, but the bees that season, and the following one, yielded almost no honey, and what there was, was of a poor quality, as it usually is here when scarce. This disconcerted all our plans, and now, without going back there as a honey dealer, *myself*, I could not sell a full crop of honey. To hold one's custom, it seems necessary to be near enough to give it one's personal attention.

Thanks to Byron Walker for his stating the condition of the honey market in Cincinnati. It would seem a solid basis of business to have a Muth & Son in every large city, who have sufficient integrity and tact to so select and put honey on the market that the public may know just where to go to get what they want; *then* glucose and syrups would be sold pure, and while we would not be resisting an evil, we would be overcoming evil with good; although I think a few heavy fines of adulterators would have healthful influence in working up a legitimate trade.

I still think the putting of our honey in a retail package and sending it as direct as possible to the consumer, is most desirable, if we can have the proper dealer in each city to act as a kind of balance wheel, selecting and selling according to merit, so that when there is a failure in one locality, he may buy a choice article in another to supply the demand. What shall we do, advertise for such dealers?

Ventura, Cal.,

May 29, 1891.

Compel Adulterators to Label Their Goods.

OTTO J. E. URBAN.

HURRAH for W. F. Clarke! He struck the nail on the head in regard to adulteration of honey. If the bee-keeper had to come down on his price in order to kill adulteration, he would kill his business before adulteration would even feel sore. It is an utter impossibility to produce and sell honey as cheap as glucose. It is also impossible to put a stop to the making of the "stuff," as the law gives nobody a right to stop anybody's business, so long as

it is a legitimate business, and here is where the point comes in that most all your writers overlooked. There is a law that compels oleomargarine manufacturers to sell their product under label, with the proper name of the article on. This very same law could be used to compel adulterators of honey to label their product as such and sell it as such. Make them call the child by the right name. If it is a pure angel, call it an angel of the light, and if it is a devil's sprout, call it a devil! Compel the manufacturers to tell the people what they make and offer for sale, and then let the consumer choose what he wants. If he chooses to eat glucose, or honey and glucose mixed, let him do so. If he wants pure honey, he knows how and where to get it. Nobody will be hurt by this policy. We cannot stop anybody from imitating anything. Imitations will be made and sold as long as this world stands. Let anything which is good and useful come on the market and it will be only a short time when imitations of the article are put out to sell, which are made cheaper, and, of course, are of inferior quality, and may be sold a trifle cheaper. This we know to be a fact, and we can't stop it so long as they don't claim their imitations as genuine. The sum and substance of the whole cry about adulteration is, according to my opinion: Let the Union find out all the manufacturers of adulterated honey and *compel* them, by law, to label their product with its proper name and let it be sold as such.

Thorndale, Tex.,

May 30, 1891.

The National Bee-Keepers' Union not Created to Prosecute Adulterators.

THOS. G. NEWMAN.

FRIEND HUTCHINSON:—In reply to your card asking me to write for the REVIEW, what I think of the plan of having the Bee-Keepers' Union aid in the prosecution of adulterators, making such changes in the constitution as would be necessary to allow it to use money for this purpose, I would offer the following thoughts:—

Byron Walker starts out by saying that "the Bee-Keepers' Union ought to prosecute adulterators." On page 119 he adds: "What we need is a Bee-Keepers' Union of at least 5,000 members; then we can compel these corporations to respect the laws enacted for

our protection." We must entirely disagree with Mr. Walker in this matter.

The National Bee-Keepers' Union was not created for such a purpose. It was constituted simply for "defense," and not to wage an aggressive warfare against adulteration, or any other moral or social evil!

Remarking on this subject, the editor of the REVIEW, on page 128, says:

As I understand it, a change in the constitution of the Union would be necessary before money could be used for this purpose; but, if the Union *could* put an end to what adulteration there is, and, what is of far more importance, *convince the public* of this accomplishment, I believe its usefulness would be increased a thousand fold.

Brother Hutchinson is quite right—a change in the Constitution would be necessary before it could undertake any such a super human task. More than that, it must also change its executive officer. The present General Manager could not consent to undertake any such an impracticability!

While, perhaps, it should not be publicly admitted, it is nevertheless a *fact*, that there is no sure "method by which the adulteration of honey can be detected."

Pure honey has very *often* been analyzed and pronounced adulterated by chemists in New Jersey, Ohio, Illinois, and other States, and even the United States Chemist has *blundered* in many ways when endeavoring to enlighten the public on the matter of honey-adulteration. Samples which we *know* were genuine, have been branded as either "adulterated," or "probably adulterated"—simply because there is no reliable test for such analysis.

Honey varies so much in its component parts that no analysis of it can be reliable! That from the hillsides varies in color from that in the valleys. Atmospheric conditions soil and climate even change the color as well as the body, flavor and ingredients.

In view of these facts, it would be a wild-goose chase to start the Union after adulterators—especially if there are as many as Byron Walker avers—several hundreds of retailers of such stuff in a city no larger than Detroit! The Union is in better business, and should never leave that in order to delve into the slums of abominable sophistications!

Let us build on the other wall. Produce honey of such fine flavor, put up in such admirable condition for market, and properly labeled with the producers' name and ad-

dress, so that a *demand* will be created for that honey, and the guarantee for purity shall be the name of the apiarist, and not "a trade-mark," or the endorsement of any society or periodical.

There are plenty of laws on the statute books in Michigan and other States, and the local bee-keepers can attend to the matter of prosecution without the aid of the Union. Let them follow the example of Harmon Smith, at Ionia, Mich., as is shown on page 129 of the REVIEW, in these words:

Upon learning that a can of adulterated honey had been sent a grocer of his town, he went to him and said, "The first pound of that stuff you sell, I'll prosecute you."

The "stuff" went back to the mixer. There was no blow nor bluster—no publishing of the matter in the papers. It was a case of "silent influence."

If such is done promptly, we shall soon hear no more about adulterated honey.

CHICAGO, Ill.,

June 5, 1891.

Raising Cheap Honey.

R. C. ATKIN.



I. ROOT tells us of the new method of onion culture, by which we may raise 1,000 bushels per acre; Terry tells us how to grow big crops of potatoes, strawberries, etc., and I will try to tell you how to raise big crops of honey.

Your leader seems to me to lead in the direction of getting large crops from large apiaries, rather than getting large returns from small apiaries or limited capital.

In improving "appliances and methods," let the first effort be to get greater yields of honey and greater net profits from a limited number of colonies.

Is it not a fact that, to-day, one man can manage from two to five times as many acres of land as he could forty years ago? The improved machinery, etc., that makes it possible for one man to farm so much land, together with the fixtures and taxes on a large farm, eat up all the gain. There are large investments of capital, large gross earnings, but very small net profits.

Am I not safe in the statement, that one-half more labor and care bestowed on each acre would double the crop; and treble, if not quadruple, the net profit? A harvester will cut fifty bushels of wheat from an acre almost as easily as twenty-five. Would it not cost you, Mr. Editor, much more in pro-

portion to get out 200 copies of the REVIEW than to get out 400? Perhaps the first 200 would pay expenses and all the profit come on the second 200.

When we have invested in a colony of bees, and built them up to where they are able to send to the fields a reasonable force of workers, (and right here is where man's reason must come in, in opposition to the instinct of the bee; for that instinct does not lead the bee to provide for man's wants, in addition to her own, but leads the colony to swarm and increase. No violence need be done nature, but reason may produce conditions that will change the course of instinct, and make it serve reason), why not, instead of investing in another hive, doubling the labor, and keeping a lot of bees at home to care for a new house, send those bees out for honey? For, we have just now neared the point at which the business will pay expenses and, instead of making a new colony, just a little extra work, with a slight additional capital invested in surplus fixtures, will greatly increase the net crop and consequently net profits.

But what of increase? Any experienced apiarist can quite easily make all the stock he wants. Suppose you have what stock you care to work, you will want enough increase to make up for winter losses. There need be but little winter loss except from two causes, dysentery and loss of queens. The latter need not be heavy. Estimate your probable loss, and when the honey flow comes, take away queens from every colony strong enough to swarm, putting the best queens in other hives, with just enough bees to care for them, and one comb of hatching bees with each queen. In estimating losses don't forget that some of your old colonies will lose their queens at mating time.

Each of those old colonies should be allowed to requeen itself, either from the brood left when queen is removed, or its equivalent, the giving of a ripe cell or virgin queen at the time of cutting out cells, nine days after removing queens.

After the flow is over, look at your queenless colonies, take away all honey and give empty combs. The brood combs taken can be stored for spring feed, or used to fill out the nuclei if needed. Those old queenless bees can wear themselves out trying to fill the empty combs given them.

Those old queens with the bees given them will build up to full colonies for winter and

have a lot of young bees. Such colonies will gather almost as much honey and care for as much brood as twice as many bees would do in the same hive. Why? *Because they have to.* At that time of year the queen will "spread herself" beyond the cluster, and the bees will *work hard* to keep up with her. Those who have tried it know that a very few bees can be made to rear a large amount of brood during a honey flow and at the same time put lots of honey in the brood chamber. This plan leaves nearly all the old bees in the old hive, at work in the supers, just where we want them.

This removing queens to control swarming, and keeping all the bees in the old hive, I believe will give as much honey, yes more, for the investment of capital and labor, than any other system yet in use.

I believe it possible to produce from two to four times as much honey per colony as is now produced.

Two days work will remove queens, cut out all cells from twenty colonies, and eight or nine days later remove all cells but one. Can any man watch for swarms, or divide, and furnish new hives, and do it at the same expense of time and cash? I say no; neither can he get so much honey nor have his bees in so good shape. Let him who doubts this try it.

This is not all theory with me. By observing Doolittle's teachings to have a *hive full of bees during the honey flow*, I have not failed, save once, in fifteen years, to get a fair crop of honey. I seldom get less than 50 lbs. and usually 75 to 100, and one season, 227 lbs. average per colony, spring count. That was not done in Colorado either, but in Iowa. Neither did I at that time remove queens; but my crop would have been increased by so doing. I did, however, clip cells and return swarms.

Thanks to Elwood and France for the plan of removing queens.

I have tried to briefly point out the principles, but all the "hows," etc., would fill a book. Let each apply the principles to suit location and circumstances, then adopt the best trade mark of all, "an honest name," and the adulteration scare will disappear.

FT. COLLINS, COLO.,

May 5, 1891.

[Whether it will pay a man to prevent increase, or modify it to a certain extent, all depends upon circumstances. I know of a man in this State, who, years ago, was very

extensively engaged in bee-keeping. He raised good crops of honey; at the same time he took good care that there should be a quite a little increase. He had a splendid cellar and usually wintered his bees successfully. In the spring he frequently had 200 or 300 colonies of bees to sell, and he sold them at fair prices. "I tell you," he has said to me more than once, "that's where there is money in bee-keeping—selling bees in the spring." A man, to succeed, ought to look the ground over carefully, and then decide in what manner, all things considered, he can make the most profit.—ED. REVIEW.]

Spring and Summer Management with
Small, Divisible Brood-Chamber Hives,
and Swarm Catchers.

B. TAYLOR.

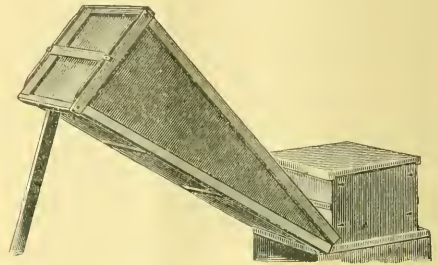
IN ATTEMPTING to describe my method of using my small hives, I scarcely know where to begin. The possibilities with such hives are so great, and the useful things that can be accomplished with them are so many, that it would take a small volume to tell it all, and I will only attempt in this article to explain *my* method.

Where no increase is desired, the bees are placed upon their stands in the spring about the time soft maples bloom. After a good flight they are examined to ascertain if they have a queen and sufficient stores. If so, they have a shallow box of sawdust, $2\frac{3}{4}$ inches deep, placed between two bottom boards under the hives to keep the cold out at that point, which is where the most of it enters. Another similar box, with building paper nailed on one side for a bottom, is filled with sawdust and placed on top to keep the heat from escaping. (From the top is where most of it does escape.) The bees are then left undisturbed, until near swarming time, unless something should seem to need especial attention.

The hives, when placed on the stands in the spring, are composed of two sections of my small hive. Each section is 16-inches square, outside measure, and contains 10 combs 13 inches long and $4\frac{1}{2}$ inches deep. Near swarming time, when they are of proper strength, the top section is placed below and the bottom one on top, a case of sections put on, and swarming time awaited.

The swarm catchers are made ready, and, when a swarm is seen issuing, a catcher is

quickly adjusted to the entrance of the hive and in five minutes the bees are all in, when the catcher entrance is closed, and bees and all are carried into the wintering cellar near by and leaned against the wall, where they may remain until a convenient time for hiving them, even if it should not be for two



TAYLOR'S SWARM CATCHER.

days. When I am ready to hive them I go to the hive from which they issued, set it on the ground, put an empty hive filled with foundation or starters on the old stand, place the *under* section of the hive that swarmed, with its brood and young bees, on top of this, and the case of sections from the old hive on top of all, with a queen excluding honey board under it. If needed, an extra case of sections is given. A sheet is spread in front and the bees brought from the cellar, the coolness of which has by this time hushed them to deathly stillness. We shake them upon the sheet, when they march in without fifty bees taking wing. Three cheers for the swarm catcher, worth its weight in clover honey, for a single season, to any expert bee-keeper.

The remaining section of the old swarm with its brood and queen cells are removed to a temporary stand in any convenient place, and within a day or two all queen cells are carefully destroyed. And I will say right here that after many years of experience and handling of thousands of this kind of hive, I have never known a case where the whole of the queen cells were not in the *top* section of the hive, and this is the reason for putting the *bottom* section with the new swarm, as we want no queen cell with it. The section on the temporary stand is examined for queen cells and kept hopelessly queenless. When all the bees are hatched, they are shaken out in front of any swarm where most needed. And please remember that these young queenless bees will be re-

ceived by *any* swarm, and will stay wherever placed. It is not necessary to wait for all the bees to hatch; they may be shaken out every few days until all are out.

The section with its empty combs is kept until the fall flow of dark honey commences, when it is placed on top of a strong swarm, with a queen excluding honey board under it, and filled with dark honey for extracting, or for fall or spring feeding, as needed. I use mine for raising young bees for the following white honey harvest, and I have found it the best market for dark honey.

Now this may look like a great deal of work. But with the small hives, it is done with the least possible amount of work, for in using these hives, we handle hives and not single frames. In using 200 of them in the home yard in the seasons of 1889 and 1890, I never lifted *one single frame*, and I do my work with an ease and dispatch that the followers of old fashions know nothing about.

The system resembles Dr. Tinker's, except that he uses his brood in strengthening the parent swarm, and I use it in strengthening any swarm that needs it most. Some new swarms, for instance, as we all know, commence work in the sections with great energy, but their numbers soon diminish. Such swarms I keep reinforced with bees and "booming strong" until the end of the white honey harvest. There are two other distinct methods of managing the small hives, viz., where we wish very moderate increase, and when we wish all the increase we can get. They are unsurpassed for both cases of the management, but of the methods I will write at another time.

Forestville, Minn., March 28, 1891.

[In a letter recently received from Mr. Taylor, he, in referring to the excellent yields reported in the last Review by the Western man who did not give his name, says, "In 1889 I obtained 143 pounds of comb honey per colony in an entire apiary without any tedious fusing; still, I am greatly pleased with the story." I tell you friends there are great things in store for those who will be progressive; who will adopt such hives and methods that the tedious handling of combs, *singly*, may be dispensed with, and will learn how to use, understandingly, queen-excluders, self-hivers, queen-traps, bee-escapes and all profitable labor saving implements.

And now a few words about the swarm catcher. It is practically the same as the

Bailey catcher which I laughed at when I saw it illustrated several years ago. At that time, however, I had never been through the experience of having several swarms in the air at the same time—and more a coming. When Mr. Heddon has all the swarms in the air that he can manage, he removes the supers from the hive of the next colony that begins to "spout bees," and "douses" the bees with water. Mr. Taylor has several of these catchers scattered about the yard, and when a swarm is seen issuing, a catcher can be adjusted to the mouth of the hive *instantly*. There is no climbing of trees, no hunting for queens, no mixing of swarms, but everything is lovely. Mr. Taylor sent me a catcher from which I had the accompanying engraving made. The catcher is a very simple affair; simply a frame of light wood with cotton cloth tacked on the sides and painted. The upper or larger end is of wire cloth instead of cotton cloth; and is removable, being held in place by two buttons. The few bees that get into the air before the catcher is adjusted will join any swarm that is in the air, or else return to the old location. — Ed.)

A Modest Man Brought Before the Public.

YEARS AGO, I can't stop to figure up how many, probably nine or ten, when I was living at Rogersville and enjoying myself rearing queens, I was one day perched upon one end of the work bench, writing letters at a little desk I had fixed up against the wall, when a young man stepped in at the door and asked if my name was Hutchinson. I said that it was.

"W. Z.?"

"Yes."

"Well, my name is Root."

"Ernest?"

"Yes, sir."

We shook hands, and about the next thing on the programme was the request for a drink of water. I told Ernest that we brought our water from a spring about twenty rods away, and, if agreeable, we would go directly to the spring. To the spring we went, and if ever I saw any one enjoy a "drink," it was Ernest at the spring. In order to reach me early in the day, he had "pounded ties," as the boys say, on the railroad for a distance of six or eight miles with a July (I guess it was) sun overhead. No wonder the boy was thirsty. I have never

seen him since that he did not refer to that drink at the spring.

My brother was with me then, his first season with bees, I believe, and we three had one of those best of bee conventions for the remainder of the day and evening. I remember I was getting things in readiness to make my first exhibition of bees and honey at our State fair, and that Ernest was much interested in the "fixins."

I liked Ernest then and have liked him ever since; and it has been a genuine pleasure for me to meet him at conventions; also to see *Gleanings* show, more and more, as the years go by, the touch of its new master's hand. Considering the excellent work that Ernest has been doing so long upon *Gleanings*, I have felt for some time that bee-keepers would be pleased to "see how he looks" and know more about him; and, after studying over the matter a little, I decided that I knew of exactly the person to tell us about him. The following sketch shows that my judgement was not at fault in this instance:—



ERNEST R. ROOT.

Mr. Hutchinson has requested me to write a few lines relative to the junior editor of *Gleanings in Bee Culture*; and it is very seldom that I comply with a request more cheerfully. Still, I realize that a sensitive

mind shrinks from saying any thing commendatory of a friend directly to his face, lest the expression of honest friendship cross that fine line where praise ends and flattery begins. But if the person we are now discussing were subject to that malady which makes a larger hat necessary to fit a swelling head, the disease would have broken out long ago; so I feel safe in saying what I shall say regarding a man who is even now well known to the whole apicultural world.

Ernest R. is the eldest child of Amos I. and Susan Root, and was born in Medina in June, 1862, consequently he has just entered his 30th year. Fortunately his early history, which I could not write, has been written by himself in *Gleanings*. But it might be well to note that his first recollection of things terrestrial was when his father mounted that hobby of his (apiculture) which will always connect their names with the production of honey. In fact, apiculture and mechanics constitute the atmosphere in which Ernest has been reared to manhood. By way of education, he enjoyed all the advantages of our excellent schools here, and graduated in 1881. In August of that year he went to Oberlin College, and remained four years. John T. Calvert, who is now Ernest's brother-in-law, was also with him at Oberlin. In 1885, the work of managing his father's business was far beyond the power of any one man; and the boys were told that, if they did not wish to see the editor of *Gleanings* break down entirely, it would be necessary for them to come home immediately, which they did. Mr. Calvert assumed the responsible position of business manager, while Ernest devoted his time to *Gleanings*, and to a rigid examination of implements designed for use in the apiary.

Almost any man can find heirs enough to whom he can give his property; but seldom indeed does a man throw off the heavy burden of the details of a great business, and see it "blossom and shake like Lebanon," or grow like a transplanted herb in new soil, as did A. I. Root when he put his two "boys," as he calls them, into the traces, inside of brick walls, and then put himself at liberty to pursue high-pressure gardening, etc., outside. But in no sense have his boys usurped any of his prerogatives. Nothing is done without his full knowledge and consent, though, of course, he is not so conservative as to try to keep them in any one groove, oblivious of all human progress. In fact,

the conclusions of Ernest in regard to the Hoffman frame and fixed distances were revolutionary so far as the "traditions of the elders" were concerned here; but when he saw what others could do with those frames he immediately published what he knew to be facts concerning them, and so far he is not sorry for having done so.

But that "fixed distance" of 20 miles between Oberlin and Medina finally became intolerable to Ernest; and the idea of reducing it to less than a bee-space tended to mitigate the grief which he would otherwise have felt on being obliged to leave college before the fall of "laurel leaves." His "queen" was in Medina. All this was evident from the fact that, on the 15th of December, 1885, he was married to Miss Lizzie Humphrey, one of his father's valued helps in the office. The offspring of this marriage is a son, Leland Ives, born March 29, 1891; and it would be difficult to mention anything that has added more to Ernest's happiness for years than the advent of this son. Its middle name is the same as its grandfather's.

In early life Ernest suffered much from earache and kindred head troubles, and even now he finds that to be his most vulnerable part. Increasing astigmatism has compelled him to wear specially ground glasses for a number of years; and he says he is still forced to favor his eyes all he can.

In manners, Ernest is very open and friendly. In fact, one knows him about as well after an hour's talk as he ever will. But this friendly urbanity does not prevent him from seeing the quack and impostor in an instant, so he is seldom if ever imposed upon. He is utterly destitute of selfishness; and his library, his camera, microscope, gun, or whatever he has, is entirely for the good of any who can be benefited thereby. His picture shows, phrenologically, an even balance of temper, which is well known to us here; for it is just as safe to ask a favor of him before dinner as after, which is not the case with most men.

In speech our junior editor is very rapid, with frequent interruptions, or going back to get a better word. In this respect he is just the opposite of his father, who seldom changes a word in dictating even two pages of *Our Homes*, containing 3000 words. A. I. has all his editorials fully matured and ready to put together, like the stones in Solomon's temple, while Ernest goes more on the cut-and-try plan.

But the best thing I can say about Ernest is the unchanging attention which he pays to his father and mother. With him, nothing must stand in the way of their convenience and pleasure. In fact, no consideration would swerve him a particle from what he believes to be in harmony with the Bible, or even what all men agree to be right and square; and this is equally true of his father. The unkind flings which sometimes appear in print, intimating that so and so has been fleeced out of a nickel by dealing with A. I. Root, are very painful to his hands here, especially as his business is all in the hands of persons who would never consent to fraud on a customer.

The first intimation that Ernest will have of this article will be when he comes across it in fumbling over the pages of the REVIEW; and the fun of seeing him perform on that occasion will be ample remuneration for the

STENOG.

MEDINA, June, 1891.

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. ~~1/2~~ The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, JUNE 10, 1891.

LETTERS from the South indicate that a honey flow is on its way North.

The *Am. Bee-Keeper* has decided that *its forte* will be that of catering to the needs of beginners. 'Tis well.

GLEANINGS again has a "Ladies' Conversation" which at present is well sustained and, as might be expected, interesting.

THERE SEEMS to be a perfect mania among bee journals at present to have a department for giving short items, such as "Stray Straws," "Chips and Shavings," etc. Such a department *can* be made very interesting

and instructive; but let no editor imagine that simply putting in a whole lot of short items is going to place his paper in the front rank. It all depends upon the *character* of the items.

Now that the new book, "*Advanced Bee-Culture*," is out, I shall put in my "best licks" to catch up and have the REVIEW out on time again.

Gleanings is now trying to persuade its readers to tell how the paper ought to be "run;" the same as the REVIEW has been doing. Speak out, friends, but while showing up its faults don't forget that it has some glaring virtues.

"BRACE" COMBS AND "BURR" COMBS.

Writers have been using these terms indiscriminately, but J. A. Green says, in *Gleanings*, that the combs *between* the top bars are *brace* combs, and those *above* the top bars may be called *burr* combs. J. A. is correct.

VASALINE, when rubbed on the joints of hives, supers, etc., will prevent the bees from sticking the different parts together with propolis—at least so say the British bee papers. Just think what a comfort to take off supers without any disagreeable prying with knives accompanied by that unpleasant "snap" as the propolis gives away.

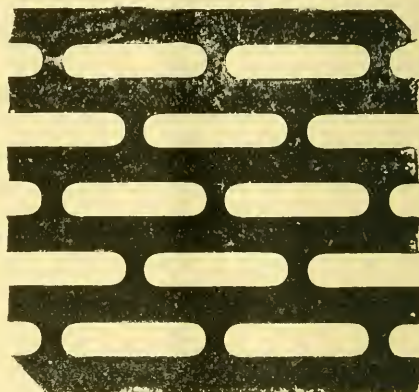
INFLUENCE OF DOMESTICATION.

Domestication of bees, so says Mr. C. H. Murray in *Gleanings*, has its effect upon their habits. In time they will become more tractable; also less inclined to swarm. To use his own words: "Bees that have their own hives provided for them generation after generation will in time cease to hunt up new localities, and will quit swarming if they have a fair chance at home."

DIVISION BOARDS "NO GOOD."

Dr Miller reports in *Gleanings* the result of an elaborate experiment, recorded in the

Revue Internationale, which goes to show that the division board, as ordinarily used in packing up weak colonies, is of no advantage. A comb is a poorer conductor of heat than is a board. It's what I have often thought, that a good comb is the best division board. Its nonconductability makes up for the fact that, with open end bars, there is an open space at the ends.



THE MOST PERFECT perforated zinc is made by Dr. G. L. Tinker, of New Philadelphia, Ohio. For the last two or three months I have been promising myself and the Doctor that I would give an illustration of his work, printed from the zinc *itself*, and at last I have been able to fulfil my promise. The tinted work on the cover of the new book, *Advanced Bee-Culture*, was printed from zinc furnished by the Doctor.

MR. COWAN'S NEW BOOK.

An apology is due Mr. Cowan for not having mentioned his latest book, *The Honey Bee*. I have been so busy getting out my own book that I have not had time to read it through. I have read enough, however, to show me that I am incapable of reviewing it. It treats of the natural history, anatomy and physiology of the bee, a subject to which I have never been able to give scientific attention. All my bee keeping has been from a bread and butter standpoint. I have never dissected a bee or examined one with a microscope. Mr. Cowan's book is very nicely gotten up, neatly printed, profusely

illustrated, very tastily bound, and contains a vast amount of knowledge upon the subjects discussed.

YELLOW CARNIOLANS.

The yellow Carniolans get a "black eye" in the last issue of the *Missouri Bee-Keeper*, several correspondents showing them up as a fallacy, but the editor of the *Am. Bee-Keeper* claims to have given the matter as thorough an investigation as possible, and he says that the part of the country from which come the gray bees is situated well up the mountains, and it seems that in descending the mountains the less gray the bees become; and, finally, in the valleys they are almost entirely of a yellow or golden color; hence, Carniolans may be either gray or yellow and yet be *pure*.

THE NUMBER OF OPENINGS NEEDED IN A QUEEN EXCLUDER.

Just at present there is being more argument used to show that *two* rows of perforations are an advantage in the strips of zinc used in making the wood-zinc honeyboards. There is also argument on the other side. It is claimed that a large number of openings are needed for ventilation and for passageway for the bees. In a queen excluder with eight rows of openings (for a Langstroth hive) there are 200 openings, and their combined capacity is equal to a space $1\frac{1}{4}$ inches high and 14 inches wide! Just compare an opening of this size with the *entrance* of the hive, through which a *whole swarm* can pass in less than *two minutes*.

THE INFLUENCE OF SCENT IN INTRODUCING QUEENS.

Mr. A. E. Morgan, of Chippewa Falls, Wis., writes to recommend the plan of introducing queens that was lately given, in the REVIEW, by Mr. J. H. Larrabee, that of first caging the removed queen a few minutes in the cage that is to be used in confining the new queen. The theory is that the old queen leaves a scent in the cage that the bees recognize and thus mistake the new queen for their former sovereign. Mr. Morgan stops up the entrance to the cage with Good candy, and allows the bees to at

once begin the work eating out the candy. He says he has practiced this method three years, sometimes in a terrible dearth, and never lost a queen—has often found a queen laying in three hours from the time that the old queen was removed,

Of course, I can't say that the scent has nothing to do with the queen's acceptance, but I should like to see the same method tried with the caging of the removed queen left out.

NEAT JOB TYPE FOR DISPLAYING ADVERTISEMENTS.

I believe the REVIEW can honestly claim whatever honor attaches to having been the first bee journal to pay particular attention to its advertising pages. It encouraged advertisers to bestow more care on their advertisements, it brought to their notice a journal devoted exclusively to the subject of advertising, it used new type of neat designs, and care and thought were exercised in its display, not only to make all advertisements as attractive as possible, but to give each advertisement a *distinctive character*, something different from the others, so that readers would be almost unanimously led to read *all* of the advertisements. It is a pleasure to notice that *Gleanings* is beginning to pay more attention to this matter. Just look over its advertising pages and see how they have been brightened up by the new faces (of job type) that have made their appearance during the last two or three months. *Gleanings* recently remarked, editorially, that "It takes extraordinarily good editing to boom a bee journal that uses poor paper and ink, and is otherwise slovenly in typographical appearance." This is equally as true of the advertising pages as of the reading matter. The time has passed when advertisements can be set up in any manner with any type that happens to be on hand, and then "slapped" together hap hazard in their "make up," with the thought that "nobody will ever notice the difference." To have bee journals very neat typographically is now the fashion, and I believe the REVIEW helped to set that fashion.

THE ADULTERATION OF HONEY.

It is gratifying to notice the decrease in the use of violent language when referring

to the adulteration of honey. The idea that we must fight adulteration because it is an evil is not logical. Please lay aside all prejudices and listen to reason for one moment. If we are to oppose evil we ought to use our resources in such a way that they will do the most good. We ought either to attack the greatest evil, or else one that is the easiest overcome. What folly to pass by scores of crying evils, those that are causing untold miseries, and go on a wild goose chase after an insignificant evil that is growing less as the years go by. Some bee-keepers may *think* they are opposed to the adulteration of honey because it is an evil, but the supreme indifference that they exhibit towards other and greater evils that don't effect them directly, shows that they delude themselves. As good citizens we are all opposed to any form of evil; as *bee-keepers* we are opposed to the adulteration of honey because it strikes at our pocket books.

Another gratification (to the editor) is the admission that producers can no longer afford to adulterate honey. The difference in price between honey and glucose is now so slight that the expense of mixing does not pay unless the business is carried on upon a grand scale. This greatly simplifies the matter of fighting adulteration. Instead of having a thousand and one little mixers all over the country, there are only a few and they are in the business quite extensively. The business must be extensive or there are no profits. If rightly managed this state of affairs is really an advantage to bee-keepers. Instead of being compelled to hunt up a thousand rills and build a dam on each, there are only a few broad streams that need "damming." But the dams must be longer, higher and stronger, greater in many cases than one man can build, and a union of bee-keepers is needed. There is already a Bee-Keepers' Union, formed for the purpose of defending its members against unjust persecution, but its constitution could be so changed that it might aid bee-keepers by aggressive as well as defensive measures. Its present Manager says that such a change must also be accompanied by a change in its Manager. I trust not, if the Union only could and would (as it should) pay its Manager liberally for all time spent in its service. There would be no running after a thousand and one petty adulterators, as Bro. Newman fears would be the case. It would not be policy to prosecute every dealer, per-

haps few if any of them, but reach for the adulterators, the *mixers*. Stop the mixing and there will be no dealers. Let each bee-keeper, when he finds his market infested with adulterated honey, trace the adulterated goods to the adulterator. With a reasonable amount of shrewdness this can be done with no great amount of trouble and expense. Let some of the "stuff" be bought, direct from the mixer if possible, or secured in such a manner that its source can be *proved*. When proofs of adulteration have been secured, let the adulterator be informed that prosecution will result unless he stops this "evil" practice. Bring to his notice the Bee-Keepers' Union, formed expressly to aid bee-keepers in such matters, and that it will be called upon if necessary. If necessary prosecute and continue to prosecute for each offense, until the practice of adulteration is abandoned. A few convictions under the auspices of the *Union*, proofs of which could be shoved under the noses of other adulterators, would have a rather depressing effect upon adulteration. The very name of the Union would be a *power* against adulteration. They would no longer ask: "What are you going to do about it?" The assurance of Prof. Cook that adulteration can *usually* be detected leads me to hope that, with the aid of the Union, the few large adulterators could be made to "shut up shop."

Whether the above course is adopted or not, I still believe, in the face of all that has been said, that honey will yet be so cheap that it will not pay to adulterate it. Dr. Miller says in his "Stray Straws" that "Hutchinson's remedy for adulteration is cheap honey—too cheap to be good." Now, Doctor, I protest. I have never intimated that the honey should be poor in quality. I would raise only the best of honey, but I would raise it more cheaply. Many are the inventions that have been made in bee-keeping, but that industry is still in its infancy as a *business*; is still big with possibilities. Just consider the effect that one or two discoveries would have. Let us be able to control swarming and what would be the result? Suppose that the wintering of bees should be reduced to an exact science, where would the price of honey go to? Both of these are among the possibilities. In one sense bee-keeping resembles manufacturing. When the *raw material* costs a manufacturer nothing, what show is there for a rival that

must pay for his raw material? We have only to perfect our manufacturing facilities to be able to crowd all rivals from the field. We are doing wonders now in the way of getting up labor saving implements, and the beauty of it is that the lower the price of honey goes as the result of such inventions, the more safe and pleasant will become the business of bee-keeping.

It is true that there will be poor seasons when, even with all the advantages I have mentioned, it might pay to adulterate honey, but these "mix shops" do not start up as the result of one poor honey season; it is when the average price of honey, one year with another, is above that of glucose.

In the meantime, before honey is so cheap that it drives out glucose, what shall bee-keepers do? Do as Chas. F. Muth & Son, and many others have done. Sell only good honey and sell it under their own name. Establish a reputation.

BEE ESCAPES.

When bee escapes were first illustrated and described in the bee journals they attracted but little attention. I well remember the first one that was sent me. When I went out to the apiary I took it out and showed it to my brother. I kept a straight face as I explained its use. My voice may have had a laughing or contemptuous tone, although I tried hard to control it, but my brother commenced laughing as soon as he "caught on" to the idea. The more I tried to explain to him its advantages, the harder he laughed. "If I can raise the honey, I guess I can get it off the hives," was his comment. I must confess that I felt that way myself. It seemed like "too many oats for a shilling"—too much rigging for the work to be accomplished. For the moment I forgot the smoking and brushing of bees out in the hot sun, the accompanying stings from the irritated bees, and the robbers gathering around in such crowds that the work must be suspended. The crowds of "stragglers" that escaped from the cases of honey when brought into the honey house, and buzzed and bumped about on the windows until they finally escaped at the top, and robbers sometimes found their way in at the same entrance, all these, and the time spent in these manipulations, seemed to count for nothing, so strong is the force of habit.

I presume others had similar thoughts, for it was not until some of the more progressive bee-keepers had tried the escapes and called attention most emphatically to these points that the general bee-keeping public took much interest in bee escapes. I intended to give them a trial last season, but had no honey to remove, hence am compelled to rely upon the experience of others, but the interest in them is becoming so great, and so many are inclined to give them a trial, that I think it best to gather all the knowledge that I can in regard to them, even if I have not tried them.

To Mr. Jno. S. Reese, of Winchester, Ky., belongs the honor of inventing the bee escape. It was a cone, or a double cone, and an empty super was needed to give room for the cone. This made some complication, and some have reported that the bees clustered in the empty space and built combs there. To remedy this, Mr. C. H. Dibbern, of Milan, Ill., laid the cone on its side and flattened it out, making a pear shaped arrangement. The bees pass in at a large and easily-found entrance at the large end of the "pear" and pass out through the smaller end and in doing so make a few complicated twists and turns. The whole arrangement is such as makes it easy for a bee to find its way out, but difficult to find its way back. The Dibbern is placed in a board not more than half an inch thick and does away with all empty cases or space. It is said that the bees sometimes find their way back through these escapes, in fact Mr. Dibbern himself admits that this is the one great objection to be overcome, and R. & E. C. Porter, of Lewistown, Ill., have now invented an escape that remedies that difficulty. The bees pass out between two delicate springs that close together to such an extent that a bee cannot pass in the opposite direction. It certainly looks now as though the Porter escape is ahead of all others.

Many who have never tried bee escapes will try them this season, and they are anxious to know which is the best escape and the best methods of using it. If I am not correct in saying that the Porter is the best, I shall be glad to be corrected.

Bees pass down through an escape much more readily when there is plenty of room in the hive or supers below. Usually, in the working season, when a case of honey is ready to come off, it is also well to put on another super. When such is the case, the

new super should be given at the time that the escape is put in place, as this gives room for the bees to "escape" into.

Queen excluders are almost a necessity if bee escapes are to be used; that is, if the management is such that the queen is likely to invade the supers.

The escape is fitted into a thin board ($\frac{1}{2}$ inch) that is the size of the top of the hive. With the ordinary hives in use, a rim, bee-space in height, is tacked to the upper edge of the board. This arrangement leaves a bee space both above and below the board. The super from which it is desired to remove the bees is slightly raised, a puff of smoke driven in, then the escape-board slipped in and the work is done. In a few hours the super will be free from bees. Two men ought to place escapes in position at the rate of four a minute. It is said that smoking the bees down out of a super as much as possible before putting the escape in place greatly hastens the escape of the bees.

As I have never used the escapes, I cannot go on and give in detail all the little points of management, hence must trust to correspondents to do this, and in the July REVIEW will be published what they say.

EXTRACTED.

Bright Yellow Bees.

Mr. W. J. Ellison writes me as follows: "I have several colonies of five-banded bees, and if they don't do better another season, they will have to take the next seat lower. I like their beautiful color, and their queens take better every time than the dark ones. I believe some people would rather have them for their color, even if they had to put up with other deficiencies. I wish you could have seen some of the queens I sent out last month, during swarming, that were reared from these yellow bees. They surpassed *everything* for beauty, and the question now is, shall we raise these queens, because they please our customers, even though we feel we have their superiors in the three-banded bees?"

If you write to your customers, friend Ellison, just as you have written to me, I think it all right to sell them the yellow bees. Several times have these bright yellow bees been brought before the public, but they

have never seemed to *stay* a great while. Just now they are being boomed as never before and it may be well to give them a little consideration. I have never had enough of them to give them a reliable test as regards their honey gathering qualities, but some men in whom I have confidence have given good reports in regard to them. My own opinion in the matter is that there are different strains of them, varying in character, the same as is the case with the ordinary three-banded Italians or with the black bees. I think the difficulty is just here: when a man begins to breed for color, he is likely to neglect other qualities. The brightest bees are continually selected to breed from, regardless of whether or not they are good workers. I know that these bright yellow bees are very beautiful and very gentle, and they are not *necessarily* poor workers. As to their purity as Italians, I am in accord with Mr. Doolittle as he expresses his views in the *Missouri Bee Keeper*. In reply to the query: "Can Italian bees have more than three yellow bands?" he says:—

"They can not only have three bands, but they can have six in a few years, if the improvement as to color should continue as great during the next ten years as it has during the past decade. Not only can they show what is termed six yellow bands, but the abdomen can become a solid yellow its entire length, the same as some of the best specimens of queens and drones now do. There is nothing impossible with any animal or vegetable that is hybrid, or that will 'sport.' But the question naturally arises, are these yellow bees as good for honey gathering as the darker Italians? Where properly bred, I can see no difference in favor of either along this line. Admitting both to be alike as to honey gathering qualities, we find the reason why the yellower bees are so eagerly sought, in the thought expressed in the beginning of this article, that 'most of us want something nice,' and beauty is a thing to be desired, where we can have it without lessening other valuable qualities. Some seem to think that these yellow bees have been bred in-and-in-more than any other bees, but this is, I think, a mistake. There were plenty of four banded bees as early as 1871 in an apiary near me. These bees were crossed with other four banded bees from apiaries in the West, and these in turn crossed with very yellow Italians in the Southwest; and so the crossing of the yellowest bees in the United States has been kept up till we have to-day bees in the New World whose abdomens are three-fourths a solid yellow, and yet so far as I can see they are just as good honey gatherers as those bees formerly called Italians, showing but very little yellow, that would sting the 'socks' off any man."

Involuntary Wax Secretion.

E. France says, in *Gleanings*, that bees secrete wax whenever they have more honey than they have combs in which to store it away. At such times they have to hold their honey in their sacs—they have no other place to put it. The wax is secreted as a consequence of holding the honey in their sacs. This is the whole sum and substance of wax secretion. Mr. Doolittle, in a later issue of *Gleanings*, says:—

"Exactly. That is as I have always argued. Now, if Bro. F. will closely watch a single-comb observatory hive, he will see that the old bees, on returning from the field, give their loads of honey to the young bees, and that these young bees hold these loads of honey till they are sufficiently evaporated to be deposited in the cells; hence it comes about that it is the *young bees*, very largely, which secrete wax, and that wax *must* be secreted to a greater or lesser extent, from the standpoint of Bro. F. and myself, whenever there is a flow of honey of any great amount. Prof. Cook might as well haul down his flag when such 'weighty' men (avoidupois) get after him."

Spacing Loose Frames.

In order to prevent, by accurate spacing, the building of brace-combs, it has been thought necessary to use fixed frames, or use some device for spacing the loose frames. Mr. B. Taylor, of Forestville, Minn., recently sent me a model of the rabbit to a hive having little "gains" cut upon the upright side of the rabbit. Each "gain" is exactly the width of the space to be left between frames, and the space between any two "gains" is exactly equal to the width of a top-bar. With such an arrangement there is little difficulty in spacing the frames accurately. Mr. E. H. Whitaker tells, in *Gleanings*, how he manages this business; it is as follows:—

"Some five years ago I conceived the idea of spacing by pencil-marks across the edge of the hive, just above the frame-rabbit, said pencil-marks to coincide with the centers of the frames. I still use this method, and can space the frames quickly and accurately thereby."

Catching Swarms on Sticks.

Awhile ago the REVIEW gave a plan of catching swarms by having the queens clipped and then driving a short stake or branch

of an apple tree in front of each hive. Commenting upon this, Mr. Jones, in the *C. B. J.*, says:—

"We have frequently had queens running up sticks and little bushes set in front of hives in that way; and if the swarm is issuing sometimes they stayed on the stick, but if the swarm got fairly into the air, and there were few or no bees flying around, they would run up the stick and try to fly off and then flutter to the ground again. If the bush stuck down is sufficiently high, with plenty of twigs on it, some of the bees will climb it with the queen, and others if they wish to rest after flying, will light on it, so that the queen will soon have an escort, and in that way will remain on the bush. We do not like the short stick principle, but the bushes may be from 3 to 6 feet high, and will stand from 3 to 5 feet in front of the hive. A narrow strip of thin board running from each corner of the hive to the butt of the tree is an improvement, as it guides the queen directly to the bush where she climbs."

When Queen Excluders are Necessary in Raising Comb Honey.

The following is from *Gleanings* of June 1:—

"On page 380, May 1, you state that queen-excluding honey-boards are entirely unnecessary in the production of comb honey. I have just gone over 50 hives from which I left the queen-excluding zinc. On the 50 stands I secured 3 good sections. All of the others had more or less brood. I cut out the brood, returned the supers, and the bees have since cleared out all of the remaining honey in the sections; so I lost my first crop of honey through not using queen-excluders. My supers were of the T pattern, filled with 2-lb. V-groove sections, with $\frac{1}{2}$ to $\frac{3}{4}$ inch space between frames (8), and the bottom of the sections. E. H. SCHAEFFLE.

Murphy's, Cal., May 11.

[Your experience is peculiar and phenomenal—especially so when those extensive bee-keepers, Hetherington, Elwood, Dr. Miller, and, I believe, J. F. McIntyre and L. E. Mercer, of your own State, produce good clean comb honey without queen-excluders. Two-pound sections would be a little more inviting for the queen to enter than the one-pound. Either you contract your eight frames down to three or four, or else you have queens more prolific than we usually have. There is some screw loose somewhere. Will some of our large comb-honey-producers who do not use queen-excluders please tell where it is?] E. R."

With established colonies in eight-frame Langstroth hives, I have had no trouble from the queen entering the sections. I have never used a queen-excluder under such conditions and see no use for it. But when a

swarm is hived in a contracted brood nest, the frames of which contain only foundation or starters (no drawn comb) and the supers are transferred to the newly hived swarm, the queen will almost *invariably* invade the sections unless restrained by an excluder. As Ernest says, "There is a screw loose somewhere" with this California man. If all the circumstances were known, I think the cause of the trouble might be pointed out.

Another Queen Cage.—The Dixie.

Last month the REVIEW contained an advertisement of the above cage, made by J. M. Jenkins, Wetumpka, Ala., and I intended to notice it editorially, but I am glad I did not, as I now find, in *Gleanings*, so much better a notice than I could have written. It was written by Mr. Jenkins himself, at the request of Mr. Root, and reads as follows:—

"I believe the Dixie queen-cage is little enough and big enough, simple enough, cheap enough, light enough (1 oz.), has rooms enough, and all that. I also think the printed directions about right for the guidance of the timid novice, and the other fellows don't need any. So far as I know, this is the only cage that has contents, breeder's address, etc., printed on it; and I believe the request to the postmaster, 'Deliver quick,' may at times expedite matters, especially in the country, where the consignee may live a few miles away, and the queen or 'word' may be sent by some wayfarer. This printed request, and notice of contents, gives the country postmaster a pointer as to the care he should take of it, and the desirability of effecting a speedy delivery. Some of its best features were borrowed from other pages, especially your Benton cage.

"While I am about it, I might say I like to see the printed name and address of the individual or firm doing a business, on every letter, wrapper, package, or shipment he, she, or it sends out by mail or otherwise: for, besides the little feeling of pride in it, a knowledge of the sender sometimes enables the postal and railroad folks to correct errors and straighten things that 'ain't' straight, and thereby save loss or long delay; and it is a way of advertising too."

Paper for Covering Hive Covers.

I prefer hives so small that the cover can be made of one board. Such covers, properly cleated and painted, I have used for years and found them entirely satisfactory. But some bee-keepers wish for larger hives, and must use covers of more than one board. To get a joint that is weather proof is well nigh

impossible. To remedy the difficulty such covers have been covered with tin. They have also been covered with paper, and the paper kept painted. Mr. C. P. Coffin tells, in *Gleanings*, of having excellent success with Fay's ceiling manilla. Here is what he says:—

"Several years ago, early in my bee-keeping experience, my Simplicity covers cracked in the sun, and began to leak. So far I had purchased no tin, and, having some pieces of Fay's manilla at hand, I fitted it to the covers just as you do your tin, except that it was first made wet and pliant, then pasted on, and tacked around the corners and sides. After it was dry it was painted two coats, and since that day it has had the same treatment the tin covers have had, and you would have to look very closely to detect these covers from the tin ones. They have never leaked, and, so far as I can see, are as satisfactory as the others.

Now, this is, whst this manufacturer sells as inside, or ceiling felt; he makes a roofing-felt of still better material, all ready painted, for roofing houses; and I have thought that this latter could be used, not only for the purpose above named, but also, perhaps, in making Ernest's light cases for outdoor wintering; then, if the cases could be so constructed as to nest together when not in use, by having the shape somewhat like some of your honey-buckets, or even like a house-roof, it might prove quite an acquisition in your climate. But as I am totally unfamiliar with this branch of bee-keeping I will venture only a suggestion as to the above material. I am sure it is of very lasting and weather-resisting character. I think the firm is now W. F. Fay & Co., Camden, New Jersey. The cost of ceiling-manilla is one cent per square foot. I inclose a bit of the ceiling, such as I used."

The Best Bee Escapes.

Bee escapes will probably be used to a greater extent this season than ever before, and, in giving them a trial, it is well to start out with the best. I have never used bee escapes, as I had no honey to remove last year, but all who have tried the Porter spring escape in competition with other styles, unhesitatingly give it the preference. S. A. Shuck has recently published his experience in the matter, in *Gleanings*, and I quote the part bearing upon the different styles:—

"During the season of 1890 I removed all my comb honey, about 2500 lbs., from the hives by the use of escapes, and experienced less inconvenience and annoyance by robbers or bees in my honey-house than I have frequently experienced in removing a couple of hundred pounds by the old method of smoking, shaking, and brushing of the bees from the supers,

I used four different patterns of escapes—the cone, trap-door, Porter spring, and Mr. Dibbern's latest pattern. Triple-cone escapes made of perforated tin work quite well at times. Occasionally quite a number of bees find their way back through the cones into the super.

The trap-door escapes work nicely for a little while, but they are soon rendered useless on account of propolis.

Mr. Dibbern's new escape gave very poor results, as in my first trial with it there was very little decrease in the number of bees in a T super in 24 hours after adjusting the escape on the hive. My second trial was but little better, as only about half the bees were out of the super in 24 hours. In subsequent trials it worked some better, but not any better, if as well, as the cone escapes, as the bees are slower in passing out through the Dibbern. I very much dislike the Dibbern escape, for two reasons; *i. e.*, it is just as liable to clog up with dead bees as the cone escape is, and there is no way of clearing it out or knowing that it is or is not in working order without taking it apart.

"While the bees have shown a disposition to propolize the perforations in the perforated tin cone escapes, and plaster over those made of wire cloth, and glue the doors of the trap-door escapes fast, they have put but very little propolis into the spring escapes, but not enough to interfere with the working of the springs in the least."

Bee-Escapes Help to Make Cheap Honey.

Last month the REVIEW gave a long article on bee-escapes, but, as this implement promises to play such an important part in the future of bee-keeping, I think it is entirely in order to again give another extract, from *Gleanings*, on the subject:—

"Both the Dibbern and Reese escapes are a success with me. Like others I met with failure when first using them; but a little observation soon put me on the right track. The main secret of success is in the fact that *bees will not all desert their queen or brood, sealed or unsealed*; therefore to succeed with the escape, surplus supers *must be free from all brood, and the queen below*. This can be accomplished to a certainty only by the use of zinc queen-excluders.

The space between the escape-board and the top of the frames below should not be over a bee-space ($\frac{3}{8}$ inch); for if, as some recommend, a space of one to three inches is left, the bees will cluster in this, filling it with brace-combs, at the same time clustering on the escape, thereby forming a communication back to the supers. To secure the best results, supers of empty combs, or sections, should be placed under the escapes, as the bees are slow in going down into a crowded brood-chamber below—especially in eight-frame hives. I generally place the escape on just before night, and take the supers off by seven or eight o'clock next morning. As a rule there will not be more

than a dozen or two bees left in the supers. In two or three instances it cleaned them out completely. Half-depth supers are freed from the bees much quicker than full ones. A free use of the smoker when putting on the escapes will hasten the bees in going below. It takes me about one minute to each hive in putting on the escapes, they being made in a board just the size of the hive; and all there is to do is to raise the super and slip this between; give a few puffs of smoke in the top of the super, and go to the next. In the morning take your wheelbarrow and wheel your supers, now free from bees, to the extracting-room, where you can extract at your leisure. This is a long way ahead of the old plan of shaking and brushing the bees off each individual comb, with an army of cross robbers following you around in the hot sun all day.

A few points of great advantage in the use of these escapes, overlooked by some, are, that, when extracting every week or 10 days, as some do, *you do not disturb the working force of bees in the fields*. This is quite an item; for, often-times, by the old way you so excite the bees that it causes them to lose the best part of the day, right in the midst of a good honey-flow, which means 8, 10, or 15 lbs. of honey less. I am confident that large amounts of honey are lost each year in just this way. Who has not seen colonies cluster out on their hives, all day, sometimes longer, just from being disturbed in the way mentioned? When taking off honey after the flow has passed, you avoid all that troublesome robbing, which is sure to annoy one at this season. Again, after using the escapes one season, you can not fail to note the change in the temper of your bees compared with what it was when managed in the old way.

I would not part with the escapes for a good deal; for by their use one saves three-fourths the labor of taking off a crop of honey.

Give me a hive having frames at fixed distances, with a plain zinc queen-excluder, these escapes, and a good reversible extractor, and I will show you how to produce honey at less than half the cost nowadays.

A. F. BROWN.

Huntington, Fla., May 13.

[You have given us one of the most valuable and reasonable articles of the season; and there is many a bee-keeper who is craning his neck to see how these "new-fangled things" are coming out. It is pleasant to know that these innovations not only work nicely on paper, but in actual practice. I have thought, for over a year back, that the bee-escape and fixed distances were going to revolutionize present methods in the production of comb and extracted honey; and the way reports are coming in, it begins to seem as if I had not surmised amiss. In fact, it is difficult to see how any one could come to a different conclusion who would be willing to lay aside his old-time prejudices.

Your next to the last paragraph, unless you are an ardent enthusiast, contains an

idea that it may be well for some of those who are holding back, to think over and digest a little. Instead of raising such a hue and cry about the low selling price of honey, let us pay a little attention as to how the product may be lessened in *cost*. We need to exercise all reasonable means to keep the price up; but let us not forget that there is a good deal of sense in reducing the cost of an *honest* pound of honey.]"

Deep Top-Bars Don't Prevent Burr-Combs. Folded Tin-Bars Objectionable.

If the discussion that ran through the journals a year and a half ago led any one to believe that *deep* top-bars would prevent the building of burr-combs, let them read the following that appeared lately in *Gleanings*:—

"Three years ago, depending upon the testimony and advice of those who claimed to know, I put into my apiaries several thousand combs with top-bars $\frac{3}{8} \times \frac{3}{8}$, the object being to diminish burr-combs by the extra depth of top-bars. Two years of practical work with these has fully demonstrated that at least twice as many burr-combs are deposited between them as there are between the old-style top-bars which are 5-16x $\frac{3}{8}$.

Why should we expect any different result, since the vacuum to be plugged is $\frac{1}{2} \times \frac{3}{8}$ between the former, whereas that between the latter is only $\frac{1}{2} \times 5-16$, the spacing in each case being $1\frac{3}{8}$ from center to center? So I am satisfied that extra depth of top-bars is in no case a prevention of burr-combs between them. But if the spaces between them are too wide, it has an opposite effect, as it increases the unoccupied space, which is the chief cause of burr-combs. If extra depth ever has any effect in diminishing them in the bee-space *above* the bars, I have failed to notice it. But if they are ever deposited in a bee-escape of proper dimensions, they do not originate there, but are simply a continuation of those extending from the combs below through the spaces between the top-bars. If we make these spaces and the bee-space above uniformly about $\frac{1}{4}$ inch there will be no burr-combs deposited in either if the top-bars are only 5-16 thick. The use of a thousand or more wide top-bars last season has settled me in this opinion, and I fail to find any report that conflicts with it. But we should not overlook the importance of having the spaces between the slats above the bee-space as narrow and as accurate as the others.

I now make my top-bars 5-16x1-16 throughout their whole length, and space them 1-32 from center by using an end-bar that wide at the top. This form of frame is much cheaper than the Hoffman, and it is stronger, and I think equal to it in other respects.

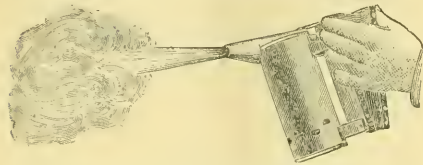
OLIVER FOSTER.

Mt. Vernon, Ia., April 2.

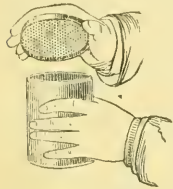
[Your testimony, friend Foster, it seems to me, does not conflict with the discussions

on thin and thick top-bars that occurred a year and a half ago, when the discussion came up in our journal. It was not then agreed that a top-bar $\frac{3}{8}$ square would prevent burr-combs (see *Gleanings*, Nov. 15, 1889; also Jan. 1, 1890, page 20). Mr. Hall, and all the rest of those who spoke in such high praise of the new top-bars, recommended *extra width* in addition to extra thickness (see pages 20 and 131, 1890); besides that, a small bee-space and accurate spacing were later suggested as very important factors. You may remember, in answer to *your article* a year and a half ago, I told you that a top-bar $\frac{3}{8}$ square, alone, would not accomplish the desired result (see *Gleanings*, p. 126, 1890); and your experience above is just about what I should expect. Where did you see in the journals, three years ago, that top-bars $\frac{3}{8}$ inch square would prevent burr-combs? Three years ago was about a year and a half *before the discussion in Gleanings came up*. Extra width, careful spacing, and a small bee-escape, will prevent burr-combs. You say, then, 'What do you want an extra thickness for?' Because, on the Langstroth frames, a 5-16 top-bar, a $\frac{3}{8}$ —yes, even a $\frac{1}{2}$ -inch top-bar—will sag; and just as soon as the top-bar sags, the bee-space above is changed, and away go the burr-combs again. Let me repeat again: The extra thickness is intended to prevent sagging, and so preserve the very important factor—bee-space. You say, use folded tin bars. In our apiary, on L. frames it does not accomplish the result. In order to keep it from dropping out, the folded bar must be a little long. The result is, it has to crowd up the top-bar, or push down the bottom-bar a trifle. If the diagonal wires are drawn too tight, the trouble is aggravated. We have several thousand of such combs in our apiary, and there are very few of them indeed that have level top-bars. If you use a square frame, then a top-bar $\frac{3}{8}$ inch will probably answer; but even then, the folded tin bar is a thing the bees do not like. I have just been out in the apiary looking over some combs, and about half of them have the folded tin bar naked on one side, and the cells adjacent to it are practically useless, either for honey or for brood. Now, why not have these cells taken up by a top-bar that won't sag, and one that won't have to have a folded tin bar to keep things straight? We have made our top-bars for loose frames, for a year and a half back, 1-1-32 wide and $\frac{3}{8}$ thick. We do not make thick-top frames $\frac{7}{8}$ wide, because we know there would be burr-combs, sure. Our fixed frames have top-bars only $\frac{1}{8}$ thick and 1-1-32 wide. Top-bars to the loose frames might be also $\frac{1}{8}$ thick, but the lumber comes in such shape that it is about as cheap to make the extra $\frac{1}{4}$ inch as to make it only $\frac{1}{8}$. After all, friend F., after taking all the facts together, you see we do not disagree unless it is in the use of the folded tin bar and the extra thickness. I notice that you have adopted the Hoffman widened end. We tried them last year, but have abandoned them and now use the top-bars widened at the ends, as well as the end-bar, as Hoffman has them.] E. R. R."

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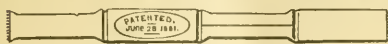
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1891

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In America, produced by crossing with queens from all the best breeders, and he is now prepared to furnish you with choice, large, yellow queens, reared in full stocks, at the following low prices :—

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Untested queens, each,75
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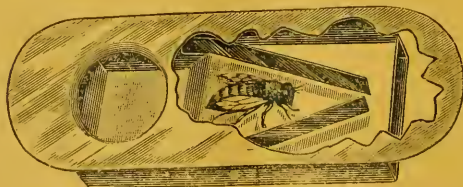
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One untested queen in August and Sep. 75 cts.

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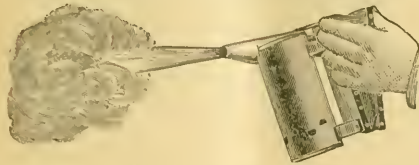
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BEE-KEEPERS' GUIDE. Revised, enlarged improved, illustrated. Every bee-keeper ought to have it. Price \$1.50. A. J. COOK, Agricultural College, Mich.

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Bingham Patent Smokers,

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THE BEST ON EARTH!

Doctor Smoker,	3½ inch,	\$2.00
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Is the best shipping and introducing cage in use. Only \$10.00 and \$20.00 per 1,000. Sample free to any queen breeder. We manufacture a full line of bee-keepers' supplies, and send catalogues free to any address.

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Job lot of Sections. \$2.00

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That Andrews man has just the bees,
That he manipulates with ease,
And will the most exacting please.

They're bred from pure and gentle stock,
With tempers even as a clock,
And seldom rise at any shock.

Now please remember, if you will,
These bees are bred at Patten's Mill,
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And if you want one, two, or more,
Send on your orders as before,
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At the appointed time.

Last August, tested queens, June 1st,	\$2.00
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- 1 untested Albino, \$1.00; six for \$5.00.
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Devoted to the Interests of Honey Producers.

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W. Z. HUTCHINSON, Editor & Prop.

VOL. IV. FLINT, MICHIGAN, JULY 10, 1891, NO. 7.

The special topic of this issue is

“Bee - Escapes.”

That of the next issue will be

“House Apiaries.”

Bee Escapes, their Origin, Requisites, Uses, Advantages and Improvements.

C. H. DIBBERN.

I AM GLAD the REVIEW has chosen this topic for the July issue, as it is one of the live subjects of our business. During the past few years I have experimented a great deal with escapes, and given much thought and study to the matter. For this reason I will presume that an article from me will be welcome.

I do not claim to have originated the idea of bee escapes, that is, to compel bees to desert the supers for the hive below. I think Mr. Reese is fairly entitled to this honor, although an escape for doing this very thing was patented more than thirty years ago. I do claim, however, that I was the first to make the idea practical, in my horizontal escape, and do away with the objectionable features of the Reese and other escapes. It is not my object, however, to quarrel about priority, as I am perfectly willing to let bee-keepers settle that question for themselves.

Now let us see what is really required in a perfect bee escape. First, we must have a board with which to cut off the supers from the hive. It has been suggested that there should be a rim of various dimensions immediately under the board, leaving a vacant space between it and the hive or super. This is not at all necessary, as I have proved by many experiments. What any one wants of such a space, for bees to cluster and build comb in, I cannot understand. It was this very difficulty with the Reese that led me to plan the horizontal escape. The escape board should have only $\frac{3}{8}$ bee space on each side of it when in place. Any escape that will not work in such a board is of no account. I use only a $\frac{1}{4}$ inch board, but I am inclined to think that a $\frac{3}{8}$ or $\frac{1}{2}$ would be better on some accounts. All seem to be pretty much agreed as to the kind of board required. I find many other uses for these boards. In summer they are used for inner covers to the honey cases and in winter they are covers to the hives in the cellar.

Since I first illustrated the horizontal escape in the *A. B. J.* for November 15, 1889, many forms of escapes have been brought out; some showing great ingenuity.

It may be asked, if this form of escape is of such importance, why was the one of thirty years ago lost sight of? Well, to judge from the cut published in *Gleanings*, it seems to have been a kind of trap door arrangement, and it is likely that the bees soon “fixed” the door with propolis. We must remember, too, that the surplus arrangements of those

times were mostly five-pound boxes—not very suitable for using bee escapes. Their time had not come. I wish to say right here that any escape with trap doors, springs or other working parts will always be a slow process and unsatisfactory in the long run.

The escape should be as plain as possible and instantly removable from the board. It should be provided with abundant ventilation so that in hot weather, with crowded hives, the bees in the supers will not smother and the honey be ruined. I would suggest that where escapes are defective in this respect, a few inch holes be bored through the board and covered with wire cloth. The escape should also be made so that all parts where it may become clogged with bees or drones may be seen from the top. I find that drones are particularly likely to die in escapes, even where there is plenty of room. Some of these things I have only lately learned, and I admit that some of my older escapes were defective in these respects. I am now experimenting with a very plain little escape that seems to answer all requirements. I shall give it a severe test upon strong colonies that are run for extracted honey, and when I know it is all right I will make it known, and there will be no "patent applied for" either.

As to the uses and advantages of escapes, little need be said. They will soon speak for themselves. Take an armful of escape boards with escapes in place, and place one by the side of each hive from which you wish to remove a case. If honey is still coming in, place an empty case beside it. Now have an assistant blow in a little smoke as you pry up a case and slip in the board and super in place, and you will be surprised to see how quickly the work is performed. Now, when, in a few hours, you can go and carry in all the honey, with no bees to bother with, you will be still more surprised that you could ever have put up with the old "smoke-out-brush-'em-off" plan.

Most of us have some defective bee spaces in which burr comb will be built, especially in good years. Now, in the "good old way" we would pry the case off and drip the honey over the hive and all over the apiary, making a sort of "free fight" for the bees and often a red hot time for ourselves. By the use of escapes there is not a particle of drip outside the hives, the bees will save all that drips in the hive and the supers will come off dry and clean. This is a *big* point.

There are yet other uses, aside from the removal of surplus, to which bee escapes may be put. I am now practicing what I call the bee escape system of swarming. The plan is to have the swarm upon the old stand, remove supers from the old to the new hive, put an escape on top and the old brood chamber on top of that, giving it a small entrance of its own. The bees constantly escape into the lower hive, and, on the seventh day, the old hive is given a new stand. Of course this is the Heddon idea divested of its bunglesome features. In connection with the self hiver, I am now practicing this system with great success.

As I have intimated, I think that a *perfect* bee escape is not yet in the market. I have a number of devices ready as soon as I can give them a severe test in actual use. I feel confident that I have the coming escape, but no matter, the person who can give us the simplest, cheapest and best device is the one we are looking for. The escape that we now have, however, will do the work, and we will make good use of it until a better is found.

MILAN, Ill.

June 30, 1891.

Great Value of Bee Escapes—Most of Them
Work Under Right Conditions—The
Porter the Best.

J. A. GREEN.

THE bee escape is the greatest of recent inventions in bee-keeping. Since the invention of comb foundation and the introduction of queer excluding metal nothing has been brought forward of greater practical value than the bee escape.

One of the greatest of labor savers, it will do more to simplify and cheapen the production of honey than anything brought forward in years. It is equally valuable in the production of comb and extracted honey. It is of greatest value in the out-apiary, and by its use I think even the house-apiary may be made a practical success.

I have just returned from an out-apiary run for extracted honey. Yesterday I put bee escapes under such supers as were full of sealed honey—the work of only a few minutes. To day all I had to do was to pick up those supers—not a *bee* in any of them except one—load them on my wagon and remove the escapes. In the one case the queen had found her way through the honey board and there was brood in the super.

Bees will not leave a super when there is brood or a queen in it, so that queen excluders are a necessity in producing extracted honey.

When removing a super an empty one should be given at the same time.

Bees will pass through the escape most readily when it is left on over night, especially when the nights are cool. Five or six hours through the day time, will usually get all, or nearly all the bees out.

When extracting supers are left this way over night the honey sometimes becomes too cold to extract well. Pile it up out in the sun or keep it for a time in a warm room.

Most of my honey is not extracted until after the rush of the honey-flow is over—sometimes not for two or three months after it is removed from the hives.

I have in use a number of devices. When everything is favorable they all work well.

The old style vertical cone escape is too bulky and sometimes the bees make trouble by clustering on the under side, building comb if left on too long.

The Porter spring escape, which I tried thoroughly last year, is the best. The bees sometimes find their way back through other kinds, but the Porter escape is positive in its action and they cannot get back through it.


Paint the edges of the escape boards some dark color, contrasting strongly with the white of the hives, so that you can see at a glance just where they are.

DAYTON, Ill.,

July 9, 1891.

History of Bee Escapes.

G. W. DEMAREE.

 FRIEND of mine has suggested that an article from my pen, on the history of bee escapes, would be read with interest, now since the device has been made a practical help in the apiary. There is some responsibility attached to such an undertaking because of the difficulty the historian finds in the way of doing justice to all.

The first hint we have of a "bee escape" as a nomenclature was printed on a device to permit bees to escape from a dark closet and prevent them from returning to carry away the honey. This device was invented by the writer of this article and exhibited by him at the National Convention, at Lexing-

ton, Ky., in 1881. Mention is made of this device in the report of the committee on exhibits as may be seen by referring to the report of the proceedings of the Convention as given in the *American Bee Journal* of that year.

The concern was made of wood and glass and was in the form of a V and had a spring at the apex for the bees to "escape." Afterward I substituted the wire cone; and in 1887 I began to experiment with an entirely new principle. This new principle consisted of a delicately adjusted trap door, or swinging gate in what I call a *chute*. This tiny swinging gate was so finely adjusted in the passage way or *chute* that the slightest touch from the inside would swing the under part of the trap door outward and let the bees "escape," but when pressure was brought to bear from without, a "stop" at the bottom of the *chute* prevented the door from swinging inwardly and no bee could force his way back.

When I was experimenting with this tiny swinging trap door, Mr. J. S. Reese, of Winchester, Ky., sent me his wire cloth device applied to a horizontal division board. Thus he became the first to apply the "bee escape" to a honey board, and is now the accepted father of the present, practical bee escape—one of the greatest helps known to modern bee culture.

With this new idea I revised my tiny trap door plan, and having adjusted it in a small tin *chute* so as to fit it in a honey board it became a perfect success.

While Reese and Dibbern were working to perfect their labyrinthin plan I was hopeful that they would succeed, till experience taught me that nothing but *mechanical force* would prevent bees from returning in numbers sufficient to annoy the apiarist. Now it seems a little singular, but the facts seem to warrant the conclusion, that Mr. Porter was at the same time experimenting with his delicately adjusted spring device, which he has patented and therefore brought into general notice.

Some friend sent me two of Porter's escapes and I immediately adjusted them in suitably made honey boards and have given them the severest trial, right beside my swinging door device, and I have no hesitation in saying that nothing can be more simple, and few devices will ever be more efficient in performance than the trembling little springs which constitute the Porter Bee Escape. But it is my opinion it will meet a

rival in the subtle, swinging trap door, when I have procured machinery that will make the little gates perfect.

Now, in conclusion, I have to say that from the Reese labyrinthin idea, the bee escapes of to-day, and of the future are, and will be, a progression of ideas.

CHRISTIANSBURG, Ky.. July 10, 1891.

Antiquity of Bee Escapes.—Advice in Regard to Their Use.

H. L. JEFFREY.

SEE that you now have Bee-Escapes on the brain, and you very honestly let the fever have its full raving in your first two paragraphs on page 156. The first paragraph was at its full height and the second showed the result of a weakened and spent force and returning rationality.

I have seen quite a number of just such cases as you describe as yours, I have told dozens of bee-keepers about the escapes and quite often met the reply: "Do you think us fools or are you lying to us?" Right here I must say that it is easier to make the majority of people raving mad or set them thinking that you are lying to them by telling the exact truth and the whole of it, than by any other method, and I have many times enjoyed myself in that way and then watched for the chance to hector some one concerning the results. For three or four years I used the bee-escape as a means of that kind of enjoyment.

The first bee-escape I ever saw was the result of a little opposition in that line. One John H. Tanner, helping me one day in 1877 when I was taking off some of the old style of sections, asked if "the sections could not be put into a case like a fly trap made wrong end first and attached to a hive so that the bees could go into the hive out of the sections and not get back upon the honey again, and if it would not work?" I dared him to try it and for some days hectored him about it. I often congratulated him on making his everlasting fortune and such like compliments, knowing that he would, if really stirred up, produce something that would lead to a practical apparatus, and out of an old cottage fly trap he made the first successful apparatus that I ever saw. I tested it in 1877 and used it until I was satisfied of its usefulness, but before I was allowed to examine into its make, yes, before I was really informed of its existence, I was bound by

promise not to write to any one about it and I kept my promise faithfully until now. It worked perfectly; and parts, if not the whole, of the original escape are in my possession. In principle the Reese escape is the same. For six or seven years quite a number of inventive geniuses have made various forms of escapes, but they all had to go back to the original Tanner principle. The Porter plan and principle have been used more than six years ago, but is not equal to the Reese, and I do not believe that there ever will be one that is its equal. I have tried dozens of modifications of escapes but the first Tanner principles are all in all and perfect, and I will enumerate some of the reasons.

If a single cone is used the bees will feed through and then will work back and forth. If there is but little space between the board that holds the cones and the hive or sections below they will not go down so readily, and they will soon learn the way back and forth to the crate of sections.

Your advice to place a case of new sections beneath the escape when putting it on would be in error just often enough so that I would not advise it. A new case of sections placed on the top is quite often deserted, thereby causing a crowding of bees in the brood chamber and either swarming or laziness would be the result just often enough to be perplexing and expensive. To remedy that trouble use a deep space of not less than 4 inches or even 5 or 6 inches under the escape board and let the bees have it from 1 to 3 days. They will hang in there quietly, (I like 2 or 3 days better than 1) will secrete some wax and will be in fine condition for a case of sections and in no way will it prevent them from finishing up those they are already working in. On the 2nd, 3rd or 4th day as is convenient set a crate of empty sections on a hive body or something near the hive with the escape on, take the escape carefully from the hive, strike it heavily down upon the section case, then set both back upon the hive. The bees are jarred into the sections and go to work immediately building comb, when they would otherwise have been *idling* around for days or perhaps not doing anything at all in them.

Now, a word about the rapid using of the escapes. You say in your leader that "two men ought to place escapes in position at the rate of four a minute." Not a reasonable beekeeper would ever expect 240 escapes per hour as the work of two men. 40

would satisfy me and I doubt that that many would be work well done all day long. I do not wish to discourage the inventive genius, because, from the many but few will be chosen or stand the test of time and experience, but the Reese escape in principle and form is *the* one. Neither do I wish to detract from Mr. Reese the honor and credit due to him by writing the truth of what I do know and can prove to be true, but I write to show how slowly the finest and most valuable things develop. Through the modesty of the inventor an invention may be known only locally and the first case is a verification of the second and *vice versa*.

You say you have not tried the escapes. I have used them by the dozen, and find it pleasant to go out late in the afternoon, separate two crates, place the escape between them, and, when the escape is properly adjusted, raise one end of the board covering the sections, as you advise, give the bees a few deluging puffs of smoke then shut it down and in the morning go out with my wheel barrow for my crates of honey.

When using the escapes *always* give them plenty of space beneath; always give the bees time enough, and always take time to do the job and do it well and leave no cracks. Hurried work is always slighted somewhere. Bro. W. Z. H., don't, with a helper, put on four escapes per minute; just take four minutes to put on one. Such rapid work might surprise the bees and arrest all work for the day.

The full appreciation of the escape is at the stinging part of the season and when they sharply and pointedly insinuate "better leave us alone you honey thief." I can handle more honey alone with 20 escapes properly made, than I can with a helper, without the escapes.

WOODBURY, Conn., July 1st, 1891.

Those who Have Used the Porter Escape and What They Say.

R. & E. C. PORTER.

YOUR postal of yesterday at hand. I think Mr. John S. Reese, of Winchester, Ky., if requested, would give you an article on escapes in general and ours in particular and he may do so without being asked. He has tested our escapes thoroughly and gives them his hearty indorsement. On June 8th he writes us: "Having given the escapes a practical test it

gives me great pleasure to say that they are absolutely perfect, and beyond all question of doubt, will do their work under all circumstances. I can not tolerate my own make any more after using yours, and I enclose \$2 for as many as this amount will buy. I will write an article for *Gleanings* and give the facts as I know them." Since our escapes have been advertised we have received orders for something more than 2,000. Many who ordered but one as a sample to test have ordered more—all the way from 5 to 40 each for their own use. But very few of these, however, are beekeepers who write for the journals. So far we have not received a word of complaint from our customers but many of praise. They will be handled by the leading supply dealers next year. We did not expect to sell many, if any, to supply dealers this year but have already received orders from Root, Kretzmer, Tinker, Cary, the Falconer, Co. and a number of others.

I think J. A. Green has tested our escapes quite thoroughly and could probably give you a good article.

"Rambler" also would probably do the same thing, if he hasn't rambled too far away.

Some time ago we sent a half gross of escapes to A. N. Draper, of Upper Alton, Ill. and he probably knows something about them by this time.

We enclose a copy of a letter received from J. F. McIntyre which you are at liberty to use as you wish. Will write you some more when we get time.

FILLMORE, Cal., June 23rd, 1894.

R. & E. C. PORTER,

MESSRS. — LEWISTOWN, Ill.

I have tried your bee-escapes under various conditions to see what they would do and will now submit my report. In the first place your escape is far superior to any other bee-escape which I have tried and I have tried several. Being positive in its action it will finally clear the bees out of any super no matter how large. I find that the length of time taken to clear a super of bees depends on the number and kind of bees and the size of the super. A T super full of comb honey will be cleared of bees in about 5 hours. Extracting supers with small frames like Heddon's or Dr. Tinker's are cleared nearly as soon, say 6 hours; with a full depth, 10-frame Langstroth super it takes much longer, from 12 to 24 hours,

owing to the number of bees in the super. The bees seem to be more contented to stay in a large super or else they get discouraged trying to find the way out and give it up. Our nights are always cool here no matter how hot it is in the day time, and if the escapes have to be left on over night the honey gets cold and does not extract so well. I shall use your escape to take off what comb honey I produce and brush the bees from my extracting combs, as before, while I use Langstroth supers. Very Truly Yours,

J. F. McINTYRE,

P. S.—You may send this report to *Gleanings* or use it as you please.

Origin of the Reese Escape.—The Porter the Acme of Escapes.—Don't Use Smoke, but Shade the Supers.

JNO. S. REESE.

SOME plan of getting the bees away from the honey, or honey away from the bees, without having a big fuss about it, was one of the first important questions with the writer soon after he began to keep bees. The wire cloth, cone fly trap principle flashed into his mind one day while trying to take from the hive a case of sections, and in a very few minutes a cone was formed and fastened around a hole in a thin board and placed as a movable bottom, in a T super. The next morning there were not more than a few dozen bees left in the super, and they were not disposed to fight. A longer and slenderer cone was afterwards made and attached to a board the size of the super with a bee space above and below, and this cone was so placed on the board that it would fit into the lower case of sections when one section was removed. This same board works nicely to take off the last case or super by placing the empty super on next to the brood chamber, then the escape board, and then the super with bees and honey.

The vertical cone escape is simple, cheap, easy to make, not patented, and works as well under all circumstances as any of the horizontal escapes that have been made or used at the Highland apiary, except the Porter spring, which is certainly the acme of escapes, and will take precedence in said apiary, where a number of them have been in practical use all this season.

Escapes, like perforated zinc, will be applied in many ways, such as changing the

bees from extracting cases to cases of sections at a proper time to get choice comb honey, and other uses which lack of space forbids mention.

The bee keeper who does not use escapes at this "stage of the game" might well be classed with the men who do not use foundation or perforated zinc.

Do not use smoke to hurry the bees down through the escape, but use instead a little patience and a good deal of shade over the surplus cases, as the heat of the sun might melt down your choice honey when the bees have unwillingly deserted it and cannot ventilate it.

WINCHESTER, Ky.,

July 6th, 1891.

Moderate Increase with Divisible Brood Chamber Hives.—Handling Hives Instead of Combs.

B. TAYLOR.

IN MY former article I gave my method of managing the small hives when no increase is desired; in this I will explain my practice when a moderate increase is desired. A small increase is a necessity, as, with the most skillful management, a small loss will occur during the year and it must be made good.

Up to swarming time, I proceed the same as explained in my first article. Near swarming time I determine the number of new colonies that I will make and then prepare to provide suitable young queens for them. In choosing material for these queens I follow Nature's law of "Natural Selection." The swarm that, under average treatment, becomes powerful and casts an early swarm holds Nature's certificate of superiority; so I take a suitable number of the first swarms to provide the queens needed and proceed as follows: The new swarms is hived with that section of the old swarm that contains no queens cells, and is placed upon a new stand. The top section of brood containing the queen cells is left on the old stand. This gives it an abundance of bees to insure the queens being kept properly warm and perfectly developed. The swarms that come after these, from other colonies, are hived with one section of the old hive and one empty section containing foundation or starters and are placed upon the old stand. The other section of the old hive is placed upon a new stand. This management is continued until the number of swarms desired is pro-

vided with one section each on a new stand. As the queen cells provided are about to hatch, I give one good cell to each of the sections on the new stands, placing the cells in plain sight, under the onameled cloths, between the combs on top. I pay no attention to the queen cells already in the combs below, as the cell given will hatch first by several days and the first queen out will attend to the other cells. In three or four days after the queen is out I examine the combs until I find some of the first queen cells destroyed which I accept as proof that the choice cell is all right and make no further search until the queen should be laying, when I look again to be sure that all is well.

As the bees continue to swarm, the one section of brood left from each swarm is placed upon one of the sections containing a young queen, until each has a full hive of two sections. A queen excluding honey board is now placed upon each, and upon this is set the section of brood left from each swarm, care being taken to destroy the queen cells in them. On top of these swarms I often pile up these sections of brood until they are five and six high. In a few days such colonies are the most powerful in the yard; and by removing the hives above the honey boards, when all the brood has hatched, shaking the bees from them at the entrance below, and putting on supers, first class results in comb honey may be secured. I usually leave the hives piled up just as they were placed to be filled with honey to be extracted or saved for feeding as may be desired.

Who says now that we cannot make the bees, left in the old hive after swarming, productive of honey? I have frequently found four to six hives (sections) solid full of honey in the fall and a first class colony in the hive below the queen excluder.

I see in *Gleanings* for May 1st, page 356, that Geo. F. Robbins tries to explain nearly the same system that I have outlined in this article; but with the old-fashioned, full-brood-chamber hives. I have no doubt that he is a skillful apiarist, yet how clumsy his management seems to an accustomed to using small, divisible-brood-chamber hives. My management may seem tedious and fussy on account of my poor way of explaining it, but in all this work, with an apiary of 160 colonies, spring count, there is no necessity of lifting a *single comb*, all the work being done by handling hives. After

an experience of twenty-five years with small, divisible - brood - chamber hives I could no more think of giving them up than cities could give up their street cars and go back to hacks and coaches. In another article I will give my method where large increase is desirable.

By the way, I see that Bro. Root is beginning to talk of the necessity of handling hives instead of frames; verily, the world does move. As soon as the importance of handling hives instead of frames is fully recognized, the full brood chamber is doomed.

FORESTVILLE, Minn.

May 6, 1891.

Bee-Escapes a Success With Shallow Supers.

J. F. M'INTYRE.

LAST SEASON, to have it just right, I purchased one of Dibbern's four cornered escapes, and I made several double cone Reese escapes, putting from one to four escapes in each board. In all my experiments with escapes I always put a super full of empty comb below the escape, to give room for the bees to get out of the super above the escape. Early in the season the bees would nearly all get out of the supers in about eight hours, or during the night, but the supers were not full of bees or honey. When we were ready to extract I thought I would try them again, so I placed them under some supers that were full of bees and honey. They were full depth Langstroth supers, fourteen inches wide inside. I examined them every day for three days. At the end of that time the supers were still about half full of bees, so I took the escapes off in disgust and put them away. This spring I received three escapes from R. & E. C. Porter. I was pleased with the positive principle of these escapes and tried them in various ways to find out something definite as to the time it would take to empty different sized supers. The single tier section supers were always emptied first; average time five hours.

I consider this escape thoroughly practical for removing comb honey; saving perhaps two-thirds of the work, to say nothing of stings, robbers and other disagreeable things connected with the old way. The small extracting supers come next, taking about six hours on the average to clear the bees out. It may be practical to use these escapes in connection with small frames and

supers in working for extracted honey, especially when one is not obliged to extract from morning until night. On the full depth, ten frame, Langstroth supers, they were not so successful; when the supers were full of bees it took about twenty-four hours for all the bees to find their way out. The honey gets cold during the night here and does not extract well the next day; besides those large supers are not easy to handle. I did not try smoking nearly all the bees out of the super before putting the escape on; I think that would be more work than brushing the bees off in the old way.

FILLMORE, Cal.,

July 8, 1891.

Praise for the New Book.—The Value of Swarm Catchers.

B. TAYLOR.

MANY thanks for the new book. After a short examination, I said to a boy who is learning the trade, "You just learn to practice what this little book teaches, and you will be master of practical honey producing, so far as present knowledge goes." I regard it as the best instruction book yet published for the real honey producer.

Terrors of swarming time are changed to a pleasant pastime. Yesterday I left the yard for a day's rest, and on returning found the two boys left in charge had captured and nicely hived seven swarms. Today, so far, we have taken four, and I am now able to declare that all I said about it being perfect is fully demonstrated by practice. I have made some very small changes from the one I sent you as I informed you by letter.

The three last days of June were so cold here that bees scarcely flew at all. July 1st, at ten o'clock, the sun showed his face, and the swarms rushed out like a Johnstown flood. Swarm catchers in hand we moved "immediately upon their works;" and after a very pleasant and exciting contest we secured an "unconditional surrender." We secured and hived without loss, or a single mix, every swarm; and during the four first days of this month we have caught and hived forty-five swarms without a single failure. During the season we caught and hived about ninety-five swarms, with an ease for muscles and nerves hitherto unknown. A bright boy or girl of ten years can use the catchers as easily as the strongest man, and

I assert that they are a complete cure for the hardest place in managing a large apiary. I believe I have saved from \$10 to \$25 a day for the last four days in direct loss, besides the wear and tear on ourselves. I can handle 100 swarms easier with them than twenty-five without. A word of prophesy and I am done. Any kind of machine that catches the queen and allows the bees to fly out, is a fraud against bee keepers.

FORESTVILLE, MINN.,

July 4th, 1891.

Introducing Virgin Queens—Doubts About the Influence of Scent—Escort Bees Ought to be Left Out.

RAMBLER.

UPON reading over your leader on the Introduction of Queens, I noticed one omission, the introduction of virgin queens, and upon that point I shall feel perfectly free to write.

The virgin is the first one we have to deal with in the rearing of queens, while many breeders traffic to quite an extent in this species of live stock. As to whether it is advisable to put these queens upon the market I shall not at present consider, except to say that such queens, unless the purchaser is quite sure of his drones, are quite sure to raise an inferior strain of bees, in relation to color if not in other respects.

The introduction of a virgin queen to a full colony is quite difficult. Although it can be done it is preferable to introduce to a nucleus. A method not sure every time is to cage with a good supply of candy in the entrance to the cage. The entrance ought to be longer than usual, then by the time the bees eat out the candy and reach the queen she is treated with the respect due to her station. Another sure way to introduce to a nucleus is with tobacco smoke. The bees are stupefied and drop down upon the bottom board, and the virgin is then dropped in with them. When consciousness returns, the queen is accepted without complaint. This is the method that Mr. Alley employs when introducing virgin queens.

As an experiment I have successfully introduced a virgin queen by removing the occupant from an unhatched queen cell, tucking the virgin down into the cell and plugging up the opening at the rear of the cell where the queen was put in. As she has gnawed out of one cell she is an expert, and soon has another "borning" into the little

bee world, to the evident delight of its citizens. The same plan has been practiced by Simmins with this modification, the Doolittle queen cell cage, with a piece of foundation at the entrance, was used.

In the introduction of fertile queens it would seem that the various methods had been before the public so long that nothing more could be said upon the subject, but the continual unrest shows that more perfect methods are needed. It seems that nearly all methods are too wasteful of time for this fast age. To wait 72, 36, or even 24 hours, means the loss of several thousand bees, and the fraternity will not be satisfied until we reach the perfection of introduction—immediately.

The nearest and safest method yet practiced is to unqueen the colony at any time during the day, then in the evening turn back a corner of the quilt, and, with a puff of smoke, send in the queen. Simmins and I have practiced this with complete success.

As to all ordinary methods, long or short, in the honey flow or out, there is one to which I have never taken kindly, and that is to roll the queen in honey. A thorough daubing with some kinds of honey results disastrously to the queen by closing the breathing spiracles.

One point touched upon and always referred to by bee keepers, is the scent. "The queen must get the same scent as the colony." How do we know it is the scent? If a bee meets another bee, or a queen, the acquaintance is made by touching antennæ, and, as I understand, the point of the antennæ is only a feeling instrument while the sense of smell or scent is further up on said organ. Now, it appears to me to be the same as when several ladies meet, the delicious practice of kissing commences and it is all harmonious until something objectionable comes up. If a male should kiss the prettiest woman what a commotion there would be—and a lawsuit. So in the bee hive, it is when this delicious intercourse, which is neither smell or mere feeling, is interrupted, that the balling commences.

If a queen is to be introduced with a cage, I prefer a simple, flat cage, that will hang between the combs; and there is one vital point not touched upon in the leader: What is to be done with the escort bees? Any one would suppose from reading the leader that these escort bees were to be introduced with the queen. I always remove them and have

only the queen in the cage, for I am sure the escort bees endanger the life of the queen upon introduction, either by long or short methods.

Another point that has come up in my experience is, allowing a bee to enter the cage through a small opening, *a la* Morrison. I have seen such bees stung to death immediately by the queen. I wish also to put in a demurrer against Doolittle's invariable box method. I have given such box of bees a queen and jolted them over a road for seven miles from an out apiary and then had them set to and ball the queen. Therefore, to sum up the matter, no set rules can be given to the fraternity for the introduction of queens at all times and under all circumstances.

Three Methods of Fighting Adulteration.

R. L. TAYLOR.

WHERE are three ways in which it might be reasonably suggested we can deal with the fact of the adulteration of honey.

1st. By letting it alone so far as open hostility is concerned.

2nd. By actively prosecuting the retail vendors of adulterated honey.

3rd. By taking active steps for the detection and suppression of all concerns that concoct and send out adulterated honey to retailers under false labels.

But it is well to understand that it is an exceedingly difficult matter to deal with in the way of legal prosecution. It may be claimed to be somewhat analagous with the business of counterfeiting money, but there are wide differences between the two so far as the ease of legal suppression is concerned. The feelings, convictions and idiosyncracies of the public must be considered, because successful prosecution can be had only through juries and jurors who come from the public. All honest people, yes, and most of the dishonest people, have an ineradicable conviction that the emitting of counterfeit money is a direct menace to their own financial interests, while it brings no honest addition to the wealth, support or comfort of any individual, and so convictions readily follow where evidence is to be had.

How different is the case with the adulteration of honey. The public cares nothing about it. Everybody uses butter, but how little do the people care about the sale of

oleomargarine. But when not one in a hundred use honey with any regularity, what can be expected when it is not claimed that any one is greatly injured except it be the bee keeper, and that only in the cheapening of his product so that those who want pure honey may get it all the cheaper. With the public it is a mere question of which is the sharper of two classes of producers. The people have no sympathy to expend on bee keepers. During the last few months in attempting to secure legislation asked for by bee keepers I have had abundant opportunity to discover the illy concealed contempt for those who get their profits by pasturing their bees on the fields of others.

In view of the situation I have described, together with the fact that it is confessedly impossible to determine with certainty by any known method whether a given sample is pure honey or not, I think the plan of prosecuting retail vendors of adulterated honey for the purpose of suppressing the business, should be dismissed as not promising sufficient success to warrant the effort.

The third plan stands on a somewhat different footing. With stringent laws against adulteration and false labeling, or against the latter alone, perhaps something could be done toward the legal suppression of the business. Here it would be possible to get evidence of actual adulteration without the element of uncertainty attending chemical analysis in such cases, and doubtless success in suppressing the business could be attained in proportion to the amount of settled determination enlisted in the prosecution.

But, after all, I am inclined to favor the first plan; that is, of fighting the base mixtures with pure honey instead of legal writs. I do not look upon the fight as a hopeless one. Everything is in our favor. The pure article is much superior, everybody prefers it, and everyone sufficiently informed with relation to the matter need have no difficulty in obtaining it. It follows that the only thing necessary is the dissemination of information among the consumers, and the intelligent apiarist need not be told how this is to be done. It is only necessary to say further that I think no evil can come from admitting that honey has been adulterated and will continue to be. Everybody knows that what is desirable is imitated if it can be, so few will be surprised at the admission or lost as purchasers of honey.

LAPPEER, MICH.,

July 3rd, 1891.

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. ~~50~~ The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, JULY 10, 1891.

HONEY DEW is being gathered in large quantities. How would it answer for making honey jumbles? Or isn't it fit for even that?

CARNIOLANS crossed with Italians are good workers but I find them unpleasant to handle. I have one colony that objects even to having anybody come near the hive.

OLD SUBSCRIBERS can have their subscriptions extended one year and the new book, "Advanced Bee Culture," sent for \$1.25. Several have written in regard to this.

THOS. G. NEWMAN & SON have moved again; this time to more commodious quarters—199, 201 and 203 East Randolph Street. This more than doubles their floor space, of which they now have over 10,000 square feet. They are now in the third story instead of the fifth as formerly.

THE DETROIT EXPOSITION opens August 25, closes September 4. As the time draws near again I am greatly tempted to make an exhibit—presume I shall "go" as usual. M. H. Hunt writes that he will put up a \$250 building on the grounds. H. D. Cutting will be Superintendent again. For premium list address Geo. M. Savage, No. 7 Merrill Block, Detroit, Mich.

"HANDSOMEST AND ONE OF THE BEST."

A lady, bee-keeping friend of mine, upon presenting me to an acquaintance, remarked that "Mr. Hutchinson is the editor of the handsomest and one of the best bee journals published." Of course I agreed with her, but a little bird has whispered in my ear that one of the other journals is having a neat engraving made for the front page of

its cover. If this thing keeps on, no industry will be able to boast of *much* handsomer journals than that of bee culture.

A COMPLETE SURPRISE.

Upon receipt of the June REVIEW Ernest Root wrote me as follows:

"I wish to tender you my thanks for the very neat biographical sketch that appears in your last issue. It was a complete surprise to me and I cannot imagine how the folks here at home got ahead of me. I suppose you are responsible for the heading 'A Modest Man.' I don't believe it is true but it pleased me all the same. If there is anything that comes near being an abomination in society it is a swelled head on young shoulders."

A VISIT FROM "RAMBLER."

I had been working hard to get things in readiness for moving the office into another part of the house where there would be less verandah and trees, and, consequently, more light, and was very tired. I had gone to bed early and Mrs. Hutchinson was about to follow, when "ching!" "ching!" went the door bell. Wife went to the door and was met by the inquiry: "Does W. Z. Hutchinson live here?"

"Yes, but he has been working hard all day and has just gone to bed."

"Well, I hardly know whether to come in, or go back down town."

"Let's see, what's the name?"

"Martin."

"Why, come in, *of course*."

So the "grip" containing that ever present "Hawkeye" was set down inside the hall door and "ye editor" was invited to "get up and see if you know this man."

Yes, I knew him, as I had seen his picture in *Gleanings* and had also come into possession of his photograph.

Well, we talked bees and Rambler told of places he had visited, until Mrs. Hutchinson, knowing that late hours do not agree with her husband, sent us off to bed.

The next day we went over to Lapeer, expecting to find R. L. Taylor at home, but were disappointed. We poked about and examined the usual "traps" that will accumulate where there is an apiary. Two or three "shots" were taken at the apiary, *a la* "you press the button, we do the rest,"

only I believe Rambler does the "rest," (develops the picture) himself.

Rambler went on to Lansing, from there to Dowagiac, then to Chicago, and then he will probably make few if any more stops until he reaches Sacramento, California.

He does not expect to engage in the production of honey; he has a cousin there interested in a berry, or fruit box, factory, and there is a probability that the manufacture of some lines of bee keepers' supplies will be added. If this is done, Rambler will have charge of this department and will also handle Root's goods. This will probably prove a good thing to all concerned.

Rambler will write up and illustrate, for *Gleanings*, this last great ramble of his, and those who have read his other rambles need not be told whether or not it will be interesting.

I have had so much to say in regard to continuous advertising, that I cannot forbear repeating a remark that Rambler repeated to me. When visiting the W. T. Falconer Co., its manager said that he was greatly astonished at the folly exhibited by some of the manufacturers of and dealers in apiarian goods, in that they advertised only during the *selling time* of the year—about three months. The Falconer Co. has found it advisable to advertise continuously—that was the way in which they had built up their enormous business.

THE MULTIPLICATION OF BEE JOURNALS.

It has now been so long since a bee journal has been born, that I think I may venture a few remarks upon this subject without fear that any editor will imagine that I have his journal in mind.

In the first place I would remark that this is a free country, and every one who wishes to publish a bee journal has a perfect legal right to carry out his wishes. It may not be pleasant for the editor of some old, established journal to have some new-born rival outstrip his paper in usefulness, but one of Nature's laws is that the fittest shall survive. So long as a journal fills a niche all its own, there is no fear of rivals; but if there is an "opening" left, in comes a rival, and then the best man wins. I have no sympathy with the idea that new bee journals ought not to be started because they may draw some patronage from already established journals. Existing journals will not lose

patronage by the advent of a rival, unless said rival is more deserving of said patronage. Without the least thought of boasting I can honestly say that, since beginning the publication of the REVIEW, not a bee journal, old or new, has so much as thrown the *shadow* of a jealous pang across my breast. I have no reason for jealousy. I doubt if the journals already in existence when the REVIEW made its *debut*, or those that have since "come upon the carpet" have robbed it of a single subscriber.

And yet, how few are the bee journals started within the last half a dozen years that the laying of "Vol. I, No. 1," upon my desk has aroused other feelings than those of sorrow and sympathy. The fact that they could not live was too apparent. They filled no niche. Why they were started was an enigma. The field that they attempted to occupy was already filled with laborers who were doing the work in a better manner than the new comer could ever hope to do it. The paper, the ink, the press work, the type, the "make up," the subject matter, and, above all, the editorial *spirit* that prevades the pages of a journal, all combine to tell the practical eye whether or no the new venture will be a success. Some journals now dead, beamed with hopeful promises in the earlier issues. Their editors were full of enthusiasm, bound to make a success, and the result of this condition showed most clearly upon the pages they sent forth. But the starting of a bee journal, and the building of it up into a paying business, is a slow process: one requiring pluck, energy, determination, skill of the *right kind* and *money*. When but few subscribers come in and advertising patronage is meager, there seems to be a disposition to retrench expenses; to use poorer paper and ink, to pay less attention to the securing of first class correspondence, and the discouraged state of mind into which the editor falls is reflected upon his paper. When a paper reaches this stage it is practically dead; and everybody knows it except the poor fellow who is kicking against fate. Nine-tenths of the bee journals have been started with no conception of the requirements of successful journalism, of the downright hard work, both mental and physical, of the time, patience, perseverance, skill and money required. Many bee journals have been started from unwise motives. Perhaps a man already in possession of a printing office starts a bee journal because he can do

the printing so cheaply. Unless he has the stuff in him from which apicultural editors are formed, such a venture is so much capital and labor wasted. Another journal is started that its proprietor may thereby advertise his business. Unless he can make a journal that would be a success aside from its aid as an advertiser, said proprietor will find said advertising the most expensive he ever bought. Other journals are started with a view to catering to the needs of a single State or locality. From the very nature of things, such journals cannot succeed. There are not enough bee keepers in any one State, or two or three States, that will subscribe for a bee journal, to enable a "local" journal to succeed. Neither can a journal devoted to one single branch of bee keeping be successful. To succeed, a journal must be broad in its scope, and gather its subscribers from every State in the Union: its editor must have a thorough knowledge of bee-keeping and be well and favorably known. There is more in this last point than many would-be editors dream. Lastly, bee journals fail because they are not *good enough*. Instead of seeking for new fields, where ordinary ability might hope to succeed, they enter fields already occupied and then fall behind in the competitive race. He who strikes out in a new path has a great advantage over those who attempt to follow. I should never have attempted the publication of a bee journal upon the same plans as those already in practice.

I presume but few will realize the amount of courage required to enable the editor of a bee journal to write as I have done, but, considering the mania there has been for starting bee journals, it seems as though something ought to be said. Before a man starts a bee journal let him search diligently for a new field. Failing to find one, let him be *sure* that he can out-do some of the old journals before spending time and money in entering a profession in which will be found stings as well as honey.

MISGUIDED CRITICISM.

To review a book fairly and honestly, to point out its faults and foibles, to enumerate its virtues, to show where it is lacking and where it is overflowing with wit and wisdom, to do all this fearlessly, yet in such an honorable, straight forward, manly way that even the Author will admit that it is fairly done, is a

difficult and delicate task. I am reminded of all this by reading, in the *Bee-Keepers' Guide*, the beginning of what promises to be an exhaustive review of the new book, "Advanced Bee Culture." If Bro. Hill would do this work thoroughly and fairly, it would be of benefit to the Author, to the reviewer and to his readers; but if what he has already published is a specimen of what is to follow, he will be doing scanty justice to himself or his task. I know it is one of the unwritten laws of authorship that an author must suffer and be silent, but we bee-keepers seem to be a law unto ourselves, and quickly fly to the rescue, upon an attempt to mangle our mental offspring. Let no one imagine that I care only for praises, I court the fullest and most severe criticism, but I wish it *fairly* done.

To illustrate the fault of which I complain, I will give an extract from Bro. Hill's review. In speaking of the first chapter, "The care of Bees in Winter," he, among other things, says:

"We have reviewed it carefully and fail to find anything in it either advanced or new and the good things practical and sensible are entirely omitted. The subject is nicely treated from a literary or rhetorical point of view, but is of no practical value as an instructor for bee-keepers because it lacks detail and system. A greater part of the article is made up of how to do things wrong instead of telling how to feed and prepare bees for winter at the proper time. He takes so much space telling how to do the work out of season in a disagreeable, impractical way, and at times is apt to leave the impression with the reader that neglected bees can be just as well cared for in January as in September and October. It looks to us as if a book calculated to teach advanced bee-culture should tell how and when to do the work, and not devote two-thirds of its space telling how to patch up old sores caused by neglect of slow, afternoon bee-keepers."

The very first paragraph in this chapter under criticism reads as follows:

"If they were properly prepared for winter the preceding autumn, given plenty of good stores, properly protected out of doors, or placed in a cellar or other repository having the proper temperature, and precautions taken against depredations by mice, bees require almost no care in winter."

Of this Mr. Hill takes no notice.

Under the heading of "The Care of Bees in Winter" it would not have been appropriate to have described in detail the treatment they *ought* to have had the previous season. This was done elsewhere under appropriate headings. and, in fairness, Mr. Hill ought to have mentioned this. If he did not approve

of the methods of preparation advised it would have been entirely proper to have said as much, giving his reasons—that would have been fair criticism.

There is no use in discussing here why bees are sometimes short of stores in winter, why the cellar may not afford sufficient protection in severe weather, why it may sometimes become infested with mice, etc., etc., the fact remains that these conditions are sometimes found, and the aim of the chapter is to tell how best to remove these difficulties when they *are* encountered. Had Mr. Hill confined himself to the praise or condemnation of the methods adopted, giving reasons, it would have been fair criticism and called for no protest.

In justice to Mr. Hill I will say that *some* of his criticisms are fair. By this I mean that his views differ from mine, and I *may* publish his entire article in the August Review and reply at length upon the points where we differ. Go on with the review of the book, Bro. Hill, only be fair about it, and I shall really enjoy having a discussion with you.

BEE ESCAPES AND WHAT MAY BE DONE WITH THEM.

Other men besides John S. Reese have invented bee escapes. They invented them before he did, but they did not discover their value: or, discovering it, kept that knowledge to themselves. To the man who invents and *makes known* belongs the honor. Mr. Reese is the one to whom modern bee culture is indebted for its bee escape. Mr. Dibbern improved it but it was still imperfect in that bees *could* and sometimes *did* find their way back. Mr. Porter then developed the spring principle which seems to answer every requirement. This number of the Review contains more unqualified praise of the Porter spring bee escape than any other issue has ever contained of any other implement, but, so long as it is deserved, who cares? That's what these discussions are for, to try and decide what implement or method is best, and the clearer the decision the greater the satisfaction.

To get "the honey away from the bees or the bees away from the honey" with but little labor and not many stings, is really more than it seems to be at first. And that is not all. The bees are not disturbed at their labors, there is no annoyance from robbers, if there are any "burr" combs built between

the supers there is no drip from them, as the "muss" caused by their breakage is all cleaned up before it is time to remove the supers and there is no gnawing of holes into the cappings as sometimes happens when honey is removed by the old methods after the harvest is over. Possibly, too, escapes will allow bees to be successfully and pleasantly managed in house apiaries.

One of the correspondents, Mr. H. L. Jeffrey, says that my advice to place a case of new sections beneath the escape is not always advisable. He says that a new case of sections placed on top is quite often deserted, thereby causing a crowding of the bees in the brood chamber and either swarming or laziness results. Friend Jeffrey has misunderstood me. I did not advise putting the new super on top. Here is what I said: "Bees pass down through an escape much more readily when there is plenty of room in the hive or supers below. Usually, in the working season, when a case of honey is ready to come off, it is well to put on another super. When such is the case, the new super should be given at the time the escape is put in place, as this gives room for the bees to 'escape' into." Nothing is said about putting the new case on top. As a matter of fact it would be put at the bottom, unless near the end of the season (see extract from *C. B. J.* in the Extracted Department). In other words, the supers would be manipulated *exactly* as they would if no escapes were used. All the difference being that, instead of smoking, brushing, blowing and shaking out most of the bees and carrying the stragglers into the honey house, the bee escape is slipped in place when a case is ready to come off, and when the bees are out the honey is taken away. Mr. Jeffrey objects to putting a case of sections just beneath the escape, but would leave an *empty space* there, equal to a case of sections, for the bees to cluster in. Why not let them cluster in a case of sections? If the case of sections is placed next the brood nest, when honey is coming in, the bees will not only cluster in it, but will at once commence work in the sections.

Mr. Jeffrey also objects to escapes being put in place so rapidly as four per minute. If the supers and their contents are to be examined to determine whether an escape is needed, and, if so, where it is needed, such rapid work might not be possible; perhaps a minute to each hive might be needed.

When I said "four a minute for two men" I had in mind simply the placing in position of the escapes after the locations where they were needed had already been decided upon.

If there is anything more to be said on this subject, space will be given in the August REVIEW.

HOUSE APIARIES.

How frequently it happens that one little invention brings a whole lot of changes in its wake; also brings into use discarded methods and implements—perhaps causes others to be cast aside. The bee escape seems destined to belong to that class. One reason why I greatly favored black bees in raising comb honey was because they could be so easily driven from the supers. With bee escapes, this point would lose its value. Years ago, quite a number of bee keepers built house apiaries only to abandon them after giving them a thorough trial. Of course, a house apiary has its advantages and disadvantages, but one of the greatest difficulties, if not the greatest, was that of removing the honey. This could not be accomplished without allowing the bees to escape inside the building, which was a never-ending annoyance. The bee escape will entirely remove this disagreeable feature, and it remains to be seen if, with this objection out of the way, the desirable features of the house apiary outnumber its faults.

The first, and perhaps the most important objection to a home apiary, aside from the matter of removing the surplus, is its cost. Without any close figuring I should "guess" that it would cost three times as much to house bees in a house apiary as it would in ordinary, single-walled hives. Having written thus far, I have sat for some time, pen in hand, trying to think of the *next* objection, and I declare I can't think of another objection. Is it possible that the only objections to house apiaries have been their expense and the difficulty of removing the honey? Who is there *already possessed* of an abandoned house apiary and of some experience in its management who will now re-stock it with bees because of the ease of removing the surplus with bee escapes? I came very near mentioning, as one objection to the house apiary, that it would be unpleasant to work in such a cooped-up place, that most bee keepers would prefer to work out

in the open air with the blue sky overhead and the breezes on the cheek, then it came to my mind that the hot sun and the rain were sometimes overhead, and the wet grass under foot, and I concluded that, all things considered, the house apiary would be fully as pleasant a place to work as in the open air. Mr. Root, in his *A B C of Bee Culture*, says that the house becomes unpleasantly filled with smoke from the smoker, but that it might be remedied by having a box in which to set the smoker, a small smoke pipe communicating with the open air. If the bees were worked for honey, and bee escapes used, there would really be but little handling of bees, and but little use for smoke.

Another point comes to me. How would swarming and hiving be managed? I don't remember having read how the hiving of bees is conducted in a house apiary. It would be a difficult matter to shake a swarm down on the outside, as the entrances, at least some of them, are some distance from the ground. It would seem that the plan of allowing the bees to hive themselves by returning to the old location would be necessary. If the queens were clipped they would, of course, drop off upon the ground. The use of the queen trap would probably be advisable. If the bees are allowed to hive themselves by returning to the old location, the combs at the old location must be taken away while the bees are in the air. This would be rather a fussy job. Well, I am beginning to find objections, or what seems like objections to me. Perhaps it might be advisable to use regular hives in a house apiary, the bottom boards being stationary, the entrance to each hive being through the bottom board. In this way a hive of bees could be picked up and placed upon a new stand the same as in the open air. If we must have regular hives, why go to the expense of a house apiary? Why have a house apiary, anyway? That's the question. What are the advantages of a house apiary? The colonies, apiarist and his tools are brought close together under shelter. Empty combs, sections, etc., everything needed, can be stored in the room, almost within reach of every hive. In taking off honey it is the same. When the honey is off the hives it is already stored under shelter. Furthermore, wet weather does not stop work if there is any to be done. Neither can robbers give any trouble. These last

two points are particularly valuable in queen rearing. In fact, it seems to me as though a house apiary offers unusual advantages to the queen breeder. It frequently happens that queen cells *must* be removed, or nuclei started for the reception of hatching queens, upon a certain day. If that day proves to be a rainy one, such work is almost impossible in the open air. I have sometimes carried colonies into the honey house, divided them up into nuclei and introduced queens when it was raining too hard to handle bees in the open air. I have several times had nuclei in my shop, fastened to the wall, the bees flying from an auger hole bored through the side of the shop. I was always well satisfied with such an arrangement for queen rearing.

Ernest Root has been experimenting lately with their abandoned house apiary, and in July 1st *Gleanings* reports as follows:—

"I have been conducting, during the past two weeks, quite a series of experiments, to prove or disprove some of the latest ideas, and among them the bee escape for the house apiary. You will remember that W. Z. Hutchinson, of the REVIEW, as well as the senior editor of *Gleanings*, suggested that the escape might overcome some of its most serious objections. I had been thinking the matter over for about a week; and the upshot of it was, I told the boys to clean out the upper story of all rubbish and unused traps, for this is all the use the building has had for six or eight years. When in use it had two-inch auger hole entrances. We tacked Reese cone bee escapes over a dozen of these entrances so that the bees in the dark would see these holes if they got inside of the room, and escape. Those entrances which we expected to use were closed temporarily until we could put in nuclei. There are windows on three of the eight sides, hinged at the top, opening on the inside. These were darkened by nailing black tarred paper on the sash. To make the room comfortable while working in the building, these sashes are hooked to the ceiling above; and to prevent robbers from coming in from the outside, wire cloth was nailed on the outside window casing. This wire cloth must permit the escape of the bees from out of the room, but prohibit the entrances of bees from the outside. Accordingly, it was cut eight inches longer than the casing, and allowed to project that length above the top of the window. The upper rim of the casing was cut away a quarter of an inch deep and clear across, so as to allow the bees crawling up inside to pass up and out. Those on the outside would not, of course, think of running down the passageway eight inches, and then entering the house apiary—at least, very few would do so.

Well, now, how does it work? Nicely, so far. The screened windows make the room nice and cool, and the small Reese cone bee escapes nailed to the entrance permit what

few bees there may be in the building, to escape after the room is darkened and closed up. You see, there are about a dozen entrances that have Reese bee escapes on. After the room is darkened there are a dozen holes that shine dimly. The few bees that may be inside fly to these holes and pass out. Years ago, when we used to work in the house apiary, we were troubled by bees that collected on the floor making their way toward the door when it was opened, as there was no means of their escaping; and, furthermore, as we did not then know of the window bee escapes, we had to work in a hot, sultry room, poorly lighted, and, more often than not, filled with smoke. The bees that crawled on the floor, somehow managed to crawl up our trousers legs, and get mashed under foot; and this, with the heat and smoke of the room, was unendurable. All these things forced us to abandon the house apiary. When we go to work *now*, we close the door behind us, open up the darkened windows, and let the breezes of summer pass through. The smoke passes out of the windows so as to make no serious inconvenience. Still further to obviate the difficulty, I have in my mind's eye a ventilating shaft to connect with the peak of the building, under which to set the smoker when not in use. From present indications this will not be necessary; but should it be required it can be put in at very little expense. I have not yet tried the bee escape for taking off comb honey inside. It is, however, too late to make this experiment; but if the bee escape works *outdoors*, I know it will *inside*; therefore the house apiary is not such a terrible place in which to handle bees, after all, judging from the present outlook. Subsequent developments may cause me to be disgusted with it, however.

Oh, yes! I forgot to say that each colony or nucleus in the house apiary should be thoroughly fastened in by itself. Each compartment should be made as tight as any indoor hive. They are not yet quite bee tight, but this fall I propose to have them fixed so they will be, if I continue to like it as a place for working with bees as I do now.

There is another thing that I did not mention; and that is, that there is no grass to mow—no long, wet grass and weeds to wade through; no burning sun and no running indoors when it rains.

Do not imagine that I have gone so crazy on the house apiary that I am going to recommend it in preference to hives outdoors—not at all. But there are a good many who, years ago, at considerable expense, built house apiaries, and now they have them in disuse. I simply wish those who have them to see how they can be made available again. There are others located in cities, perhaps, where land is expensive, and a room or house apiary on top of a building could be used very nicely."

It will be seen that the Reese cone escapes over some openings in the wall, wire cloth over the windows with escapes at the top, an arrangement for darkening the windows when the operator leaves the building, bee

escapes to use on the hives when removing surplus, all combine to remove the discomforts connected with the use of the house apiary.

There is another point in connection with house apiaries that is of some importance in some localities, and that is that everything can be kept under lock and key. This would seem especially desirable for out apiaries. One would scarcely like to go to the expense of building a house apiary at an out apiary unless very positive that that locality was to be permanently occupied. If the building was so small that it might be readily hauled to some other locality it might answer.

As to the wintering of bees in house apiaries it would seem that the bees might be readily protected with cushions, as there would be no storms or water to guard against.

I know that house apiaries have been well-nigh universally abandoned, and the object of this discussion, to which the August Review is to be devoted, is to try and decide if, with the advantages offered by the bee escapes, it is worth while to revive their use.

EXTRACTED.

The Manipulation of Sections.

During the past two or three months it seems as though a new hand, or rather an *old* hand, had gotten hold of the *Canadian Bee Journal*. It has more life and vim and some excellent, practical, helpful editorials. The July 1st issue contains the best advice I have yet seen upon the management of sections upon the tiering up plan, and, with my most hearty endorsement, I copy the entire article:

"Several have written us in reference to putting on and taking off of sections. There seems to be a difference of opinion in reference to this. But we prefer, after the bees are sufficiently strong, and the white clover commences to yield, to put on one case of sections first, and as soon as the bees commence to work in them nicely, and get them partially drawn out and a little honey in the most of them to raise up the first case of sections, and set another under it next to the brood. The bees continue, if they are strong enough, to store in the top sections while they are drawing out those below. As soon as the second case of sections is drawn out and partially filled with honey, the next above will be about full, and sometimes the bees will just commence to cap a little in the

centre rows. This will probably be about six or nine days from the time the first case was put on. We then raise up the two and put a third case of sections filled with foundation under, next to the brood. In this way we keep adding some every few days in proportion to the strength of the colony, inducing the colony to store in the top sections, and leaving an empty space, or rather sections only partially filled just above the brood chamber. This keeps down the swarming fever very much better than to have fully filled sections that only require a small corner to be filled and sealed here and there over the frames before they are ready to be taken off. The bees are not so inclined to swarm out when they have what appears to them an empty brood chamber. Then there is another advantage in so placing the sections. If the empty sections are placed on top of those being filled, the partially filled will have to remain on for some days to be filled, and the bees travelling over these capped sections to get to the ones above, soil the sections and mar their appearance. The bees are also less inclined to daub the sections with propolis if they are placed as we suggest, because they are raised a little up in the hive, and they are not nearly so badly daubed as when down next to the brood chamber. According to our method a number of cases may be put on equal to the strength of the colony and the length of the season.

If, however, at the latter part of the honey season you find that you have not room enough in the hive, it is not advisable to put an empty section next the brood chamber, as the bees will not cross over the empty ones to carry honey to the top, but will be more apt to bring down the honey from the top sections to the lower ones as the honey-flow ceases. In order then to give them plenty of room, induce them to work, and prevent swarming, put a crate of partially filled sections or empty sections with foundation in them on *top* of the sections which are being filled and capped over instead of underneath, thus bringing these latter down next the brood chamber. The bees will be sure to fill and cap these and should the honey-flow continue longer than you expect, the bees can work in the upper sections and the work done there is by no means lost to you. Besides the stimulating effect which these empty sections have on the bees, inducing them to work to fill all up before the honey-flow ceases, it gives you a good start the following season, and you can make no better investment. This system will keep the largest possible force of working bees fully occupied, and prevent swarming through the honey season, and at the close will induce the bees to complete their work, and what they may do over is not lost, but can be used next year.

We may say that sometimes the honey season is suddenly cut off, and leaves us with one super of sections with foundation scarcely touched, and another with perhaps the foundation only partially drawn out, and a little honey in. Instead of leaving these empty spaces between the brood chamber, and the sections being completed above, you

should lift up the filled sections; take out these two crates, and put the sections that are being completed down next the brood chamber, and set these two partially filled supers on the top. A little careful manipulating in this way will leave very few empty sections in the fall. To carry on this work it is best to have a stand made of light strips, about an inch square, and the top so arranged that you can lift off your crates and set them on top of these stands. The top of the stand should be large enough so that you can put down three sets of crates. This enables you to change them as you desire, remove sections, or manipulate in any way you wish. This stand should not weigh more than from five to ten pounds, and be about two and a half feet high. If built of slats, there will be no place to mash bees in setting on crates and it can be carried about the yard in one hand."

The style of cover that I use has a cleat at each end. This cleat is wider than the cover is thick, hence it projects ($\frac{1}{2}$ inch) both above and below the cover. By turning a surplus crate in a diagonal direction, two diagonally opposite corners will just nicely "catch on" to the up-raised edges of the cleats on the ends of the cover. I have yet to find a better place to set a super filled with bees and honey than upon the cover of an adjoining hive, turning the super in a diagonal manner as mentioned. The cleats raise the crate so that no bees are crushed.

Not a Fair Trial of the Effects of Unsealed Brood in Holding Swarms.

The following is an extract from June 15th *Gleanings*, and was written by Ernest:

"Day before yesterday I visited the Shane yard. I wheeled it down; and just the moment I arrived, a fine nice swarm was in the air. I had contemplated sitting down in the shade of a large apple-tree, and eating my lunch before beginning work; but that had to be postponed. This swarm, likewise, started out for the woods; and then, oh how I wanted the fountain pump and a good big pail of water! In despair I ran to the hive whence they came, to see whether they had a clipped queen. Yes, there she was—a two-year-old queen, with both wings clipped. Before I could pick her up she went in at the entrance; and the bees, on reconnoitering to discover their queen, finally settled in two clusters. Although there were many tall trees in the vicinity, they were obliging enough to settle on the two smallest trees in the orchard, and on two of the lowest limbs at that, so I could reach them very conveniently. I soon hived them in two empty hives on empty combs. "Now," said I, "I will see whether those fellows will stay contented without brood, for some old veteran has said that brood has no effect either way." In a few minutes they both swarmed out again, and clustered. Again I put them back on dry combs, and again they both swarmed

out. This time I gave each a frame of capped brood and unsealed larvæ.* Again I put the bees back, and, presto! they both stayed just as quietly as if that had always been their home. Before they had their brood, they were crawling all over the hives in wild confusion, flying out at the entrance and then back. I am aware that unsealed larvæ will not *always* hold them. I have had newly hived swarms vacate in fifteen minutes, even after having given them larvæ. But as a general rule, in our experience, unsealed brood is a mighty good detainer. It makes them contented, and sort o' at home."

The above, as I understand it, is not a fair test as to the efficacy of brood in retaining a newly hived swarm. The bees were *queenless*. Their queen was clipped, and not being able to follow them she had returned to the old hive. A swarm having no queen with it will *never* stay hived unless given unsealed brood, but will continue to swarm out as often as hived, hence I say that the above was not a fair test. I should expect that unsealed brood would *invariably* hold *queenless* bees, but my faith in its detaining bees having a queen has been terribly shaken. Bees having a queen can snap their fingers at brood. They are independent. They can rear brood and establish a colony wherever they please. Not so with a queenless swarm. It is *doomed*. The bees are ready to catch at anything to save the community from destruction, and a comb of unsealed brood is hailed with delight and "stayed by."

The True Color of Carniolans.

It is as I suspected. The yellow that crops out in Carniolan bees comes from an admixture of Italian or some other yellow race. These conclusions are arrived at from reading an article by Frank Benton in the July *Am. Bee Keeper*. I copy that part of the article that relates to this point:

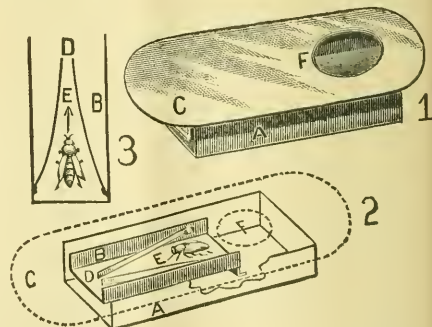
"The purest type of the Carniola race is dark gray, or steel colored, larger than our common bees, and wholly free from yellow bands. Whenever yellow is found among bees in Carniola it is to be taken as an evidence of Italian blood. Carniola is located in the southern part of Austria, near the head of the Adriatic sea, and is only separated from Italy by a single narrow province—Gorizia.

The line between the last named province and Carniola follows a range of mountains extending in a southerly direction from the main part of the Carnic Alps. The history of bee keeping in Carniola shows that the migratory system has been followed there for some centuries. During the buckwheat yield many thousands of colonies of bees are brought by rail and by wagon from all

parts of Carniola, and from adjoining districts toward the centre of the province. I have seen a railway train bearing five thousand hives of bees and their attendants to the buckwheat fields. Some colonies are even brought over the mountain range which separates Gorizia from Carniola, whose elevation is from 1,200 to 2,500 feet. Bearing in mind that Gorizia borders on Italy and that its surface slopes toward the Italian line and the Adriatic, and, in fact, that between the Carnic Alps and the great valley of the Po, which drains nearly the whole of the northern plain of Italy, there is no mountain barrier to prevent an admixture of the bees native to these districts, it is easy to understand how it is that the bees southwest of the Carnic Alps shade off or merge gradually into Italians, since migratory bee keeping is not practiced to any great extent in the northwestern province of Italy. With these mixed bees more or less yellow blood has been brought from Gorizia into Carniola and scattered about. In buying or breeding bees in Carniola I have always avoided queens whose workers showed any yellow or rust-colored tinge. Such bees are generally more irritable than the pure Carniolans; they do not breed true to type, and in fact are more like hybrid bees. Nor have I been able to discover that they possess any traits superior to those shown by the distinctively gray bees which are so largely in the ascendancy all over the province of Carniola. The bees offered for sale in this country under the name of "Yellow Carniolans," or "Golden Carniolans," are simply hybrids; are bees having blood of some of the yellow races—Italians, Palestines, Syrians or Cyprians—in their make up. Verily, some do love the color of gold."

The Porter, Spring, Bee Escape—The Best One Yet Devised.

Last month I desired to give the whole of the following article, contributed by S. A. Shuck to *Gleanings*, but lack of space compelled me to be content with a short extract. I now give the article entire:



"Engraving No. 1 shows the escape complete, which, when placed in an escape-board, is ready for use. The bees enter the escape at F and pass out at D, as shown in

cuts 2 and 3. The escape proper, as shown at A, is $3\frac{1}{4}$ inches long by $1\frac{1}{4}$ wide and $\frac{1}{2}$ inch deep. The top piece C is $4\frac{1}{4}$ in. long and $1\frac{1}{4}$ in. wide. The part B, containing the springs as shown in cut No. 2, is $1\frac{3}{4}$ in. long, 1 in. wide and $\frac{1}{4}$ in. deep. The object of this inner part, B, is to admit of a depression under F for the reception of dead bees that may chance to get into the escape. A dozen or twenty dead bees may get into the escape and not interfere with the bees passing out between the springs. To prepare the escape for use, make a plain board of $\frac{1}{2}$ inch material, the size of the top of the hives on which it is to be used. Cleat the board at sides and ends so as to provide the necessary bee space above or below the board. Bore two holes $3\frac{1}{4}$ inches apart from center to center, and near the center of the board, with a $1\frac{1}{8}$ in. bit, and cut out the intervening wood; drop the escape into this opening and it is ready for use.

To adjust the escape-board on the hive, remove the hive cover. A few puffs of smoke are necessary to prevent the bees from becoming angry. Raise the super, place the board on the hive, and set the super on the board, and return the hive cover. All is done in less time than is required to write this sentence, yet this is all the time that is required by the bee keeper to remove the bees from the super, as the bees pass out at their leisure, and the super is taken to the honey house at any convenient time after the bees have deserted it.

During the season of 1890 I removed all my comb honey, about 2,500 lbs., from the hives by use of escapes, and experienced less inconvenience and annoyance by robbers or bees in my honey house than I have frequently experienced in removing a couple of hundred pounds by the old method of smoking, shaking and brushing of the bees from the supers.

I used four different patterns of escapes—the cone, trap-door, Porter spring, and Mr. Dibbern's latest pattern. Triple-cone escapes made of perforated tin work quite well at times. Occasionally quite a number of bees find their way back through the cones into the super.

The trap-door escape works nicely for a little while, but they are soon rendered useless on account of propolis.

Mr. Dibbern's new escape gave very poor results, as, in my first trial with it, there was very little decrease in the number of bees in a T super in 24 hours after adjusting the escape on the hive. My second trial was but little better, as only about half the bees were out of the super in twenty-four hours. In subsequent trials it worked some better, but not any better, if as well, as the cone escapes, as the bees are slower in passing out through the Dibbern. I very much dislike the Dibbern escape, for two reasons: *i. e.*, it is just as liable to clog up with dead bees as the cone escape is, and there is no way of clearing it out or knowing that it is not in working order without taking it apart.

The only objection I see so far to the Porter spring escape is, that it has no *automatic* principle that will extract the bees from the supers in a given time; and the bees of some

colonies, under certain conditions of weather, are very slow to move out; but once they are out, they are certain to stay out.

While the bees have shown a disposition to propolize the perforations in the perforated tin cone escapes, and plaster over those made of wire cloth, and glue the doors of the trap-door escapes fast, they have put but very little propolis in the spring escapes, but not enough to interfere with the working of the springs in the least.

But little need be said concerning the utility of a practical bee escape for removing comb honey from the hives. Any bee-keeper who has gone through the vexations of removing his comb honey from the hives during a honey dearth will agree with me that it is anything but a pleasant task; while with a practical escape the vexations are all removed—no brushing, no shaking of bees, no robbing, and no bees in the honey house. The escape boards can be adjusted at any time of day, and it is done so quickly that the robber bees have no chance to get a start. The supers can be taken off at the bee keeper's leisure after the bees have deserted them, which is usually from five to eight hours. Many of my supers were carried in early in the morning, without hat or veil, while the good wife was setting the breakfast.

Concerning the inventors and manufacturers, R. and E. C. Porter, of Lewiston, Ills., of the Porter spring escape. I will say, that, so far as I have been able to learn, they are the oldest practical bee keepers in this part of Illinois. At present they do not keep a very large apiary, only some sixty or eighty colonies, on account of so many bees near them. In 1882 they obtained between 9,000 and 10,000 lbs. of extracted honey from about eighty colonies. In 1886 they obtained 10,000 lbs. from about the same number of colonies.

Their escapes have been as thoroughly tested as one season's work can test them, and they are well enough pleased with them to manufacture several thousand of them, and I presume they will advertise and put them on the market at once.

S. A. SHUCK.

LIVERPOOL, ILL., April 9.

[Many thanks for your valuable article. We are all anxious to know what we may expect of the bee escape; and, according to your experience, our hopes of its practical utility are not disappointed. If others shall have experience similar to yours, it does indeed promise to work a revolution in the methods of taking off honey, and we have already had some good reports. We, too, have been experimenting with different styles of bee escapes; but none do the work so perfectly as the Porter, illustrated above. It would get *every bee* out of the upper story, even off combs of brood. With the Reese and Dibbern escapes, a few bees would be left, they having evidently found their way back; and once or twice we found them clogged with dead bees. We have just received a few samples of the Porter escape. They are beautifully made, and the price is moderate. If this escape shall do as well as

it has done for you and ourselves, the two Porters deserve a vote of thanks for a perfect bee escape, and the right of exclusive manufacture, whether they have a patent on the same or not. We presume a good many of them will be sold, and we should like to have reports of where thorough tests have been made. The propolizing feature of the Reese and Dibbern, as well as their occasional clogging with dead bees, is rather against them. The two brass springs at the point D, in the Porter, are so exceedingly sensitive, that, if a bee were to touch them with its mandibles, I imagine they would tremble so that the little propolizer would become cross-eyed in trying to keep track of the oscillations, and give the matter up in disgust. E. R. R."

Advantages of Bee Escapes.

"I tried a number of different devices last season. Almost all of them worked very satisfactorily. The one we liked best, though, was the Porter spring escape. It cleaned the supers of bees almost as rapidly and thoroughly as any, and they stayed out. With some of the other escapes the bees would sometimes find their way back; but with the Porter escape they can not do this.

Having been the first one to call the attention of the bee keepers to the fact that they were neglecting this valuable invention, I can say that the bee escape is no longer an experiment with me, but an appliance of great practical value. By its use some of the most laborious and disagreeable work of the apiary is almost done away with. This reduction of labor makes it invaluable in large apiaries; but even in the smallest it will save time, stings and annoyance. The bee keeping world owes a debt of gratitude to Mr. Reese for giving his invention so freely and generously to his fellow men."—*J. A. Green, in Gleanings.*

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Bee-Hives and all USEFUL supplies for the apiary. **JAS. HEDDON,**
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Please mention the Review.

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Three months on trial free. We want you to see it. 'Tis a journal of sensible hints. Valuable to all. Twenty pages, monthly. 50 cents a year. Send address on postal card to **BEE-KEEPER PUB. CO.,**
Unionville, Missouri.

Please mention the Review.

ITALIAN QUEENS

A SPECIALTY.

Untested queen, in June,	\$1.00
Six " " " "	5.50
Twelve " " " "	10.00
After June, six queens	5.00
" " " " " " " "	9.00

Tested queens double the price of untested.
A few hybrid queens at 50 cents each. 5-9 -tf

S. A. SHUCK, Liverpool Illinois.

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THE LARGEST B. HIVE

Factory in Michigan

Is turning out hives and bee-keepers' supplies at the following prices.

One 8-frame, L. hive, 2 T supers,	\$1.00
Ten ditto,	8.00
Brood frames, per 100,	1.00
One-piece, V-groove sections, per M,	3.00
10,000 ditto,	25.00

Clark, cold blast smokers, each, 50 cents; five for \$2.00. Bee veils, best on earth, 35 cents each. Parker foundation fastener, 25 cents. Japanese buckwheat, 60 cents a bushel; bag 18 cents extra. Foundation, medium brood, 43 cents; thin for surplus, 48 cts. Alsike clover seed, \$8.00 per bushel. Extractors, books, etc., in stock.

Circulars free.

12-9 -tf

W. D. SOPER & CO.,

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Please mention the Review

Send for my 23rd annual catalogue of
ITALIAN AND CYPRIAN

BEES, QUEENS,

nuclei and full colonies. Apiarian supplies and eggs for hatching. **H. H. BROWN,**
5-91-2t Light Street, Pa.

Please mention the Review.

Beautiful Bees ALWAYS PLEASE THE EYE.
Good Qualities ARE ALWAYS PROFITABLE.

If you wish for bees and queens that combine beauty and good qualities to a marked degree, write for descriptive circular giving low prices. No circulars sent unless asked for.

CHAS. D. DUVAL,

3-90-tf

Spencerville, Md.



THE universal favor accorded TILLINGHAST'S PUGET SOUND CABBAGE SEEDS leads me to offer a P. S. GROWN Onion, the finest Yellow Globe in existence. To introduce it and show its capabilities I will pay \$100 for the best yield obtained from 1 ounce of seed which I will mail for 50 cts. Catalogue free.
Isaac F. Tillinghast,
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GARNIOLAN Five Banded Bees and Queens.

This is by far the gentlest and most prolific race of bees known, while the workers are excellent honey gatherers. They enter the sections readily and seal the honey with the whitest of cappings.

PRICES.

Select, tested queens, \$2.00 each. Tested, \$1.50 each. Six tested queens, \$8.00. Untested, 90 cts. each; six for \$5.50. Nucleus colonies, Langstroth frame, 50 cts. per frame. Don't fail to send for circular.

A. J. LINDLEY,

6-91-2t

Jordan, Indiana.

LOOK HERE.

Nice, white, V groove, Sections, \$3.00 per 1,000. 12 lb. Shipping Cases, in the flat, with glass, \$7.00 per 100; without glass, \$6.00.

Twenty page price list free.

J. M. KINZIE,

11-90-6t

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The Bee World.

A journal devoted to collecting the latest apicultural news discoveries and inventions throughout the world, containing, as it were, the cream of apiarian literature. Valuable alike to the amateur and veteran. If you wish to keep posted, you cannot afford to do without it. Subscribe now. It is a 20 page monthly at 50 cts a year. Stamps taken in one and two cent denomination. The Bee World is published by

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Waynesburg, Greene Co., Pa

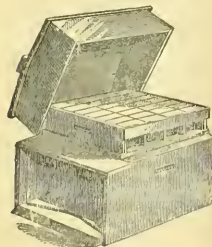
1891

Don't you want large, beautiful queens, producing bees that will just please you fully? Well, my Italians are in the lead—so my customers say. 650 queens sold and have heard of only one misnamed one.

Your orders will be appreciated and quickly filled. Warranted queen, 75 cts.; 3 for \$2.00. A beautiful, selected breeder, \$1.50.

3-81-6t

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Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa., **One of the Largest Bee-Hive Factories** in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

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All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue. 2-91-tf

OLIVER HOOVER & CO., Riverside, Pa.

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ITALIANS

Are the gentlest and handsomest bees in the world. They are good workers and less inclined to rob than are the three-banded Italians. The queens are very prolific. My breeding queen, that, together with her bees, took the **FIRST PREMIUM** last fall at the Detroit Exposition, filled a ten-frame simplicity hive with brood and bees this spring by May 1st, and May 7th had cells started for swarming.

I can now fill orders for untested queens at \$1.00 each; six for \$5.00; or \$9.00. per dozen. Tested queens, \$2.00 each. Selected, tested, \$3.00 each. Breeding queens, when I have them to spare, \$6.00 each. Safe arrival guaranteed. Make money orders payable at Flint, Mich.

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3-71-2t

Rogersville, Genesee Co., Mich.

Please mention the Review.

PATENT, WIRED, COMB FOUNDATION

HAS NO SAG IN BROOD FRAMES.

THIN, FLAT BOTTOM FOUNDATION

HAS NO FISH BONE IN SURPLUS HONEY.



Being the cleanest is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,

(SOLE MANUFACTURERS),

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Your Success in Bee-Keeping depends very much on the queens, hence you see that only the best queens are really cheap. We have the best and want you to try them. As for prices—well, you'll find them reasonable

R. STRATTON & SON,

4-91-12t

Hazardville, Conn.

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He has sold his entire bee and supply business to a man who will fully sustain past reputations, therefore it is with pleasure that he gives his consent to the use of the old name, "That Pittsfield Smith," for future advertisements.

His successor will be prepared to fill all orders promptly and to deal a little better by you than he agrees. 7-90-12t

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Please mention the Review.

MUTH'S Honey - Extractor,

Square Glass Honey-Jars, Tin Buckets,
Bee-Hives, Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

Apply to CHAS. F. MUTH & SON,
CINCINNATI, O.

P. S.—Send 10-cent stamp for "Practical Hints
to Bee-Keepers." 2-88-1f.

ITALIAN QUEENS

From the Finest Stock.

ELLISON'S AND BEES

One untested queen,	75
Three " queens,	\$2.00
One tested queen,	1.50
Three " queens,	4.00
Two - frame nucleus, with any queen, \$1.50 extra. Safe arrival and satisfac tion guaranteed.	6-91-2t

W. J. ELLISON,
Catchall, S. C.

Please mention the Review.

BEE SUPPLIES

EVERYTHING used in the APIARY.
Greatest variety and largest stock in the West.
New catalogue, 54 illustrated pages, free to bee-keepers.
E. KRETCHMER, Red Oak, Iowa.

Please mention the Review.

The 5 - Banded.

By careful breeding we have secured a strain of bees that are yellow all over. If you want bees that will work on red clover, try one of our yellow queens. Untested, in July, 75 cts.; one-half dozen, \$3.60. Tested, \$1.50; select, \$2.00; the very best, that will produce 4 and 5 banded bees, \$4.00. Descriptive circular free.

LEININGER BROS.,

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Bee Journal,

Poultry Journal,

EDITED BY D. A. JONES.

EDIT'D BY W. C. G. PETFR.

75 cts. a Year.

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These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Samples free. Both journals one year to one address, \$1.00
Until June 1st **Either Journal**
we will send **Either trial trip for 6 mths 25 cts.**
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Wanted at Once,

Your address, that I may send you my astonishingly low prices on **Hives, Frames, Sections, Crates, etc.** 4-91-6t
C. F. WILLCUTT, Exira, Iowa.

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Any ORGAN or PIANO
On your own Terms
No pay before you see and TRY
GORNISH Organs! Pianos!
Send at once for our new 20 pp. Illustrated Catalogue. FREE to any address
WASHINGTON, N. J.

ADVANCED BEE-CULTURE;

Its Methods and Management.

This book is now "out" and ready for delivery. It contains 88 pages the same size as those of the REVIEW. It is bound with enameled paper tinted to resemble perforated zinc.

It begins with The Care of Bees in Winter, and then tells how they ought to be cared for in the spring in order to secure the workers in time for the harvest. Then Hives and their Characteristics, Honey Boards, Sections, Supers and Separators are discussed. The best methods of Arranging Hives and Buildings and Shading the Bees are described. Varieties of Bees, Introducing Queens and Planting for Honey are next given a chapter each. Then the Hiving of Bees, Increase, its Management and Control, and Con-

traction of the Brood Nest are duly considered; after which Comb Foundation, Foul Brood, Queen Rearing, the Raising of Good Extracted Honey, and "Feeding Back" are taken up. After the honey is raised, then its Preparation for the Market, and Marketing are discussed. Then Migratory Bee-keeping, Out - Apiaries and Apiarian Exhibits at Fairs are each given a chapter. After this comes the question of Wintering, which is discussed in all its phases. The influence of Food, Ventilation, Moisture, Temperature, Protection, etc., etc. are all touched upon. There are also chapters upon Specialty versus Mixed Bee-Keeping, Comforts and Conveniences in the Apiary, Mistakes in Bee-Keeping, etc., etc.—32 chapters in all.

PRICE of the Book is 50 cts. The REVIEW and the Book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

Dadants' Comb Foundation.

Half a Million Pounds Sold in Thirteen Years. Over \$200,000 in Value.

It is **the best**, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year.

SAMPLES and CATALOGUE FREE to ALL. SEND YOUR ADDRESS.

1852 | Langstroth on the Honey Bee. Revised. | 1891

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HANDLING BEES is a chapter of the Langstroth revised, and contains instructions to beginners on the handling and taming of bees. Price 8 cents.

Bee Veils of Best Imported Material. Sample FREE. Instructions to Beginners sent free with Circular.

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

AUGUST 10, 1891.



At Flint, Michigan.—One Dollar a Year.

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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.

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I CAN SEND UNTESTED ITALIAN QUEENS, BY RETURN MAIL, FOR 75 CENTS EACH. W. Z. HUTCHINSON, FLINT, MICH.

The Missouri Bee-Keeper

Three months on trial free. We want you to see it. 'Tis a journal of seasonable hints. Valuable to all. Twenty pages, monthly. 50 cents a year. Send address on postal card to BEE-KEEPER PUB. CO.,

Unionville, Missouri.

Please mention the Review.

IMPORTED ITALIAN QUEENS.

Aug., \$3.50; Sep., \$3.00. Untested, 75 cts. Send orders now. W. C. Frazier, Atlantic, Iowa.

A. I. Root Says

my 5-banded Italian bees "Are about the yellowest we ever saw. For any who want fancy bees, these will be the bees."

One untested queen in August and Sep. 75 cts.

J. F. MICHAEL,

5-91-4t

German, Darke Co., Ohio.



PRICES: Each, by mail, postpaid, with full directions, 20 cts. Per doz., by mail, postpaid, \$2.25. Send for circular, testimonials, etc. Dealers send for wholesale prices. 5-91-tf

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

Type Writer for Sale.

I have a World type writer, taken in a "dicker," that I would sell for \$6.00, or would exchange for honey. Cost \$8.00 when new and could not be told from new now. Specimen of writing sent on application.

W. Z. HUTCHINSON, Flint, Mich.

J. FORNCROOK & CO.,

MANUFACTURERS OF THE

"BOSS" ONE-PIECE SECTIONS.



Will furnish you, the coming season, one-piece sections, sandpapered on both sides, as cheap as the cheapest and better than the best. Write for prices. Watertown, Wis. 12-90-st

Please mention the Review.

Italian - Queens.

6 Warranted Queens, \$5.00.

Send - for - Circular.

J. T. WILSON,

Pink, Kentucky.

4-91-tf

Please mention the Review

Hunt's Foundation Factory.

Samples free. Send your beeswax and have it made up. Highest prices paid for beeswax. 3-91-8t M. H. HUNT, Bell Branch, Mich. (Near Detroit.)

Please mention the Review

BEE - HIVES, SECTIONS, ETC

BEST GOODS AT LOWEST PRICES. WE MAKE 15,000 SECTIONS PER HOUR. CAN FILL ORDERS PROMPTLY. WRITE FOR FREE, ILLUSTRATED CATALOGUE. G. B. LEWIS & CO.,

5-91-tf

Watertown, Wisconsin

The Porter Spring Bee - Escape.

We guarantee it to be the best escape known and far superior to all others. If on trial of from one to a dozen you do not find them so, or if they do not give entire satisfaction in every way, return them by mail within three months after receiving them and we will refund your money.

PRICES: Each, by mail, postpaid, with full directions, 20 cts. Per doz., by mail, postpaid, \$2.25. Send for circular, testimonials, etc. Dealers send for wholesale prices. 5-91-tf

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

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.

4-90-16t

MACHINES SENT ON TRIAL.

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Unexcelled for SIMPLICITY, CONVENIENCE and CHEAPNESS. Every part INTERCHANGEABLE, REVERSIBLE and INVERTIBLE. Adapted to interchange with the Simplicity and other frames and bodies. For introductory prices, etc., address

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1-91-1f Masontown, Pa.

We've Got 'Em!

Golden Italian queens—bees work on red clover. Tested queen, \$1.10; three for \$3.00. Untested, 70 cts.; three for \$2.00. Circular of supplies sent free.

JNO. NEBEL & SON,

5-91-1f High Hill, Missouri.

P. S. The Hon. J. M. Hambaugh, of Spring, Ill., says: "Your queens are daisies. Send 12 more."—for \$7.00.

LEAHY'S FOUNDATION,
Wholesale and Retail,
Smokers and Sections,
Extractors and Hives,
Queens and Bees,
R. B. Leahy and Company
Higginsville, Missouri.

1-90-1f Please mention the Review.

ITALIAN QUEENS A SPECIALTY.

Untested queen, in June, \$1.00
Six " " " " 5.50
Twelve " " " " 10.00
After June, six queens 5.00
" " twelve " " 9.00
Tested queens double the price of untested.
A few hybrid queens at 50 cents each. 5-9-4f

S. A. SHUCK, Liverpool, Illinois.

THE LARGEST B. HIVE Factory in Michigan

Is turning out hives and bee-keepers' supplies at the following prices.

One 8-frame, L. hive, 2 T supers, \$1.00
Ten ditto, 8.00
Brood frames, per 100, 1.00
One-piece, V-groove sections, per M, 3.00
10,000 ditto, 25.00

Clark, cold blast smokers, each, 50 cents; five for \$2.00. Bee veils, best on earth, 35 cents each. Parker foundation fastener, 25 cents. Japanese buckwheat, 60 cents a bushel; bag, 18 cents extra. Foundation, medium brood, 13 cents; thin for surplus, 48 cts. Alsike clover seed, \$5.00 per bushel. Extractors, books, etc., in stock.

Circulars free.
12-90-1f W. D. SOPER & CO.,
118-120 Washington St., Jackson, Mich.

Names of Bee-keepers

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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

W. Z. HUTCHINSON, Flint, Mich.

KNOWLTON'S BATHING APPARATUS.

Universal Bath. Full, six, etc. in one. Vapor and Water—fresh, salt, Mineral. Artificial Sea Bath. Weights 15 lbs. Adjustable. No friction. In use. Cements: Award Medal and Diploma against the world. Wholesale & Retail. Send for Circulars. E. J. KNOWLTON, Ann Arbor, Mich.

CHEAPEST AND BEST BATH EVER KNOWN!

FREE CIRCULARS EXPLAIN ALL.

Address E. J. KNOWLTON, Ann Arbor, Mich.

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WINTER BEES

Safely and Cheaply

By using our **New Outside Winter Case** on your **Dovetailed Hives**, or with our **New Thin-walled Hive**. The outside case with either a regular **Dovetailed hive** or our **thin walled hive** makes the **Cheapest and Safest** winter hive made; and our **thin walled hive** is the **cheapest and most convenient**. It is the same size as an **8-frame Dovetailed hive** containing the same inside furniture. Send for special illustrated circular.

The **W. T. FALCONER Mfg. CO.**,
Jamestown, New York.

Catalogue of all bee supplies and sample copy of **AMERICAN BEE-KEEPER** free (The **AM. BEE-KEEPER** is a 24-page monthly at 50 cts.)

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Pratt's Perfection Queen Cage

Is the best shipping and introducing cage in use. Only \$10.00 and \$20.00 per 1,000. Sample free to any queen breeder. We manufacture a full line of bee-keepers' supplies, and send catalogues free to any address.

C. W. COSTELLOW,

8-90-1f Waterborough, Me.

Please mention the Review.

Don't Wink at This.

"Poultry for Market and Poultry for Profit," by Fanny Field, 25
 "Practical Turkey Raising," 25
 "How to Caponize," 40
 "White Mountain Apiarist," one year, 50
 Total, at regular price, \$1.10
 What did you say, fifty cents for all that? Yes, send us fifty cents and get the whole postpaid.

"WHITE MOUNTAIN APIARIST,"
Berlin Falls, N. H.

Please mention the Review.

Beautiful Bees ALWAYS PLEASE THE EYE.
Good Qualities ARE ALWAYS PROFITABLE.

If you wish for bees and queens that combine beauty and good qualities to a marked degree, write for descriptive circular giving low prices. No circulars sent unless asked for.

CHAS. D. DUVAL,

3-90-1f Spencerville, Md.

Please mention the Review.

1872 KEYSTONE APIARY 1881

ITALIAN QUEENS AND BEES.

	May	June	July to Oct.
Select,		\$3.50	\$3.00
Tested,	\$3.00	2.50	2.00
Fertile,	2.00	1.50	1.00
Six fertile at one order,		8.00	5.00
Send for circular.	W. J. ROW,		
5-91 4t	Greensburg, Pa.		

CARNIOLAN QUEENS.

A SPECIALTY.

That Andrews man has just the bees, That he manipulates with ease, And will the most exacting please.

They're bred from pure and gentle stock, With tempers even as a clock, And seldom rise at any shock.

Now please remember, if you will, These bees are bred at Patten's Mill, In New York State, just down the hill.

And if you want one, two, or more, Send on your orders as before, And you will find your needs in store, At the appointed time.

Last August, tested queens, June 1st,	\$2.00
Untested queens	1.00
Tested queens,	July 1st, 1.50
Untested, after June 1st, six for	5.00

JOHN ANDREWS,

9-90-1f Patten's Mills, Wash. Co., N. Y.

Send 25 cts for my book of Discovery and Invention, the

Queen Restrictor.

C. W. DAYTON,

1-91-12t Clinton, Wisconsin.

For Albino, and Golden Italian Queens, Send to

A. L. Kildow, Sheffield, Ill.

1 untested Albino, \$1.00; six for \$5.00.
 1 tested Albino, June and July, \$.175; August and September, \$.50.
 1 select-tested Albino, Aug. and Sep., \$2.50.
 1 untested Italian, July to Sep., 75 cts.
 1 tested Italian, July, \$1.50; August and September, \$1.25.
 1 select-tested Italian, \$2.00.
 For particulars, send for descriptive circular.

Illustrated Advertisements Attract Attention.

Cuts Furnished for all illustrating Purposes.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. IV. FLINT, MICHIGAN, AUGUST 10, 1891. NO. 8.

The special topic of this issue is
"House Apiaries."

That of the next issue will be
Handling Hives Instead of Frames.

An Old House Apiary and How it is Managed all the Year Round.

J. P. MOORE.

HAVING used one of Faulkner's non-swarming house apiaries for the past 19 years, I will give you a brief description of the house and its management.

The house is 12½ feet long by 8 feet wide by 6 feet high, inside measure. The hives are arranged on two shelves, 18 inches wide, on each side of the house, with five hives on a shelf. Each hive occupies 2½ feet of shelf, making 20 hives in the house. The lower shelf is 8 inches from floor and the upper shelf 2 feet 8 inches above lower one. The side walls are packed with 5 inches of sawdust, ceiled up outside and in, and papered and sided outside. The entrance to each hive is 12 inches wide by ¾ inch deep. The alighting-boards are 20 inches wide, project from the house 16 inches and extend through the wall and join the shelf. They slant enough to prevent rain from driving into the hives. The lower alighting-boards are a foot from the ground. There is a door, or rather two doors, in the south end. The inner one with glass opens in, the outer one is

tight and opens out. There is a window, 4 feet high and 1½ feet wide in the north end, hung on pivots at top and bottom, and revolves. This makes one bee escape. The other is formed by sliding the glass up ½ inch in the door and shutting the blind over the window, when the bees will work out through the door. There are 8 inches of sawdust in the floor, and 14 inches overhead.

The non-swarming features consist, first, in a cellar 6 feet deep, walled up to the top of the ground. The building stands on the wall on 6 iron pins driven in the sills; which leaves 1½ inch space between the walls and sills, all around. In the center of the floor is a ventilator 4 feet long by 2 feet wide, with flue same size running down to within 6 inches of cellar bottom; also two flues 10 inches square in the ceiling connected with the air shaft and running up through the roof 5 feet above the peak. There are ventilators through the shelves; in the bottoms, and near the back side of the hives. These ventilators are covered with wire cloth.

In hot weather, when the house is closed with the exception of the lower ventilator, the bees fanning at the mouths of 20 hives will raise the cool air from the bottom of the cellar and pass it over the bottom of the hives, and maintain an even temperature inside, night and day, which is an advantage when the bees are working in sections. It is not a perfect non-swarmers as I have had three to six swarms from it every year.

To prepare the house for winter it is only necessary to bank around the top of the

wall with litter or coarse manure; to prevent the wind from blowing into the cellar, close all ventilators, and each entrance to a small fly hole, and put chaff cushions on all hives. Of course the bees in 20 hives assist in keeping an even temperature: but sometimes, when we have a protracted spell of extremely cold weather, I put in an oil stove for a few days, which assists materially. I find that in a mild open winter the house apiary winters bees better than chaff hives: but in an extremely cold winter, especially long spells of cold, the well packed chaff hives come out the best.

In spring, as soon as the bees begin to raise brood, the temperature of the house rises and it is readily seen that many weak stocks that would be of no value outside are enabled to breed up, on account of the temperature maintained by the other bees. For this reason, also, it is not necessary to spread brood as in outside hives.

Having such a nice handy place to take off surplus I run my bees both for extracted and comb honey: generally extracting all the late honey. I use a hive with a closed end frame, the ends of frame are $1\frac{1}{2} \times 1\frac{1}{2} \times 9\frac{1}{8}$ high and the top and bottom bars are nailed in so as to leave $\frac{1}{4}$ inch bee space. The frames are reversible. Eight frames and two paunels are set into a rim $4\frac{1}{2}$ inches deep, with strips $\frac{1}{2}$ inch thick nailed under for the frames, which are hugged up with wedges or screws, to rest on; this gives $\frac{3}{4}$ inch space between the bottom bars of the frames and the shelf. The comb space in each frame is about $7\frac{1}{8} \times 17$ inches. Every hive has a zinc queen excluder whether it is run for section or extracted honey. My section case holds 7 single-tier wide frames. I aim to have whole cases finished at once so as to not have much handling of sections. When the surplus is ready to come off I can go in the house and take it all off the 20 hives in 20 minutes. I commence by putting one or two light cases near the window and then stand all cases on end with both top and bottom open. If there are no robbers the bees will all work out through the window in an hour or two. If there are robbers, I close the window and the outside door and then open the window once in 30 minutes, not oftener, and brush out with brush and dust pan all bees that have clustered on or over the window. In an hour or two the bees will all have worked out except a few young bees clustered in the light cases

near the window. These can be carried out and shaken down before a nucleus or weak colony. The honey can be taken to the honey room and the door and window left open so all straggling bees can come out. I formerly had 50 stocks of bees outside and always carried the surplus in the bee house to clear it of bees. If good Italian bees, such as remain quietly on the combs, are used, they handle nicely in the bee house.

The light is sufficient with door and window open: with door and window shut it is necessary to step to the window to see eggs in the cells. The upper ventilator carries off smoke.

There are many places where a bee house would be an advantage. They can be constructed very much cheaper without the non-swarmling feature simply with a ground floor and the corners hooked together so as to be removable. I have heard of several constructed in that way in Pennsylvania that were a great success.

A house apiary is a handy place to keep tools, such as smoker, smoke-wood, matches, etc., etc, and when the apiarist goes in to handle bees there are no outside covers to remove and the hives all are handy. In swarming I clip the queen and remove the hive while the bees are swarming.

BINGHAMTON, N. Y. July 20, 1891.

In a private note accompanying the above, Mr. Moore says: "I can't see why folks have so much trouble in taking off the surplus in the house apiary. It is the nicest place in the world to take off surplus. I presume the trouble comes from letting in the light from three or four different directions. Let the light in from only *one* direction if you want to get the bees out."

Securing Abundant Increase With Small Divisible Brood Chamber Hives.—The Value of Swarm Catchers.

B. TAYLOR.

FRRIEND Hutchinson, in complying with your request for an article explaining my method of obtaining large increase when using small double hives, I will tell what I have done in that direction since July 1st.

The burden of handling large numbers of bees in the swarming season had made me resolve to extend my colonies no further. I had parted with about 200 colonies in the last

year, so as to narrow down my business in harmony with my advancing years, but the success of controlling swarms with the swarm catchers, opened new possibilities and I at once resolved to increase my colonies and establish one or more additional out apiaries, as I can now employ a boy of 10 or 12 years to catch the swarms, so I proceeded as follows:

When a swarm issued I caught it and set it in the cellar. I then went to the hive from which it issued and removed the supers. Then I set the top section of the hive on a new bottom board and removed it to a new stand. The sections were then returned to the under half of the old hive, with an empty super under them if more room was necessary. A young, just hatched, queen was now liberated in this hive, or sometimes a queen cell just ready to hatch was used. The reason for giving a young queen here is that the swarn is liable to swarm out again, on account of the small quarters to which they are returned, but with a virgin queen this trouble is avoided. Sometimes I returned the bees in two or three hours if they became sufficiently quiet. At other times they were left 36 hours. When ready to return, a sheet is spread in front of the prepared hive, the bees brought from the cellar, and, as they have clustered on the movable end of the catcher, they are lifted out and shaken on the sheet well away from the hive. The cool cellar having allayed the excitement, they can be spread out on the sheet and kept there for two hours, if necessary, in order to find the old queen. When found she is returned to that section of the old hive that was removed to a new stand, and all swarming is now over with this colony, and it is built up into a first-class colony for wintering. Sometimes it makes 50 or more pounds of surplus honey.

The colony on the old stand with the new queen will not swarm again this year and may make large quantities of honey if any is in the fields, and will be a first class colony for the next year. This doubles the number of colonies which is the largest increase I ever practice.

If you wish to make artificial colonies, hunt up the queen, divide the hive as above, placing one section on a new stand, return the old queen to it after waiting 2 or 3 hours to allow all the old bees to return to the old stand, which they will not all do if the old queen is returned immediately on removal.

The virgin queen is given to that part left on the old stand which gets all the old working bees and one-half the brood. The sections are placed upon it just as in the first case and it will make a booming colony for any purpose.

If I wanted still larger increase I would hive the new swarm in an empty hive on the old stand, remove the sections to it, divide the two sections of the old hive, place them on separate stands, cut out all queen cells and give each a just hatched queen or mature queen cell. Each will make a first class colony and this makes all the increase anyone should want.

You will notice Friend Hutchinson that in all these ways of making increase I do nothing to interfere with securing a first class crop of honey the present year and the work is short enough to handle 25 swarms a day without trouble.

I wrote you on July 4th of having caught 65 swarms since the first day of this month. The next day, July 5th, 25 swarms issued in three hours and we caught and hived them all without trouble and without two swarms getting together. Without the catchers it would have been impossible to have done anything with them. I never saw such a rush of bees in all my experience, and I am safe in saying that the catchers were worth fifty dollars to me on that one day. We have now caught over 100 swarms, since July 1st, without a single failure, and have done it all with an ease hitherto unknown.

I am now preparing to greatly increase my colonies and start further out-apiaries as it is now possible to catch and hive the swarms with cheap labor. I pronounce the catchers perfect and invite anyone interested to come and see for themselves.

FORESTVILLE, Minn., July 14th, 1891.

A Successful House Apiary. How the Bees are Hived by the Use of a Catcher and Feed Board.

J. A. GOLDEN.

FRRIEND Hutchinson, I see by your last leader that the August REVIEW is to be devoted to house apiaries. I shall be very glad to read that number, from the fact that much has been said in abuse of my ideal of bee-keeping, or the house apiary. Your leader suggests far more to be considered than this article should contain.

May there not be much in the plan and management of the house apiary as regards the comfort and pleasure of the apiarist? I suspect this is one of the main causes why house apiaries are unpopular; therefore I will give you my experience.



CATCHING A SWARM FROM THE HOUSE APIARY
BY MEANS OF A SWARM CATCHER.

My house is 8x10, by 6 feet high and accommodates 24 colonies, ten on each side and four on one end. The studding is 2x3, spaced 22 inches apart. Inch square cleats 3 inches long are nailed on each side of the studding at the floor and 30 inches above. A board the width of the studding rests on these cleats with two 3 inch pieces nailed upright on this board with a board 12 inches long nailed on top of the upright. A "long idea" hive nine feet six inches long, sixteen inches wide and depth to suit frame, is built on each side and divided into five apartments by grooved division boards, leaving a space of two inches between each hive. The entrances are cut in the side boards, 10 inches by $\frac{3}{8}$, at the center of each hive. Bottom boards are nailed on and placed in position, resting on a cleat at each end. The spaces back of the hives and between them are packed with shavings and boards fitted in on top, making every part complete. A dummy or adjusting board is used in front of each hive, the frames running lengthwise

of the house or hive. A 2 inch cone escape is placed at the back of each hive. Abundance of light comes in from a revolving window in the south end of the house. A 60 foot sub-earth ventilator enters through the floor and a ventilator passes out at top of house. The floor is carpeted, which greatly prevents the jarring of the bees, especially during cold weather.

We produce comb honey and manipulate as follows: First, we catch the swarm, usually as it leaves the parent hive, with my good wife's invention, a swarm catcher, which is a small frame box covered with light oil cloth (oiled surface inside) and having a wire screen door at the large end. As the swarm passes out we place the open end of catcher at the entrance of the hive. The bees cluster on the wire screen. We then sprinkle them a little through the wire cloth. This cools and quiets the bees and the fever subsides. We now place in position what we call a feed board. This board resembles a threshing machine feed board. On each side is a wire hook to fasten into small staples placed in the alighting board. A standard, hinged to the under side of the feed board, has a nail driven into the lower side and filed sharp and when swung against the house it will remain and support the feed board. We next pick up the catcher and slip out the wire cloth screen, when a little jar will land every bee upon the feed board at the entrance of the hive, and the thing is accomplished. These two devices (catcher and feed board) are worth very much to the bee fraternity, so far as comfort in catching and hiving swarms are concerned. To manipulate this hive, I put in as many frames as desired, and slip the adjusting board to suit.

In preparing for winter, a cushion is placed between the front of the hive and adjusting board and a cushion on top of brood frames, when all is very complete, handy of excess to feed or examine; sheltered from the storms of winter and frosts of spring, which are two features worthy of the apiarist's attention.

In manipulating the house apiary I have not received a dozen stings, except from the crushing of bees, for the past four years, and I have both hybrids and pure blood. Smoke is seldom applied. As I raise a good many queens I find the house all that could be desired for this delightful branch of apiculture, and I may claim to be the first to use the three appliances mentioned above.

There are several house apiaries in my locality and others in process of construction and no objection has ever been heard of so far as I know. With a practice of four years along this line, I submit the above and close by saying that a house and hives as I have described will cost about \$25 in this locality. I enclose a photograph of the



INTERIOR OF HOUSE APIARY SHOWING COLONIES
PACKED FOR WINTER, CUSHIONS, ETC.

exterior and interior of my house, also one of my good wife catching her first swarm with her catcher.

REINERSVILLE, Ohio., July 24th, 1891.

[For view of exterior of house apiary see Extracted Department.—ED.]

A Tall House Apiary With an Elevator and Cellar.

OLIVER FOSTER.

ANY repository for bees to be generally practical, must be economical. The "McKinley bill" has so cheapened all table luxuries into which sugar enters, that honey must also be produced cheaply if it finds a ready market.

Were it not for one or two difficulties I think a house apiary might be devised, that would be, in the end, all things considered, as economical as a yard apiary.

At present the most serious objection I think of is that it will not admit of my present ideal method of wintering, which is, in brief, under ground, with access to the open air.

The next objection is that to be sufficiently economical, the hives must be too close together for easy manipulation.

I cannot do better here than to refer the reader to a description and illustration of the only house apiary, properly so called, that I have used. It is found on page 231, *Gleanings in Bee Culture* for May, 1882. (See Extracted Department of this number.)

This apiary for 14 hives, was most economical. On the whole, it was successful, but the bottom of the hive apartments, being thin and near the ground, soon rotted out. Also the great weight of the tiers of seven hives each, caused them to settle in the middle, which caused openings through between the apartments which were only separated by $\frac{1}{2}$ inch boards. It was also difficult to remove colonies or interchange their places. About the time the house gave out I adopted the standard simplicity L. frame, which would require a change in the details of construction. I still use some important features of this system.

Were I to build another house apiary, I should want each hive, including its bottom board, *separate* and *removable*. I should want the entrance of the hive a foot or more from the wall of the building, through which, in front of each hive entrance, I would have an opening, a foot or more square, only I would not have the openings all alike, but of different shapes, round, triangular, oblong etc., to assist the bees in marking their own entrances. No other windows, doors nor escapes would be required, except for the entrance of the operator, and for his convenience while working, as no bees will remain on the floor but will strike for the entrance and the light.

The bee escape will assist in taking off honey, but no escape will cause all the bees of some colonies to leave the combs at once. A week or ten days often finds many still clinging to the combs, especially those for extracting, so that, to expedite matters, not only when removing honey but also in various other operations, it often becomes very convenient to shake bees in front of the hive. Also whenever a hive is opened that is crowded with bees, many of them are left outside. These soon find the entrance if it

is accessible, but the young bees will not readily pass out of a bee escape.

Were it not for the wintering problem, I might reconsider a partially developed plan for a large house apiary, with four or five tiers of hives extending all around the side walls, one tier three or four feet above the other. An elevator, communicating from cellar to the upper tier, with a platform large enough to extend to all the hives in a tier would be needed. Any hive could be shoved back upon the platform to be opened and manipulated, which would give ample room all around it. The colonies could be carried to and from the cellar below on the elevator if wintering in that way were desired. I fear the bees would often get too warm in winter if kept above, and in my experience, a great many bees in one repository will often do so below ground.

MT. VERNON, IOWA. July 20, 1891.

A House Apiary, that is a Regular Bee Killer—Some of Its Other Disadvantages.

J. B. HAINS.

THE subject of house apiaries is just now attracting considerable attention.

Articles have recently appeared in the columns of journals devoted to apiculture, many commending the use of the house apiary in such a manner as to be likely to induce apiarists who have abandoned its use to again stock it with bees and endeavor to make it practical and profitable. A writer very recently recommended them for queen rearing. Now as silence on the subject by one who has had experience along that line, might be regarded in a degree an approval of its use, I may be permitted to give my opinion and back it up with a statement of my experience.

In the outset I desire to say that I regard the house apiary worse than useless and a very expensive establishment to keep up, even though the house had been furnished ready made and stocked with bees free of cost to the apiarist.

In the year of 1879 I erected a house apiary, fitted it up in the most modern style, put in forty-eight colonies of bees which wintered fairly well but dwindled so in the spring, especially on the north side, that I was compelled to draw on the yard apiary to make

them good. I secured about half as much honey from the house apiary that season as I did from the hives outside, but was unwilling to abandon the experiment. The second spring was a repetition of the first, the bees on the north side dwindled as before, some were lost in the winter and I removed them from the north side and doubled them up with the weak ones on the south side of the building, drew from the outside hives to keep up the strength of the constantly failing colonies, consequent on the loss of bees through falling to the ground outside, and being crushed on the floor inside of the house.

From that time to the present I have been compelled to add bees and brood each year, and I have no doubt that had I placed the original forty-eight colonies outside in suitable hives, and added to them as I have to the house apiary, they would to-day number more than one hundred, whereas they are now less than one dozen, and should they survive the next winter I shall surely remove them to the yard.

My house apiary is well provided with bee escapes as I have a wire screen in the upper part of the doors fastened at the center of both top and bottom with wooden pins, so that it will whirl and thus get the bees which are inside of the door on the outside so they can fly away. In addition to this I have a row of cone bee escapes made of perforated tin which are placed in openings made in the upper part of the screen and fastened along the top to the frame of the screen. These are very satisfactory so far as getting the bees out is concerned.

The loss of bees is a small matter compared to the loss of labor in caring for them, and the injury to the eyes and lungs resulting from smoke confined in a comparatively close room. I have tried it for the production of extracted honey, for comb honey and also for rearing queens, while for the two former it is a failure, for the latter it is simply intolerable as it is difficult to find the queen, and impossible to look into the combs and see eggs without running to the door with each frame of comb. If you have no "house apiary," my advice is, build none. If you have one, turn it into a honey house, a storehouse for implements, a corn house, a chicken house, in fact anything excepting a bee house.

BEDFORD, Ohio.

July 29, 1891.

Combining a House Apiary With a Shop,
Honey House and Store Room—
Having the Hives Movable.

JAMES HEDDON.

HOUSE APIARY." That is, a building within which the bees are placed and from which they fly out through the walls into the big, broad world. The building is so large that the apiarist goes in without "scrooching," turns around and finds store room for utensils, honey, etc. I built one in 1876 at my Glenwood yard, kept bees in it two seasons, then set them out; not because the inside was not a good enough place in which to keep them but because I needed the whole inside of the building as a store room for my growing apiary.

The building was one story, hip roof, 48 feet long and twelve feet wide. The walls were 4 inches in the clear, made of 4-inch matched pine both inside and out and the space between filled with sawdust. The ceiling was also covered with sawdust to the depth of about one foot. Of course the room was cooler in hot weather and warmer in cold weather than other rooms. 96 colonies were placed in the room, 48 on each side, in two rows, 24 in each row. The bottom row was raised about 8 inches above the floor, while the upper row was placed at such a height above the lower tier as to admit of tiering-up the supers upon the lower row.

Without going into details regarding how the hives were adjusted to the wall, the entrances to the hives, etc., I must tell you, Mr. Editor, that for once we have caught you napping: I see you are not experienced in regard to house apiaries. Now, see here, never allow any one to advocate in your paper the use of any hives, frames, cases or brood chambers that are fixed within the building. I used the same bottom board I now use—fast on my modification of the L. hive and loose on my new patented hive. My hive could be adjusted to the house apiary with a single motion. Now don't you see that this arrangement, while having no objectionable features, made all the hives and colonies in the house interchangeable with those outside? Do you not see, still further, that your objections to hiving swarms are washed away, because the swarms are hived out of doors in any convenient place, and, when the bees are all in, the brood chamber is carried into the house and placed where desired? Of course, this

manipulation, like most manipulation, is best adapted to fixed frames, yet it was a practical success with the L. frame.

You mention the never ending annoyance of the bees escaping in the room. Your whole thought seems to be directed simply to the removing of surplus honey. Pshaw, now, couldn't we, without any bee escapes, carry the surplus cases out of the room, or into a little closet, made in the room, and fitted with a cone escape? Perhaps you will ask how about the few bees that escape while moving the surplus cases. Suppose I ask you about the bees that escape while you are adjusting your bee escapes, or handling your brood frames, or cases, or during the various other manipulations sometimes necessary. Well, let me answer for you. We used a bridge to drop down upon the alighting board the same as we do when packing the bees for winter in big boxes. In the top of this bridge was an inch hole with a little loose block to cover it up. When a lot of bees got outside the hive, if they did not fly around the room and out of doors (and, by the way, very few bees take wing in the room) this block was removed, and in a little while all the bees would be back in the hive. By the way, we used to rid the surplus boxes of bees in the same manner, and instead of bee escapes settling the house apiary problem, I doubt if they would pay for their cost in a house apiary. Another thing: if we forgot to drop on this bridge, leaving the alighting board all open to the inside of the room for a space of 3 x 13 inches, the bees never flew up into the room. They passed in and out without seeming to notice the opening. But it is best to have the alighting boards closed as when the bees are hanging out, and the entrances are only a short distance apart, a lot of returning bees may enter the wrong hive.

I think I made a mistake in not making my house apiary wider. Had I made it 18 feet wide I could have had my hive accommodations and plenty of room besides, and would not have been crowded out for want of store room. But I am not "possessed of an abandoned house apiary" to experiment with, for the one in question burned last spring from sparks from a saw mill. The house is gone, the mill is gone, and I am left with my experience and the insurance upon the building and its contents which consisted of apicultural implements—no bees.

The house apiary possesses some splendid advantages. Out of the sun, out of the

rain, out of the wind, out of the reach of thieves, implements and bees close together, and last but not least, out of the reach of robber bees. The annoyance from robbers is the one great cause of irritability among the bees of an apiary, and I want to tell you that if you have a colony that is so confounded mean that you expect to be stung even when using a smoker, set it in the house apiary and the bees will behave perfectly; it would almost be safe to open the hive without smoke.

A house apiary ought to have its doors and windows so arranged that the house can be made perfectly dark when desired.

The floor upon which the hives rest may be connected with the walls, but the central portion of the floor ought to be disconnected from that upon the hives rest. This allows one end of the building to be used for a shop and the other for a honey house.

Make the building about one-third larger than it is expected that it will be needed and fill the walls with sawdust. The second story will be found valuable for all kinds of storage room. Have an outside stairway to this second floor and there may also be an inside stairway or a trap door.

When a swarm is issuing it can be quickly discovered by any one inside the building on account of the peculiar roaring that may be heard all over the room.

The main objection to a house apiary is that the bees, especially the queens, in returning, enter the wrong entrances where the hives are so close together. I found more queenless colonies than I ever had outdoors. I had four different figures in four different colors painted around the entrances, and the bees certainly learned them. Every fourth entrance was alike, and when stragglers came back from where a swarm had been hived, and did not enter their own hive, they were almost certain to go into the fourth entrance which was like their own in form and color.

On the whole, I think the house apiary, when rightly made and managed, is, in many localities, a thing of comfort and profit. It is an easy thing to pack colonies for winter, and after being packed I can see what splendid advantages can be gained from stove heat on the inside during extremely cold weather; although I have never experimented with this feature as my out-apiary is six miles away.

DOWAGIAC, Mich.

July 30, 1891.

Cleaning up Empty Combs.

PELHAM & WILLIAMS.

HAVING about a thousand empty combs from which the honey had been extracted, we were desirous of having them cleaned up quickly and put away in the comb closet for the winter, but the bees seemed to think there was no hurry, at any rate they were provokingly slow. The combs were hung in supers and put on top of the hives and tiered up four and five high, but as a little honey was coming in, it being the latter part of September, the bees would collect the cleanings in the central combs of each super leaving only the outer combs dry. Finally a large box was procured that would hold four or five dozen Langstroth frames in two tiers. This was set in the rear of a colony and connected with the hive by a tin tube an inch and a half in diameter and about eight inches long. The box was hung full of combs and covered with a heavy cotton cloth, a board cover to keep out rain being propped up several inches above the cloth. The bees seemed to think: "Well, this is somebody else's store house we have got into and we'll just take what we can get and carry it home." At any rate they cleaned up extractor combs and unfinished sections very rapidly.

The tin tubes are readily made from old fruit cans by unsoldering the joints and rolling the tin about a round stick. They should be a little over size so that when compressed and put in the holes they will spring out and fit tightly.

We prefer the large box to a stack of supers as it will hold sections either loose or in the racks, or cappings in shallow boxes or anything from which we want honey cleaned off by the bees. Two or three of these "clean ups" make quick work of the usual fall job of putting away empty combs for the winter. The arrangement is due to the ingenuity of Mr. M. L. Williams.

MAYSVILLE, Ky.,

July 15, 1891.

[I have frequently seen this condition of things when I wished to have sections cleaned up and have succeeded by stacking them up out of doors, in supers, and allowing the bees to enter through a small entrance. If a large entrance is given, so many bees will crowd in that, in their quarrels to see who shall have the spoils, some of the combs will be literally torn to pieces. If only one or two bees can pass through the entrance at a time, no such results will oc-

cur. I believe I learned this plan of Dr. C. C. Miller. No, this practice has caused no trouble by inciting robbing. The bees are allowed to "grub away" at the combs until they quit the business of their own accord.—[Ed.]

Preventing Increase by Returning the Swarm to the Parent Hive—Too Many Drones Cause Swarming.

DADANT & SON.

FRIEND Hutchinson:—In reply to your inquiry concerning our article in *Gleanings* page 541, on the question of preventing increase, by returning the swarm to the parent colony 48 hours after the swarm is hived, we will say that we are not the originators of this method. It has been recommended years ago by French writers, Hamet, Collins and others.

The great drawback of box-hive bee-keeping lies in the fact that during good seasons the bee-keeper gets too many swarms to get much honey and during bad seasons he loses them and finds himself as poor as before. For this reason Collins and Hamet, who were the champions of box-hive bee-keeping, as you perhaps know, in spite of all the last half century's improvements, were compelled to study the best means of preventing swarming and returning swarms to the parent hive.

Hamet had noticed what we found ourselves after him, that if the swarm was returned at once to the hive, the bees were more than likely to swarm again as early as possible. When the swarm is held in an empty box for 24 to 48 hours, the old colony gets over the swarming impulse, cools down, and when the old queen is returned she is allowed to destroy the queen cells much more rapidly. This does not do away with swarming, altogether, as much depends on the season, and many other causes may induce further preparations for swarming again, but it has a tendency to put an end to the swarming fever, and is much more successful than the returning of the swarm at once even if the queen cells are taken out before returning the swarm, as the excitement of swarming is not over in the latter case, and new cells are very soon reared.

As a matter of course it is still more advisable to remove the queen cells or the young hatched queen, as the case may be, before returning the swarm, or if preferable, to kill the old queen when the swarm is be-

ing returned, as she may be old and beginning to fail. There are, however, other matters of great importance which are too often disregarded by bee-keepers, especially beginners, who wish to prevent swarming. One of the most important points is the drone question.

They say that when Louis the Fourteenth was contemplating war, his Prime Minister Colbert said to him: "Sire, to make war we need, firstly, money; secondly, money; thirdly, money." Well, to raise honey successfully and prevent swarming, we need, firstly, to prevent drone rearing; secondly, to prevent drone rearing; and thirdly, to prevent drone rearing. This is not all we need, as money is not all we need for war, but it is one of the great needs that are too often disregarded. The drones are expensive to the bee-keeper, more so than many believe, and unprofitable and annoying to the bees. They are in the way, being out of the hive only a couple of hours each day, get in the path of the bees at the busiest time and keep the hive hot when it most needs to be cooled. One frame full of drone comb will furnish all the drones that are needed for a full apiary of 100 colonies. The others should be removed from the hives in early spring and replaced by worker comb. True, some people will tell you that if you remove the drone comb, the bees will cut down worker comb and put drone comb in its place. Don't listen to them. One great draw-back to progress lies in the fact that many people go by hearsay and not by their own experiments. Let our readers take out all the drone comb that they see in all their hives except in one or two of the best colonies, (they will be sure to leave small patches of it here and there, but this is unimportant) and they will find it much cheaper than rearing drones and using some queen trap or other to catch them afterwards. They will also find that their bees will swarm much less, provided they also try to keep the hives well shaded, with enough ventilation to prevent the bees from lying out in the hottest weather, and room enough for the bees to harvest as large a crop as may be expected.

We speak of ventilation. Did you ever stop to think that when the bees of a hive are lying out in clusters during a good flow of honey, it is because they feel ill at ease inside? This is one reason why we are in favor of loose bottom boards. We want to

be able to raise the hive sufficiently off its bottom to do away with the clusters of bees that lie idle on the outside. We want to give them enough air to enable them to make the whole hive comfortable in any part of it. The less drone traps, queen excluders, partitions, separators etc. you have in your hives, the better the bees will feel and the less swarms you will have.

HAMILTON, Ill.,

July 23, 1891.

[Upon inquiry in regard to the treatment of the swarm until is returned I learn that it is hived upon the old stand and the parent colony set to one side for the time being.—ED.]

The Three Leading Methods of Introducing Queens.

W. J. ELLISON.



AS THE introduction of queens by any mode will not be for the instruction of the "vets," I think we should make the best way we know of as plain and simple as possible, that the most unskilled and nervous juvenile in the art could not make a failure.

We have three old, standard methods, all tending to or involving the same principle, that of causing the queen to act as careless of the presence of any strangers as if she were in the home from which she had just been transposed. I have always held that, in successful introduction, every thing depends upon the *action of the queen*. If we could persuade a virgin of four or five days to act as much like a laying queen as does one of a few hours, we would have as little trouble getting the bees to accept her as we do the laying queen. But we can't. Almost the first antennæ that touches one of that age she starts, throws up her wings in a "touch me not" manner, and is next seen racing over the combs with a few old veterans of the field in her wake. Finally she is captured and held tight by each hind leg. This is the beginning of the end. The result is she is balled and if not aided is killed. I think it pays a queen breeder better not to fuss with virgin queens more than twenty-four hours old.

The first, and I think the best, of all plans is that of caging the queen on one of the combs, allowing the bees to liberate her by cutting away the comb, and it matters little where she is placed, whether over hatching bees or not, only that she is put where she can get honey from the cells, if she is not provided with food in the cage. After she

is so placed do not disturb the bees for at least 48 hours. It is well to observe this in any way we give a new queen to a colony, unless they have been queenless at least seven days or until they have had time to build and seal a batch of cells. Then they will accept almost any well behaved queen.

The next best way is in having a cage with a place of exit filled with "Good candy," the bees will eat it away making a clear passage for "Her Royal Highness" to stroll out at her leisure. Some one has said by the time the bees have eaten away the food they will be in a good humor and will accept the queen, but I believe the bees are always in a good humor when in the presence of a queen that knows how to behave herself.

The third way is that of having the queen altogether confined in any kind of a cage and placed in a queenless colony for forty-eight hours, then liberate her. She is by this time very apt to be accepted; if not well received then recage her for another term of imprisonment.

With any plan we must first be sure the colony is queenless before attempting to give them a new queen. There may be many other ways, according to books, to introduce queens but the forgoing are the chief and only safe ways.

In my own apiary I adopt myself to circumstances more than to any particular mode of introduction. I introduced a select tested queen to-day. Suppose I tell you how I did it. It took ten minutes. The colony was one that had raised a batch of cells. In taking them away the robbers became very troublesome; I feared to open the hive, after closing it in their presence, so I placed the queen, (she being in an empty cage without food) directly at the entrance. In about a minute the cage was covered with bees, some feeding her through the wire cloth. I quickly removed the cage about 6 or 8 inches away and opened it, when the same bees that adhered to it acted as an escort to lead her to the entrance, where she walked boldly in followed by a lot of merry bees all buzzing a real hearty note of welcome from each of their little wings. All this with dozens of robbers flying around. I am not much of a believer in any particular cage for introducing queens, as we have only to allow the queen, if a laying one, to become acquainted or used to the bees, and all trouble is over. Sometimes it takes one hour and sometimes forty-eight.

CATHALL, S. C.,

April 2nd, 1891.

Do We Want House Apiaries?

OLD TIMER.

WHAT depends. First and foremost, we want nothing by way of adjunct to our business that involves the outlay of much capital, as the present condition of the honey market will not justify the investment. Nothing that does not, either directly or indirectly, embrace the volume or certainty of income, which requires any considerable amount of money, will be indulged in by the prudent apiarist whose bread and butter depends on the products of his apiary.

Years ago, when the house apiary problem was first broached, the writer gave it careful attention and thought he discovered many advantages by its use. The absolute shelter from storms, the luxury of being able to manipulate bees with perfect freedom from the annoyance of robbers, the protection afforded from the extremes of hot days and cool nights, the security from loss of honey by thieves, all seemed in favor of the house apiary. Being located where lumber was cheap and abundant, I built two of these houses in the spring of 1876, each 12x25 feet in size, at a cost of \$300. They were made with six-inch, filled walls, were substantially built, and would each accommodate 52 colonies. My anticipations regarding their desirability in summer were fully realized, but both were destroyed by fire the following January, which gave me no opportunity to test their capacity for carrying bees safely through the winter.

From former experience I am of the opinion that where cheap lumber can be obtained the house apiary can be made a success. I would build them about 8x13 feet, with a single roof sloping to the south. Such a house would accommodate 13 colonies, four on each end, and five on the south side. If a double row were put in, one above the other, the capacity may be doubled; but as a matter of convenience, and for speed in manipulation, the single row is preferable, while economy would dictate the larger number. Built of rough, unpainted lumber, the cost of materials will cost from \$10 up, according to location. Anyone handy with tools can do the work without the assistance of a carpenter.

The projection of the roof will shade the upper row of hives, if one is put in, while a couple of boards, running lengthwise the building, and nailed to figure 4 supports, will ward off the sun's heat from the lower

row. A loose floor above will give storage room in the "attic," a convenience every bee-keeper can appreciate. I would have the door in the center of the north side. Ventilators at each end are necessary in hot weather. All things considered, single walls are better than double, as they afford ample protection, make a dryer room and are far more cheaper. When built upon dry soil no ground floor is necessary.

The advantages of the house apiary are many. Hives need no paint, no shade boards are necessary. The absolute freedom from annoyance by stings and robber bees is something all can appreciate. I have worked for days without veil or smoker, or even without a hat, never receiving a sting. Those who have never handled bees in such buildings, where they are not compelled to contend with the depressing influence of a sultry summer's sun cannot realize their advantages in the way of manipulation, as the amount of work that can be accomplished in a day is simply surprising. The bees cling quietly to the combs and seem to take little notice of what is going on, especially in the honey season. The only objections to the house apiaries, so far as my experience goes, are the cost and liability to loose young queens when returning from their wedding flight. The plan I have outlined overcomes the first, and the second can easily be avoided by taking a little care in giving hive entrances a dissimilar appearance. Where a proper non-swarmer system is followed these little houses enable the specialist to establish out-apiaries with much greater security, largely augmenting his annual cash income.

July 27, 1891.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS:—\$1.00 a year in advance. Two copies, \$1.50; three for \$2.70; five for \$4.00; ten, or more, 70 cents each. ~~25~~ The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, AUGUST 10, 1891.

I HAVE DECIDED to make an exhibit at the Detroit Exposition, also at our State fair. This will make the September REVIEW a little late.

THE MISSOURI BEE-KEEPER is improving. The last number shows most clearly that it has an *editor*.

SEVERAL ARTICLES on "House Apiaries" are crowded out of this issue. They will appear in the September number.

RAYS OF LIGHT can no longer be classed as a bee journal. It has been changed to a local newspaper and looks as though it might be more of a success in that direction.

WORDS OF PRAISE were spoken last month by the REVIEW for the *C. B. J.* They were deserved. In fact, the last two issues show that the praise is more than deserved. It really seems as though Bro. Jones had been in hiding for months and months and had now been found, brought out into the company and made to "talk turkey."

THE AMERICAN APICULTURIST for August is but little more than a great big booming circular for the business of E. L. Pratt and H. Alley. By *actual measurement*, more than three-fourths of its reading matter is devoted to the describing, praising, puffing and pricing of those "wonderful Punic bees," the "golden Carniolans," or to berating those who have criticized said bees or the methods of their breeders.

YELLOW (?) CARNIOLANS.

Some of the discussion upon the so-called "yellow Carniolans" reminds one quite forcibly of the bee journalism that has past and gone.

There is no doubt that yellow bees can be found in Carniola, but it has been explained how they came there, that they have intermixed with the yellow bees of Italy. The point is right here. Carniolans are a dark variety while Italians are yellow. To secure bees from just inside the border of Italy, bees that had received a dash of dark blood from an adjoining country, then breed out the yellow blood and sell the result as *black* Italians, would be exactly in line with what is being done with the Carniolans. That the bees sold as "yellow Carniolans" are good bees no one has expressed a doubt, that their immediate ancestors came to this country from Carniola may be equally true, but to call them typical Carniolans would be as absurd as to call an ootroon a typical African.

CLOSED-END FRAMES IN A TIGHT-FITTING HIVE.

Ernest Root, in *Gleanings* for July 15, contends that the deeper are close fitting frames the greater is the difficulty of manipulating them in a tight fitting case, *ala* Heddon. He says that deep frames catch and draw out by "hitches" as in the case with a bureau drawer if it fits snugly and is not pulled out perfectly straight. I am inclined to agree with Ernest in this matter; not so, however, when he says that the right amount of "play" or space cannot be maintained between the ends of the frames and the outside case on account of the effects of moisture. Lumber does not swell *endwise*, and by halving together the corners of a hive in such a manner that the inside of the end pieces comes against a shoulder cut in the ends of the side pieces, the hive can never be any smaller *inside* in the *direction of its length*, no matter *how* much the lumber swells. Now for the frames. Their top and bottom bars extend their extreme length and can never be any longer from swelling. The ends of the top and bottom bars fit into notches cut into the ends of the end bars, or uprights, and are nailed fast, the nails being driven within $\frac{1}{8}$ of the end of the top or bottom bars. The end bars are $\frac{3}{8}$ thick and perfectly free to swell in either direction from where they are fastened by nailing. In other words, they can and do swell both ways from the nailing. Outside of the nailing, at each end, is $\frac{1}{8}$ of wood that can swell in such a manner as to lessen the distance between the ends of the frames and the outside case. This is all the wood there is about the *whole hive* that can swell in such a manner as to lessen this space. $\frac{1}{8}$ inch of ordinary pine wood will never swell until it is more than 5-16 thick, while $\frac{1}{8}$ play can be allowed if necessary.

My Heddon hives and frames are made exactly as I describe them. When I put them in the cellar in the fall I always loosen up the screws as I well know that the end bars will swell *crosswise* of the hive. Ordinarily the screws press the frames back about 5-16 from the sides of the hive. When taken from the cellar the end bars have sometimes swelled so much in some hives that this 5-16 space is entirely closed up; but between the *ends* of the frames and the *ends* of the outside case there is ample space to allow the manipulation of the frames. I allow only 1-16 "play" yet the blade of an ordinary case knife might be easily thrust

down between the ends of the frames and the ends of the case in the most swelled set of frames I ever saw. If hives and frames were made as I have described, and $\frac{1}{8}$ play allowed, they might be sunk in the millpond a week without the frames being swelled against the ends of the case—it couldn't be done.

DISPLAYING ADVERTISEMENTS.

Dr. Miller, in his "Stray Straws," says: "Hutchinson sits up nights studying how to make his advertisements look nice." Doctor, you guessed pretty *near* the truth that time. I do sometimes wake up in the night and study over the matter of arranging the display of some advertisement the "make up" of which is not entirely to my liking. I know every style of type in my cases as well as a mother knows the faces of her children; and, after studying over an advertisement the night before, I often step up to the cases and set it up exactly as it was previously planned in the night.

As a rule the work of displaying advertisements falls to the compositor, but some advertisers indicate the style of display that is desired. No one can take as much interest in an advertisement as can the man who pays for the space it occupies, and with a knowledge of the rules governing the displaying of advertisements many an advertiser might at least word his advertisements in such a manner that they could be most effectively displayed.

In displaying an advertisement, its central thought, its leading feature, should be given the most prominence. What is it that is offered for sale? Is it queens? Then "queens" is the word for the most prominent display. The *kind* of queens comes next. Then the price, who has them, etc. If everybody is offering queens, then the *kind* of queens might be made the most prominent. If the breeder is a prominent bee keeper, then his own name might be made the most prominent. What applies to queens applies to other offerings.

There is no necessity for the amount of display that many imagine there is. A single line or even a word, something of a "catchy" character that will attract attention is enough, then let the rest of the advertisement be so well worded that, if the reader has any interest in the subject, he will read it through. The idea that the throwing into an advertisement of a whole

lot of display lines of different styles of type is the making of a handsome and effective advertisement is wholly erroneous. Instead of trying to see how many different styles of type can be worked into an advertisement, strive to use as *few* as possible. If the compositor has a *series* of varying sizes of the same style of type he can often display an advertisement *handsomely* with only this one style of display type. If different styles of type are used, let them be such as harmonize. The selection of neat and tasty wearing apparel and the displaying of advertisements are somewhat akin. No lady with an eye for beauty ever dresses in discordant colors. Her dress, her gloves, her bonnet, her ribbons are of the same color or *shades* of the same color—at least, they *harmonize*. It should be the same in putting together type in forming an advertisement.

This matter of harmony should be carried even into the making up of the advertising pages. The cuts and heavy, displayed matter should not be "bunched" in one part of the page, but scattered or so arranged that the page will appear balanced. In making up the forms it is also well to notice which pages will appear best when placed opposite.

How beautiful is beautiful printing, but, as some one has said, "to raise beautiful roses one must first have beautiful roses in the heart." It's the same with—anything.

HANDLING HIVES INSTEAD OF FRAMES.

To choose the best topic for discussion is no easy task. Of course it is well to have a seasonable topic, but, sometimes, the discussion of one topic bring up another; as the discussion of bee escapes brought up that of house apiaries. Some little happening, some expressive expression, somebody's toes trodden upon, and the tongues and pens are wagging. Everybody is interested and the time is ripe for a discussion. When a topic is uppermost, then is the time for the REVIEW to make it the subject of special discussion. Never has there been such a disposition, as at present, to take "short cuts across apicultural fields." This is the subject in which bee keepers seem the most interested at present, and the one particular "short cut" that seems ready for a more thorough investigation, is that of "Handling Hives Instead of Frames."

Movable frames *were* needed, are needed yet, but not for the purpose they once were

needed. They were needed that the mysteries of the hive might be lid jare, and they are needed yet that beginners may observe these mysteries, but how seldom are they needed in the brood nest in an apiary managed for honey by an experienced apiarist. If a colony needs feeding it is a great convenience to be able to give it a comb of honey; aside from this it is possible with suitable hives to perform nearly every needed manipulation without handling a frame.

I well remember how I handled frames the first year I kept bees. To one who has been an enthusiastic beginner it would be a waste of words to tell all that I saw—I actually became acquainted with each comb in my eight hives. As I soon drifted into queen rearing, the handling of frames was continued, but when the production of comb honey began to engross my attention the handling of frames was largely dropped. Later, when the Heddon hive allowed me to practice contraction of the brood nest without handling frames, my handling of frames in comb honey production was practically over. I presume that in two-thirds of my hives, not a frame has been taken out the past three or four years. There has been no necessity for it. In the production of extracted honey, surplus combs must be handled, but, thanks to the bee escape, there is no longer any necessity for handling them singly when freeing them from bees.

In the spring, a lifting of the hive, together with a peep down between the tops of the combs, driving the bees out of the way with smoke, will usually show if the bees have sufficient stores. By driving the bees down with smoke the operator can also see if the colony is the possessor of a queen—the sealed brood disclosing the fact. If possessed of a queen and plenty honey a colony needs no internal manipulation in early spring. There is no doubt that, when rightly managed, more brood per comb may be secured by what is termed "spreading the brood" just before the opening of the clover honey harvest: but to do this by frame-manipulation is too slow, when by simply transposing the sections of a horizontally divisible brood chamber hive, the brood nest may be turned "inside out." Just stop and think a moment. Here is the brood nest in the shape of a big round ball. Now slice it in two horizontally and put the lower section at the top, the upper at the bottom. Don't you see that the outside or spherical parts of the brood nest are brought together

in the center of the hive, while the broad, flat surfaces are thrown to the outside—at the top and bottom? In their endeavor to again bring their brood nest into the spherical form, the bees fill with brood the broodless comb that was brought into center. If this transposition is performed at the right time so that *all* the combs will be full of brood just as the main harvest comes on, it is a great big advantage, and it can be secured without handling a frame.

In hiving swarms, this same kind of hive (divisible brood chamber) enables the apiarist to contract the brood nest without handling a frame. The different methods of preventing increase, allowing a moderate increase, or securing abundant increase, without the handling of a frame, have been so recently given in these columns that it is not necessary to repeat them.

To find queens it is not necessary to handle frames. With a little practice with the Heddon hive queens can be shaken out and found at the rate of one in three minutes; or they may be found just under a queen excluder as has been several times described by R. L. Taylor. Queens can be introduced without handling frames. Simply lay the cage over the frames, or press it up between the combs from below and allow the bees to release the queen by eating candy out of the entrance. I have often introduced queens in this manner.

Weak stocks in hives with shallow combs may be united in the fall by simply setting one over the other—no handling of frames.

Again I say, why handle frames? Why cling to those hives, fixtures and methods that compel the handling of frames? Carefully, thoughtfully, honestly give the reasons and allow them to be published in the September REVIEW.

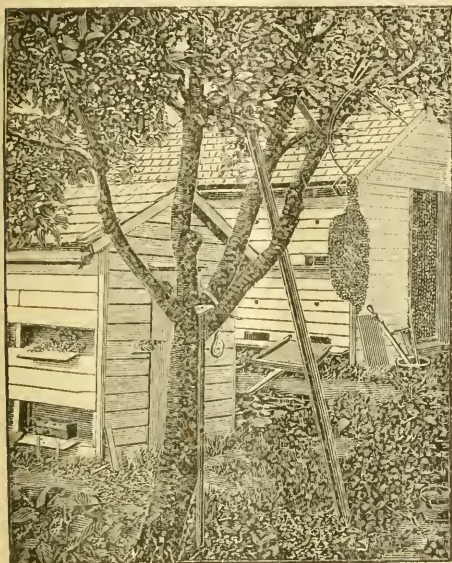
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Hiving Bees in a House Apiary; Its Advantages When Escapes Are Used.

In 1889 Mr. J. A. Golden, of Reinersville, Ohio, contributed the following article to *Gleanings*:

"Friend Root:—I enclose you a picture of my plan of keeping bees, also how I hive them. If you look at the further house, and at the lower right-hand bee-entrance, you will observe what we call a feed-board. On each side there is a wire hook that fastens into two small staples placed in the alight-

ing-board at the proper places, the standard being hinged to the under side of the feed-board, with a nail drove into the lower end, filed sharp, and, when swung against the house, will hold the board very rigid. It is one of the handiest tools one can have about a house-apiry for hiving bees. I use the wire basket that shuts automatically when the bees drop into the basket, should the bees cluster on a tree; but I usually catch the queen when she comes out, and place her in a trap, and hang the trap on a pole or tree, as you will observe in the picture. The bees



will soon cluster, and may be shook on the feed-board, the queen liberated and hived without the least trouble. The small dark spots above the entrance are two-inch auger-holes with funnel-shaped wire-cloth bee-escapes. A three-inch space between the hive and weather-board is packed solid with saw-dust, answering the same purpose as the chaff hive. During the winter I fill the porticos with straw, having an air-chamber on the inside of the house to the hive, covered with wire-cloth, that affords abundance of air for the bees. I also have a three-inch tiling, 60 feet in length, passing about six feet under the ground, and conducted thence up through the floor of the house, having a small ventilator at the roof; and on a cold day one would be surprised to see how mild the air seems to be, passing from the ground. My floors are carpeted, and no jarring is noticeable when one desires to examine the bees."

In the last issue of *Gleanings* he has the following:

"Permit me to say a word from my experience with the Reese bee-escape placed in the bee-house, as you will observe by referring to page 990, 1889. After reading E. R.'s short experience in this line on page 561

(1891) I am not surprised at the facts he has given. I have often wondered why it was that persons abandoned the house-apiry. Well, since reading E. R.'s article I presume there was good reason; and as I have always used the escape, and never had any inconveniences from the bees in the house outside of the hive, it ought to be a good reason why I thus pondered over the problem.

I have frequently seen articles condemning house-apiries, and I frequently thought of writing you for the reason; but, thanks to E. R. for the explanation. I want to say that anyone having a house-apiry can, by putting in a two-inch hole, with the cone bee-escape just over each hive, henceforth continue to call blessings down upon the inventor of that most valuable gift, the bee-escape, to the bee-fraternity.

In my article on page 990 I did not say anything about inside manipulation. I have an abundance of light from a revolving window in the south end, sufficient to catch a queen, see eggs, or for any work; also blinded when not at work. Of course, I use a spring blind. To be handy, the ventilator, or escape, above, carries the smoke away at the roof; and the cone escape—why, it's just grand. Put them on over a three or four inch rim, and the crate on the top in the evening, and in the morning no bees, or scarcely any, are found in the erate. If any, they are quite young. Yes, the escape works tiptop in the house, and I want to predict the most pleasant manipulation of bees you have ever enjoyed in your life. If you thus arrange your house-apiry, however, you must not forget to have plenty of light while manipulating or looking for queens and eggs. The spring-blind is the handiest, and most convenient in working the house-apiry. I use so little smoke one would hardly perceive it, and the ventilator draws it away when you are not using the smoker. One thus working with the house-apiry does not or can not know what robber bees are to a certainty—at least, that is my experience."

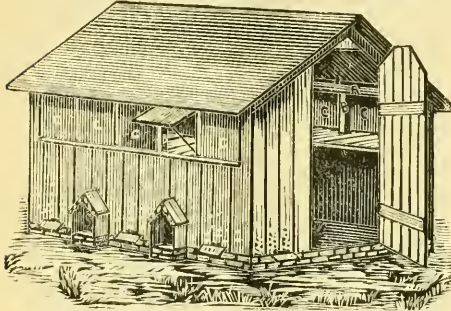
A 14-Hive House Apiry.

In his contribution to this number Mr. Oliver Foster mentions the house apiry that he described years ago in *Gleanings*. Here are the article and illustrations to which he refers:

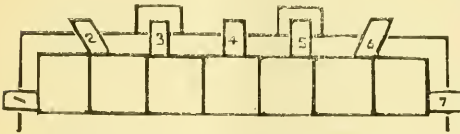
"Here is a sketch of the house apiry I promised to describe. It is 6x10, and 7 ft. high; 4 feet at sides. The roof is of inch boards, matched to turn water. They are nailed at top to a 2x4 scantling, which passes under the ridge the full length, and at the lower side to a similar piece shown at A. These are supported in the middle by posts, B B. Between these posts are hung trap doors which open out as shown at C.

There are seven two-story hives on each side, with a space of two feet between the rows. The frame used in this apiry is 9 $\frac{3}{4}$ x12 $\frac{1}{4}$ inches. The inside walls of hives are of half-inch stuff. The seven hives of each row are all built together in one box 9

ft. long, and wide and high enough in lower story to take the frame crosswise. The partitions between the brood nests are half-inch board, and 15 in. from center to center. The top stories are built to take the frame across the other way, and are 20 inches long, which



makes it easy to remove lower frames. The spaces at sides and ends, and below each row of hives, are filled with chaff. Chaff cushions are used in top story in winter. The entrances pass out from under the brood-nests something like this:



The portico on Nos. 3 and 5 prevents bees mixing. As I said, this house is a success summer and winter. I would rather handle bees in it any time than elsewhere. When it is warm, and I want to work in the "open air" with a nice shade overhead, I just open all the doors. When robbers are troublesome, I open one door in front of the hive I am working, and all the bees that take wing fly out. In extracting, bees can be shaken into top story or in front of entrance. When I said that I intended to adopt this principle unanimately, I meant that I would place the colonies close enough together in winter to keep each other warm. But I reserve this subject for another time.

OLIVER FOSTER."

Bro. Hill's Review of Advanced Bee Culture.

Last month I gave a short extract from the review of "Advanced Bee Culture" as Bro. Hill, of the *Guide*, is giving it to his readers. This extract was given to show that the work was not being fairly done. I will now give the article entire and then take up the task of replying to Bro. Hill upon those points where we differ.

"We have received a copy of the new book with the above title written by W. Z. Hutchinson. It contains 100 pages the size of the

Guide. Price 50c., paper cover. It is gotten up in the finest style, and the typographical features are an honor to our profession.

The title has a tendency to lead the purchaser to expect something new and superior to any other book published. We fear that friend Hutchinson has undertaken more in giving out this impression than he can fulfil. The first topic in the new book is "Care of Bees in Winter." We have reviewed it carefully and fail to find anything in it either advanced or new and the good things practical and sensible are entirely omitted. The subject is nicely treated from a literary or rhetorical point of view, but is of no practical value as an instructor for bee-keepers because it lacks detail and system. A greater part of the article is made up of how to do things wrong instead of telling how to feed and prepare bees for winter at the proper time. He takes so much space telling how to do the work out of season in a disagreeable, impractical way, and at times is apt to leave the impression with the reader that neglected bees can be just as well cared for in January as in September and October. It looks to us as if a book calculated to teach advanced bee-culture should tell how and when to do the work, and not devote two-thirds of its space telling how to patch up old sores caused by neglect of slow, afternoon bee-keepers.

To give directions for opening hives in a cellar or on summer stands during cold weather, for the purpose of robbing one hive to help another is not even advanced or sensible. Considerable space is used in telling how to feed candy to bees during cold weather. This is not new or advanced, because A. I. Root fifteen years ago boomed the candy feeding, enthusing bee-keepers to use it until he had large sales of it at a profit to himself and at a loss to his customers. About the most amusing thing we have heard was of a bee-keepers' wife figuring up the Root candy bill, with the ridiculous losses of colonies and failures of surplus her husband had sustained.

Advanced practical bee-keepers nowadays feed during October granulated sugar syrup, mixed with honey, warm, and in good bee feeders. This food is stored in the combs around and above the cluster convenient for the bees in the natural way. The idea of a man's writing up advanced bee culture and tell about robbing and spoiling a good colony to fix up a poor one, and then dabbling around with candy, carpet rags, etc., all winter, is, to say the least, bad taste. One-fifth of the article is devoted to killing mice, making this one of the most important features in wintering bees. He gives the temperature at which the cellar should be kept but does not say anything about what the results or effects would be if such a temperature is not maintained. He says nothing about a stove in the cellar fired with hard coal to keep up the temperature and to ventilate. He says nothing about an ice box the full height of the cellar with a door to put in the ice and a ventilation at bottom and top. The box should have heavy ribs nailed perpendicularly inside to keep the ice away from the sides so that the air

will pass up around the ice, causing a circulation, both cooling and drying the air. Both of the above are rather new, scientific, advanced, practicable and profitable. These are crowded out to make room for mice, candy business, bees crawling up trousers legs, sleeves, down his collar and under his coat, giving the reader the impression that to care for bees in winter is equal to challenging Kilrain for a prize fight.

The next subject, 'Securing Workers for the Harvest,' will be reviewed in the August *Guide*."

The naming of a book is a task requiring much care and consideration. "Advanced Bee Culture" was not chosen lightly nor hastily. For a week or more the matter was in my mind a large share of the time; even causing me to lie awake nights and study over the matter. The titles that were considered, revised and changed about before the one chosen was fixed upon, were not a few. If others, like Bro. Hill, have been led to believe that all the book contains is *new*, I hasten to dispel the illusion. I have attempted to describe the methods and implements that are thought to be best by the most advanced bee-keepers. Or, to be very exact, those that I consider the most advanced. Some of these implements and the best way of managing them may have been in use several years, but that does not prevent them from being the most advanced.

Bro. Hill speaks of "robbing one hive to help another," of "spoiling a good colony to fix up a poor one." I can best answer this by quoting exactly what I said upon this point in "Advanced Bee Culture." Here is what I said:

"Probably the best method of feeding bees in winter is to give them a frame of honey. Perhaps all the honey is in the hives, what shall be done with them? It is well known that all colonies do not consume the same amount of stores. The variation is very great, and by examining all of the colonies, or a large number of them, the bee-keeper can usually find combs of honey that may be spared to furnish needy colonies with stores."

If Bro. Hill would allow good colonies to starve in winter rather than feed them, I can only say I would not. I know he will say that he would have fed them the previous autumn. Yes, so would I, but *if*, by some hook or crook, bees were found short of stores, perhaps starving, in winter, what would *you* do Bro. Hill? As I have said in the new book, it is no unusual thing to find some colonies that have consumed less stores than others, and by carefully removing the cover and working with care an outside

comb of honey can be removed without greatly disturbing the bees. By removing one comb from a needy colony and spreading the others apart the comb of honey can be given. I am aware that such work is unpleasant, but it is better than allowing very many colonies to perish of starvation. If Bro. Hill thinks otherwise, let him give his reasons and I shall be glad to publish them. If the bees must be fed in winter and none of the colonies have any honey to spare, does he know of any better or more "advanced" plan than the feeding of candy? If he does, let him give it.

Again I am taken to task because I used so much space in telling how to guard against the depredations of mice. Let those who think this matter unimportant, read the following extract from an editorial that lately appeared in the *C. B. J.*

"When we went to set out the bees this spring, we noticed that all the bees on the floor appeared to be chopped up or cut in two and noticed the mice scampering away. The first hives we commenced to lift off the shelves convinced us that something was wrong and we ventured the statement that half of the bees were destroyed. Our surmises were correct as examination proved there was scarcely a hive in the bee house that had not from one to five mice in it. We carried out one hive into the yard and stood around it with sticks and as they came out, killed twenty-nine mice. We did not kill any bees in that hive as the mice had taken the contract and finished it. Two-thirds of the bees in the bee house were similarly treated, and those living were very much injured. We used to think that mice did not touch live bees or kill them, we are now convinced that they do. We noticed on the bottom boards of most of the hives, bees bit in two at the thorax, not one, but many, life still being in them. Their feet were moving showing clearly that they had been very recently destroyed."

It is true that I said nothing about a coal stove in a bee cellar, or about an ice box arranged as Bro. Hill describes, but here is what I *did* say, yet no one would ever have dreamed it from reading Bro. Hill's review.

"Quite a number have reported excellent results by warming up the bee repository to summer heat, say once a week or ten days, if the bees become uneasy towards spring. This enables the bees to throw off any surplus moisture, and, as the temperature goes down, they quiet down and remain so for several days, when they may be warmed up again. So long as the bees remain quiet, I should not disturb them by artificial heat. If the cellar becomes *too warm* in the spring, before it is time to remove the bees, it may be cooled down by carrying in snow or ice or the windows or doors may be opened at night and closed in the morning."

Handling Hives Instead of Frames.

In *Gleanings*, for July 15, in a quite lengthy article upon the above topic, by C. J. H. Gravenhorst, of Germany. I have read it over twice with a view to cutting it down, but considering the importance of the subject and the manner in which it is handled, I find that it cannot be satisfactorily condensed, so I give it entire:

"Friend Root:—I was much delighted in reading *Gleanings* for May 1, p. 388, where I found a letter from Mr. A. F. Brown, and your foot-note to it. Yes, you and Mr. B. have undoubtedly hit the point exactly and never I think, was a word truer than yours: 'Sooner or later bee-keeping has got to resolve itself into the handling of hives more and frames less.' You say further: 'It may be truthfully said, that old bee-keepers do not spend the time they once did over their bees; and we think it is equally true, that, as our industry progresses, bee-keepers as a class to-day, or in the near future, will not spend the time over their bees they did a few years ago; in other words, they will get a thousand pounds of honey with less labor.'

Now, friend R., let me tell you why I rejoice over your words. First, those words came from one whose name is known to bee-keepers all over the world; and because you fully know, I believe, what you are speaking of as an authority in bee-matters. Second, because I have fought for that principle to which you give expression in those words, nearly as long as I have kept bees in movable-comb hives. Descended from a family which was in the bee-business for generations, I kept bees at first just as did my forefathers in the old Luneburgian straw skeps; and, I may say, with no less success than they. Our crop from 60 to 80 colonies, spring count, which were increased, by swarming and driving, to 180 or 240 colonies, was, in the best seasons, from 3000 to 6000 lbs. of honey, and from 50 to 80 lbs. of wax—a yield that is to this day not uncommon among our old-fashioned bee-keepers in North Germany, especially in the province of Hannover; and, what is the main thing, they get it at less cost of labor and time than the bee-keepers do to-day with their movable-comb hives.

At the time I became well acquainted with Dzierzon's writings and with himself, I got some Dzierzon and Berlepsch hives, and kept bees in them by way of trial. But I found out something by this new method that did not satisfy me in contrast with the old one. In the course of several years I always got more honey and wax in the old-fashioned way, with my old Luneburgian straw skeps than with my accurately constructed and skillfully handled Dzierzon and Berlepsch hives; and last, but not least, with undoubtedly less cost, labor and time. What was the reason? Not taking into the account that the bees did not do as well in the winter, nor thrive early in the spring in this frame hive, experience soon convinced me

that the principle point was, that I could handle my old skeps instead of individual frames, and get a thousand pounds of honey with less labor. Of course, my experience would have prompted me to have abandoned the movable-comb hive totally had I been blind enough to misunderstand the great advantages of the latter. What was to be done under such circumstances, not to fall out of the frying-pan into the fire? All things considered, I thought: How would it be if you combine the great advantages of the Luneburgian straw skep with the superiority of the movable-comb hive? This idea was strengthened by Dzierzon and Berlepsch. Both of them wrote at that time in their works as well as in the *Bienenzeitung* (Bee Journal), that, if it were possible to furnish the Luneburgian straw skeps with suitable frames, there would be no better hive than such a one, in regard to wintering bees, rapid increase in the population of colonies in the spring, and, not least, ease in manipulation: but the cylindrical shape and the arched top of the old hive would not permit this. All right, I thought; but, why not alter the shape and enlarge the hive to a moderate movable-comb hive? The result of my endeavor was the construction of a hive of which you will find some pictures in Dadant's Revised Langstroth. It is this: The old Luneburgian skep with the arched top, only larger, and not in the shape of a cylinder; but by means of this it is furnished with 16 movable fixed frames, nearly as large as the Langstroth frames. Although Dzierzon, Berlepsch and other prominent bee-keepers in Germany acknowledge the great value of this hive, it is adopted, with few exceptions, only by such bee-keepers as have kept bees in the old straw skeps, and therefore they know by experience the great advantages in handling bees by turning the hive over and manipulating the *whole* hive. On the other hand, this hive has met more vehement opposition than all others. But this is easy to understand. He who has never handled bees in the Luneburgian straw skeps, especially in the rational way, like the bee-keepers of North Germany, can not have the slightest idea of the advantages bees may be handled with in such hives.

The greatest objection to this hive has been the inversion, or turning over, before one can manage the bees. But by doing it in the right way it is not a bit more troublesome than to take off a well-filled super from a Dadant hive. If you have those skeps standing on the ground (as is always the case in America), you do not have to lift the whole hive—only to turn it toward you. Let it first rest on the front edge, then on the front side, and at last on top.

Now, I don't intend to urge any of my brother bee-keepers in America to accept *this* movable straw hive—no, not in the least. Their honey-market and other circumstances are different from those in Germany in more than one respect; and, besides that, I am fully aware that the hive used in America is the most suitable one for the wants of the American bee-keepers. But as there is nothing perfect in this world of trouble, and progress must take place every-

where, I am convinced that very decided progress will be put forward in that line which has been pointed out by you, friend Root, and by Mr. Brown—*handling hives more, instead of frames*. How is this to be done in the most suitable way, in your country, will, no doubt, be shown by American bee-keepers without any assistance from other countries. James Heddon has already taken a great step forward; and other steps of importance, to further your idea are, I think, the accession of the fixed Hoffman frames and the movable bottom-board.

After these preliminary words, let me explain what you, friend Root, and Mr. Brown have advanced a most valuable idea in the bee-keeping world by advocating the handling of hives instead of frames. You will allow me to describe this by referring to the hive, as I lay great stress thereon. American bee-keepers do not think ill of my hive; but I wish to convince them that it is not the production of the writing table, but the fruit of careful experience, and such a one as has helped me to raise a crop of honey not surpassed by any other bee-keeper in Germany, unless by one of my disciples.

The handling of the hive, and not touching of any of the frames, can be accomplished if the colonies are in a normal condition, as the colony will be if the bee-keeper did his duty at the close of the previous season, and the wintering was good. Of course, there will be exceptions to the rule; but of such I shall speak by and by. As for these colonies, the movable comb and handling of frames is of the greatest benefit. I handle hives: 1. After the first cleansing flight in the spring. I do not have to remove any warming materials, quilts, nor to open a door, as is necessary with side opening hives. I simply turn my hive over, in the way before mentioned. This gives a most complete view of the interior of the hive, not limited by wide top-bars and thick honey-combs, or one single comb, as is the case with German hives. I see how many spaces between the combs are filled with bees, and how large the colony is. No one will deny that an exact knowledge of this is of great importance every time. If the bees come up briskly from a compact cluster below, then I take it for granted the colony is not queenless. Should the bees not sit in a compact cluster, but more scattered between and on the combs, then the colony is most probably queenless. A few puffs from the smoker will drive the bees down. I now let the bright daylight in, and see whether there is brood in the comb or not; and then should I not see what I wish to, I push aside two combs from those in the middle of the cluster, and take them out of the hive to look after the queen or eggs. In the same way I find out how it is with the provisions, providing lifting the hive and weighing it in my hands has not told me what I wish to know. Finding all is right, as a good normal colony always will be, the whole task is done without handling any frames. In less than a minute the hive stands again in its old position—no replacing of a quilt or warming materials, nor a window; no loss of heat from the brood-nest, no tearing up of the nicely

glued cover to cause a draft of air from the entrance through the cluster of the bees to the top of the hive. If not prevented by loss of time, there is no disturbing the bees by handling frames. To let the bees alone until a time of mild weather would be judicious. The sooner I know the wants of a colony, the sooner I can help. I do not need more than three hours on the day following a cleansing flight, to know the minute conditions of hundreds and more of my colonies; besides having swept with a brush the dead bodies and the cappings of the honey-cells from the floor-board, saving more than four pounds of wax from a hundred colonies in this way. All colonies that need my further attention (and these are always a considerable part) get one, two, or three sticks on the front side, according as the brood-chamber is to be contracted, queenlessness is suspected, or stores are supplied. In these colonies, as exceptions to the rule, I do not avoid handling the frames; on the contrary, in such cases it is a benefit to help them by means of the movable combs.

I handle only the hives, to know whether a colony is on the swarming point, or fit to swarm artificially. No one will deny that it is of great importance to know this. I simply turn the hive over, give a few whiffs of smoke; and now, as the true workplace of the colony lies open before me, I see whether queen-cells are started, whether there are eggs in them or larvae, or on the point of being capped over, or have reached maturity.

All my hives have a space of from two to three inches beneath the small bottom-bars of the frames, as such a space secures a good wintering, and shows me whether a colony is ripe for artificial swarming, or whether I have to extract honey. As soon as I see, by simply turning over, that the bees begin to start combs beneath the bottom bars, I know for certainty that the colony is ripe for artificial swarming, or that I have to take out some capped honey-frames, and insert other full combs to be again filled with honey. You see, friend R., the chief point in most cases is to learn the true condition of the colonies, without handling frames, covers, quilts, doors, etc.

TO CONTROL COMB-BUILDING SWARMS.

Whether I have given only starters or full foundation, I must always strive to secure perfect combs. Without such combs, the movable-comb hive is nonsense, and more objectionable than an old skep or box hive. All my thousands of combs in frames are perfect—not crooked in any way, nor do they show any drone-cells where I did not allow them to be built. Therefore I have no more drones in my hives than I wish. A drone-trap is for me a useless thing, and not to be seen in my apiary.

To avoid faulty combs, one must have the easiest control of the comb-building swarms; and that is to be accomplished in the most complete way by turning the hive over. And then one has a view of the actual workhouse of the bees. *Here* is performed comb-building; and *there* is to be seen the busy life of

the colony; here are hanging the wax-secreting and comb-building bees. A little smoke, and one sees the new combs built on the starters, or the finishing of the foundation. In most cases I remove the beginnings of drone-combs, and also regulate crooked combs by a so-called drone-knife—a hooked knife with a long handle. Of course, in some cases the drone-knife will not do all that is to be done to secure perfect combs; but then, one may handle one or two frames to do the rest. If I had before me a normal colony, or such a one as has worked according to my wishes, I need not handle a single frame. An inversion of the hive, a few puffs of smoke, a peep at the combs, an inversion of the hive to its normal position, and the work is done in less than a minute.

Now, friend Root, I could point out to you far more advantages in handling hives instead of handling frames; but it may be enough to show of what great importance you and Mr. Brown's suggestions are for the advancement of bee-keeping. As I have said before, I am of the opinion that American bee-keepers will themselves soon find out in what way this is to be carried out with their unsurpassed Langstroth hive; and I should be very glad to learn from them how they in future handle their hives instead of frames. C. J. H. GRAVENHORST."

WILSNACK, Germany.

To the above Mr. Root replies as follows:

"[Friend G., we are obliged to you for your very kind and very valuable information. It were no more than fair, however, to say, especially as Ernest is at present absent, that to him belongs the credit of the quotation you make. Notwithstanding, however, I emphatically endorse what he says. The glimpse you give us of the way in which you manipulate your hives is to me very interesting indeed, and I can understand now, as I never did before, why it is that you prefer such an arrangement. You have got accustomed to it, and the whole process is, as it were, at your fingers' ends; and then we must admit, as you explain it to us, that there are some very important advantages indeed in handling bees without uncovering the brood-nest at all. In fact, I remember many instances where positive damage has been done by some awkward manipulator in tearing open the top of the brood-nest during cool weather, and then leaving it only partially closed up again after he went away. Nay, further, I have seen colonies get the 'spring dwindling' and actually die outright (in my opinion), simply by this kind of unseasonable and unreasonable tinkering. If we don't use the same kind of hives, friend G., it is comforting to know that we agree on general principles in the production of honey.]"

Upon another page Mr. Root has the following:

"We would call especial attention to a valuable article on handling *hives* instead of frames, from the pen of that veteran bee-keeper, C. J. H. Gravenhorst, editor of the *Illustrated Bienenzeitung*, a German bee-paper of no ordinary standing. This is a

vital subject, and we are glad Mr. Gravenhorst has given his experience along this line. Close competition and poor *honey-seasons*, such as we have had, mean that we must produce a ton of honey with less labor, and that is, handling hives instead of frames. Mr. James Heddon deserves no little credit for advancing this idea of late: but he is by no means the pioneer in it. Since we have been handling fixed frames we have seen the possibilities in handling hives, and the time is fast approaching among *progressive* (not *conservative*) bee-keepers when they will find queens, ascertain the amount of stores, and diagnose a colony in a dozen other ways, with a tenth part of the labor. Old fogies need not poohpooh of this: if they do, they will be left in the race on profits. Let this subject be discussed. We have lots of room for such articles."

I am glad to see that Mr. Gravenhorst and Mr. Root are willing to give Mr. Heddon credit in this matter of handling hives instead of frames, but it seems to me that they do not give him *sufficient* credit. I certainly believe him to be the pioneer in this field. For a dozen years or more I have been an attentive and careful reader of our American bee keeping literature, having read nearly every journal from the first number up to the present time, and never until Mr. Heddon described his plan of preventing after swarming did I get so much as a *hint* of handling hives instead of frames. Can Mr. Root point to anyone else who wrote upon the subject previous to that, or *very* much since then, unless it is myself, (and I got my idea of Mr. Heddon) until during the last two or three years? Since then Mr. Heddon has brought out his new hive and system whereby this idea of handling hives instead of frames may be carried to greater perfection than ever before. If Mr. Heddon is not the pioneer who is? Mr. Barnett Taylor, of Forestville, Minn., who has been giving us such excellent articles of late showing the wonderful things that can be accomplished by handling hives, may have been the pioneer in this country and he may not, but I believe it is conceded that the honor rightfully belongs to the one who *first publishes* the discovery. The one who makes a discovery, then discovers the *value* of the discovery and *makes it known*, is the one deserving of all honor. I presume our cousins across the waters may have handled hives instead of frames long before Mr. Heddon advocated it, but was it not in this way? They, many of them, handled hives, straw or box hives, years and years ago, and have *continued* to handle them up to the present

time. By a lucky accident, their system of management and such hives were well adapted to each other. But movable combs were needed to enable us to learn the mysteries of the hive, having learned them, frames are seldom needed; but the idea of handling hives more and frames less, as the matter is *now* understood in this country, did not come to us from across the waters.

One word more. Years ago, when *Gleanings* was in its infancy, or child-hood I guess it was, Mr. Heddon advocated box hives in its columns, and thereby called down upon his head the condemnation of nearly the whole *Gleanings* family (of bee-keepers). I know of one old bee-keeper who has frequently said to me: "I have never taken much stock in Mr. Heddon since he advocated box hives." I don't know as Mr. Heddon ever publicly described the particular style of box hive that he had in mind, but he has several times told me about it and it was to have been a shallow hive and managed *exactly* as Mr. Gravenhorst says that he manages his. If Mr. Heddon neglected to describe his peculiar box hive and its method of management—well, he must take the consequences, that's all. But it is *sometimes* convenient to be able to handle *frames*, and Mr. Heddon has given us a hive in which the frames can be handled as well as in any hive, while for handling *hives* instead of frames his hive is the *ne plus ultra*.

If I am wrong in any of my conclusions I hope to be corrected and will "own up like a man."

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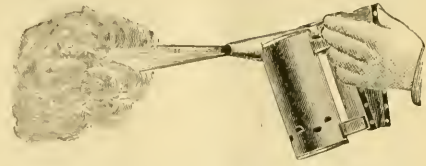
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traction of the Brood Nest are duly considered; after which Comb Foundation, Foul Brood, Queen Rearing, the Raising of Good Extracted Honey, and "Feeding Back" are taken up. After the honey is raised, then its Preparation for the Market, and Marketing are discussed. Then Migratory Bee-keeping, Out - Apiaries and Apiarian Exhibits at Fairs are each given a chapter. After this comes the question of Wintering, which is discussed in all its phases. The influence of Food, Ventilation, Moisture, Temperature, Protection, etc., etc. are all touched upon. There are also chapters upon Specialty versus Mixed Bee-Keeping, Comforts and Conveniences in the Apiary, Mistakes in Bee-Keeping, etc., etc.—32 chapters in all.

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The stove cost \$12.00 when new, but, as the office has been moved to another part of the house where it will be warmed from the sitting room stove, I would gladly sell it for \$6.00, and it is really as good now as when bought. An illustrated, descriptive circular will be sent on application.

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To turn out first class printing, five things are necessary. 1st, good type of neat and artistic styles; 2nd, good paper; 3rd, good ink; 4th, a good press; and, 5th, the skill to use all these things. If one of these factors is wanting, it is like taking a link from a chain. In what degree the above necessities to good printing

may be found in the REVIEW office, the REVIEW best shows.

Since it became known that the REVIEW was "home made" many of its readers have offered it the job of doing their printing. While I have most thoroughly appreciated this kindness, I have been compelled to decline the work, simply from lack of time. Since enlarging the REVIEW I have found it impossible to set all of the type myself, while there is not work enough to keep a compositor all the time. I am obliged to depend upon "picking up" a man for a week or two each month. This is rather unpleasant, as I am obliged to put up with Tom, Dick and Harry and sometimes I have trouble in finding even these. For these reasons I have decided to keep a man all the time and then do job work that he may be kept busy when not at work on the REVIEW.

Now, friends, if you wish for good printing I shall be glad to do it for you. Nothing will induce me to send out a poor job, but if you want nice work and are willing to pay for it (not an exorbitant price but what it is really worth) I shall be glad to hear from you.

W. Z. HUTCHINSON, Flint, Mich.



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa., **One of the Largest Bee-Hive Factories** in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

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W. Z. HUTCHINSON, Editor & Prop.

VOL. IV. FLINT, MICHIGAN, SEP. 10, 1891. NO. 9.

The special topic of this issue is

Handling Hives Instead of Frames.

That of the next issue will be

"Rendering Wax."

Why the Prejudice Against the Heddon Hive
When it so Completely Fills the Bill!

It is with some embarrassment that I undertake to write upon the subject of handling hives instead of frames, for it really brings us to the point of the New Heddon Hive against the world, and you know that it is "understood" that there is a clique in Michigan formed for the purpose of booming that hive right or wrong, and who knows but I may be classed among that number.

Then again it seems a thankless task to undertake to give information which bee keepers wilfully shut their eyes against—information which they would rather not have, and the destruction of which would cause them to rejoice. Is it because there is a patent on the hive or on account of jealousy of Mr. Heddon that so few are willing when hives and frames are under consideration to open their eyes to his hive and his frame? To be sure after almost endless captious criticism the Heddon honey board has come to be recognized, and the old Heddon hive,

after getting notches in the ends of the sides and ends, has come to have quite a boom, but they are not covered by a patent. How can such men as Dr. Miller so frequently and seriously discuss the beauties of the Hoffman frame, and such men as E. R. Root gravely discuss the endwise swelling of the new Heddon frame and propolis behind the end bars as serious objections to that frame? I feel sure their faces must relax into smiles sometimes when they contemplate their effusions on these topics, or is it because the customers of the one and the help of the other have so much time on their hands and so delight in working over hives in the hot sun that they prefer to handle frames rather than not? Or perhaps it is a love of theorizing—some men are affected in that way. It is said that such find great pleasure when writing on practical topics in drawing entirely on their imagination for their facts. Theory indeed is a great thing. How it helps a man out when he is beaten on the facts! When the facts are against him he can maintain his position on the plain of theory and still feel that he is not a bit stubborn and entirely open to conviction. By the way, did you ever notice how the man who is striving with tense muscles to exclude the light and conceal the facts protests his freedom from bias and stubbornness?

Well, in view of these things, I often feel like dropping back in the harness and refusing to make further exertion. Ephraim is joined to his idols, let him alone.

But I am wandering from my subject, or rather, I have not touched it. To-day as I write the sun is intensely hot, and it helps me to appreciate the advantages of a hive that is capable of being handled bodily in place of handling the frames separately, for it helps me the more distinctly to recall the times I have sweltered all day long taking out frames one by one for extracting, to the days when swarms were coming out galore and every moment was precious. How I have perspired over the ramshackle hives to which so many continue to be wedded in readjusting the frames every time one was moved, and to the many other occasions when queens were to be caught or the condition of colonies was to be determined, or brood was to be spread, or hives were to be contracted when some other duty demanded a share of my time, or when the shade of a friendly tree was found to be more grateful by a large percentage than the direct rays of the sun.

In the matters specified as well as in many others I have demonstrated the utility of hives that can be handled instead of frames, by the use for several years of several hundred of the new Heddon pattern.

It would seem to require no argument to show that a hive suitable to be handled in the manner suggested must be a sectional hive, and it would further seem a matter of course that only the new Heddon hive or some infringement thereon can answer the requirements. Is it not safe to say: *Hinc ille lachry mac?*"

It will require no extensive illustration to show to the unprejudiced mind the advantages of hive handling over frame handling. Using as I now do the hive mentioned, if I wish to remove honey which is ready for extracting, a few puffs of smoke drive the bees below, and with one motion I lift off the whole section. If I wish to catch a queen, if it be at a time when there is little honey in the upper section, a few puffs of smoke will drive the queen up, when I take the upper section and with two or three vigorous shakes deposit the queen with the bees on the ground in front of the hive, where she is readily captured. If the upper section is heavy with honey drive her down and shake the lower story in like manner. If it is desired to determine whether a laying queen be present, or the amount of brood, or whether preparations for swarming are making, or any other of the particulars of


the internal condition of the colony, raise one end of the upper section to the angle desired and all is disclosed. If a rapid extension of brood is wanted just at the approach of the honey season, when the bees are numerous enough to keep the entire hive warm, simply place the lower section on top of the upper one, and the work is done in the best manner possible. If you wish to increase your colonies by division take one section of the hive with the bees in it and put it on a new stand, and in three or four days give a queen to the colony that has begun the construction of queen cells, all of which is easily accomplished without touching a frame. If you desire to contract certain hives at the beginning of the early honey season in order to get as much as possible of the white honey in the sections, take one section from each, shaking out the bees, and put the removed section above the honey board of a colony that needs strengthening till the brood hatches. In like manner to get the best results hive swarms in one section of the hive. By kindred manipulation colonies may be united in the fall, and winter stores equalized. What is left? Frames must of course be taken out to be extracted, sometimes to make sure no queen cell is left in a hive, and to straighten a comb when one is out of shape. A bare statement is all that is necessary to show the advantage of handling hives instead of frames. I think it is safe to say that one-half the necessary labor is saved thereby, and that the most disagreeable part. Some will not agree, but who that has tried it to any extent questions it? Let practical results be the criterion.

LAFEEB, Mich.,

Sept. 17, 1891.

Persuaded at Last to Handle Hives Instead of Frames.

GEO. F. ROBBINS.

R. B. TAYLOR, on page 179, July REVIEW, pays his respects to me in a courteous way that tempts me to reply. I thought at first I would write to him personally, but it occurs to me that what I have to say should go into this same magazine, if there is room for it.

Mr. Taylor refers to my article in *Gleanings* of May 1st, in which I outline the system of hiving in contracted brood chambers, and says: "How clumsy his management seems to one accustomed to using small, divisible brood-chamber hives." My reply

is not to him only, but also to the very ones to whom the system appears cumbersome.

I do not think Mr. Taylor's methods tedious and fussy. For three years there has been a growing dissatisfaction on my part with the hive and frame I have been using. I am as much wedded to the system of contraction as ever, but not to my old methods of practicing it. So long as I use the Langstroth frame I shall contract as I have contracted in the past. But this year I have been testing a few shallow, divisible brood-chambers, and, although the test is not completed, I am, so far, so well satisfied with them that I am determined hereafter to invest in no other kind. I may run against something that will change my mind, but, so far, my face is set. I have two or three times in the past given, in my writings, intimations of my trend of mind toward shallow frames, but I have hesitated to invest in them for several reasons, of which I will mention only two. One is a sort of dread of—perhaps simple prejudice against—so great an innovation upon my accepted hive and system. The other stump in my way has been the not insignificant matter of cost. But every year has increased my disgust with the laborious and tedious manipulations of dummies and single hanging frames. Finally, I decided I would hesitate no longer to test in combination the divisible brood chamber and closed end frames. I believe now what I have suspected before that either one of these two principles will work best in combination with the other. Such is the results thus far of my trial of divisible brood chambers.

The burden of Mr. Taylor's article in the REVIEW, and mine in *Gleanings*, is not quite the same, one leading thought of mine being contraction, something which he does not mention; yet the general idea of both are pretty much the same. To overrule increase and get the bulk of the honey in the surplus receptacles, are the two great objects to be attained, whatever may be the methods employed.

MECHANICSBURG, Ill., July 31, 1891.

Methods, Hives, Frames, and the Honey Flow.

J. H. LARRABEE.

IN the production of honey, where it is not sought to produce as much as possible from a limited number of colonies, the handling of frames to an extent to inter-

fere with the manipulation of many colonies with a certain amount of labor, is unnecessary and I believe to-day but little practiced. I once took a number of colonies on shares, as the lady of whom I took them was tired of the labor of caring for them. And no wonder. She thought it her duty to examine them all once a week through the summer, and, of course, as she had read, it was the proper thing to remove more or less of the frames each time.

But the day when the bee keeper who produces honey at the market price can profitably handle his bees on the above plan, is past. Messrs. Elwood, Manum, Coggsall, Boardman and Miller, as well as Heddon, Taylor and Tinker, are, I believe, employing less labor than years ago, and are caring for more bees in proportion to the labor. This for the reason that they have learned that bees will to an extent care for themselves, only requiring man's aid at certain critical periods. And we who are following them are learning, first, that if colonies are strong and have plenty of bees and a queen with a goodly amount of good honey, man cannot by handling hives or frames better their condition; second, that the bee keeper is not a manufacturer nor a producer, but simply acts as a shepherd, gathering them into comfortable quarters for winter, giving direction to their breeding, and "fleecing" them at intervals.

I once followed the fashion and practiced clipping, but after a time came to the conclusion that it did not pay *me*, and now my apiary in Vermont contains few clipped queens. Also ten frame hives are my favorites, as bees in them seldom require feeding or the removing of honey to give the queen room. We have (I now speak of my Vt. location) no fall flowers that yield honey, and never but once did my bees gather fall honey, and that I regretted. Thus if they are wintered on honey, as seems best, it must be of the white honey crop. Whence, you see, partially arises my preference for the large hives. With Dr. Miller I believe in expanding or giving the bees plenty of room in the spring, and like him I don't know so well about the after contraction. If I contracted when hiving swarms, or at any other time, my bees would need feeding for winter, and that don't pay me, and perhaps, like friend Hutchinson, I would then need some quick way of uniting weak swarms in the fall.

Where one is almost sure of a fall crop, as there at the college, the function of the Heddon hive which allows it to be readily contracted when hiving swarms, etc., is valuable, as the fall honey is then put in the place where it is worth the most, and all the white honey goes to the sections.

I practice out door wintering and use a practical chaff hive, yet I believe bees can be wintered well in a cellar, though I think more care is necessary. By using a chaff hive I probably lose some time by occasionally handling frames where hives could be handled more rapidly, yet there are compensations. I gain spring and fall protection, supers not exposed to weather, and there are so many other nice things about this chaff hive that for the present I prefer to work my bees upon this old plan, handling frames little and hives less. I guess, friend H., that from year to year, I can manage as many colonies with a certain amount of labor as you can. The half days labor lost in one place is gained in another, and the man who manage 200 colonies of bees spends three-fourths of the working days of the year outside of the yard preparing for or disposing of the crop, or doing the thousand and one duties that make up the sum of life. Practice, with common sense, and a knowledge of one's hive, bees, and location, make it possible, I believe, for one man to manage with about as little labor as another the care of an apiary in different locations and on different plans.

I believe that the one great impediment to rapid and smooth manipulation, whether it be of hive or frame, is the non-maintenance of the bee space, and I think this fault is present in nearly every hive in use. We can never urge too strongly the necessity for accuracy in the making of hives and the adjustment of the parts so that everywhere there may be at all times a proper bee space. This is foreign to the subject, yet even the bars of the Heddon hive sag and warp, and the separation of the parts is made less rapid.

The great unsolved problem of bee culture to-day is the prevention of swarming, or some plan to attain the same practical results, and when this is solved I will be as willing as the rest of you to undertake the proper and profitable management of a half thousand colonies of bees entirely alone. In the meantime, whether we use one method or another, handle hives or frames,

we can none of us get honey crops unless nectar is secreted by the blossoms, and unless we have the blossoms to secrete the nectar. This question of location and the honey flow is assuming more importance with each successive season's failure here and there, or everywhere.

AGR'L COLLEGE, Mich., Aug. 28, 1891.

Handling Hives Instead of Frames.

J. A. GREEN.

THE novice, especially if he is enthusiastic and has a genuine attack of the "bee fever," handles the frames of his hives a great deal. Almost every day, and sometimes oftener, his colonies are overhauled and minutely inspected. When he cannot imagine any necessity for it, he does it just for the fun of it. This is all very well for him. In no other way can he gain that accurate knowledge of the interior of a bee hive so necessary to the successful bee-keeper, and in no other way will he so quickly tire of the business if there is not in him an abiding love for it. If his operations are carefully performed and not carried on at improper times the bees are but little injured by them. As he grows older in the business he ceases to handle bees for the fun of it and he does not find it necessary as often as he used to. Some, having but few bees, or plenty of time, or from having started out with a wrong system, continue in the belief that a periodical overhauling of the brood nest is necessary. Many of the most successful bee keepers can point to hives the frames of which have not been handled for years. As long as a colony remains in a normal condition there is no necessity whatever for handling the frames of the brood chamber. I know that many will feel like combatting this statement, but disprove it if you can.

There is no doubt that by careful management spreading the brood in the spring may be made to yield very good results. The most experienced, though, will often make mistakes in this, and in the hands of the inexperienced it is often productive of very decided harm. Because of this uncertainty of results as well as the great amount of labor required, many of the best bee-keepers have decided that it does not pay. With a sectional brood chamber, handling of frames is unnecessary, thus saving labor, and the colony is not so apt to be injured by spread-

ing the brood before they can stand it. Colonies are often injured or destroyed by improper handling early in the spring. Even if the position of the combs in the hive is not changed the breaking of the sealing at the top of the brood chamber allows heat, so necessary at that time of the year, to escape, and many a colony has its life ventilated out in this way. Instead of this, turn the hive over and make your examination from the bottom. Of course all hives cannot be turned over, but even those with loose, hanging frames, may be tipped back far enough to get a good idea of the condition of the colony.

Queens are usually found by looking them up on the combs. I use this method less and less as I learn more of the various methods of finding queens without handling frames. Queens may be smoked down and found on the bottom board, as recommended by Heddon. This is a good way when there are not too many bees.

A better plan for ordinary use is to set the hive on a queen excluding honey board having several inches space under it and then drive the bees down with smoke.

With the Heddon hive, or any similar, the queen may be shaken out of the hive as mentioned in your leader.

These three methods make a good combination. Or the bees may be driven upward and the queen caught under a queen excluder *a la* Taylor. A method that I use a great deal, and that is applicable to any kind of a hive, even box hives, is to drive the bees out of the top of the hive by smoking and drumming and catch the queen as she comes up. Sometimes I find a queen in this way in less time than I could remove a single frame, and I have frequently found a queen, introduced her successor, and had the hive closed up within two minutes and without touching a frame. For introducing queens in this way I use a wire cloth cage $\frac{3}{8} \times \frac{3}{4} \times 5$. A strip of heavy paper $2\frac{1}{2}$ inches wide is rolled up with the wire cloth making a tube half the length of the cage, which is filled with candy. The other end is closed with a wooden plug. The cage is usually placed between the top bars of the frames, though it will go almost anywhere in the hive. I have introduced a great many queens this way during the past month, and have had only one queen killed.

If bees are short of stores in the spring the most convenient way of feeding is to give them a comb of honey, but this is not

necessary. There are other ways of feeding almost as good.

In queen rearing we must handle frames. It is best to examine a colony in which a queen has been reared or introduced to be sure that the queen is laying properly. Of course this can be told in time by the presence or absence of sealed brood without handling frames, but we must wait too long to be sure, without looking for eggs. It is very desirable to be able to give a frame of brood or eggs to a colony suspected of being queenless.

There is just one other thing that makes the handling of brood frames necessary, and that is foul brood. We cannot detect this without a close inspection of the combs, and if it is in an apiary a great deal of handling of frames is necessary.

If it were not for the exceptions I have noted bees could be kept just about as well in properly made box hives as in the most elaborate frame hives, if only the question of necessary manipulation was to be considered. We want to be able to handle frames when it is necessary, but it is unnecessary to handle them as much as some do.

Some hives are much better adapted to the principle of handling hives without frames than others, and the enterprising apiarist who expects to make a living by producing honey will do well to adopt them, but with almost any kind of a hive it is both possible and profitable to handle hives more and frames less than is the general custom.

DAYTON, Ill.,

Sept. 1, 1891.

House Apiaries in Which the Bees Have Access to the Inside.—Their Advantages.

JOHN VANDERVORT.

YOU ask for my experience with house apiaries. It commenced in 1877. My object was to occupy a field where bees were safer under lock than out of doors. The results were much better than I expected. The next year I built two more, and later on I adopted that system altogether. The advantages I found were, first, cheapness; they costing about one dollar per colony. Second, the convenience of having everything under cover and at hand. I could do double the work and there were no wet grass or weeds to contend with. Third, the results in honey were much better. Cool nights do not drive the bees out of the boxes as it does in hives. My houses are 8×32 feet, 7 feet high in the

clear, and hold eighty colonies. I use the inside of my old chaff hive, have a window eighteen inches square over each hive. The window is without glass and is closed by a close fitting slide. The bees of all the hives have access to inside of house at will.

I have no use for bee escapes. When bees are shaken off the combs or out of the sections they can go out of the windows or in the hives as they like.

The principal objection to the house apiary is the loss of queens. If a colony swarms or supercedes its queen the young one is very likely to be lost. For this reason they must be watched closer than outside hives.

I build my houses double wall and pack with sawdust four inches thick, sides, top and bottom; still, I lose more in winter than I used to in chaff hives.

LACEVILLE,

Aug. 20, 1891.

Some of the Great Advantages to be Enjoyed in a House Apiary.

HENRY STEWART.

I CAUGHT the house apiary fever something over a year ago after reading an article from the pen of a Colorado gentleman who has several of these buildings in operation. This fever continued its raging until this summer, when I put up a building for an out apiary, and I am so much pleased with the same that I send you a description of it.

The building is frame, shingle roof, and enclosed with matched drop siding. It is sixty feet long, six feet wide, six feet high, and will hold seventy-eight colonies. The sides of the building face north and south, and the hives are placed inside in two rows, on each side, with an alleyway of two and one-half feet between. One row on each side is placed on the floor with an eighteen inch space between each two hives. In each of these vacant spaces is a stand two feet high on which the second row of hives are placed. Each hive is connected with the outside by means of a runway through the side of the building, and in front of each runway is fastened an alighting board. To assist the bees to mark their location the alighting boards are of different shapes, and above them are painted different designs with different colored paint. The location of each hive is known to the apiarist by a corresponding number on the inside and outside of the building. For light and ven-

tilation I inserted a strip of wire screen twelve inches wide which, with the exception of one corner, runs around the entire building. This is placed near the top. This screen is arranged with bee exits in it so as to allow any bees that may leave their hives inside to escape out of doors.

The poor season thus far has not given me a very extended experience in working with the bees in the building, but so far it has been a very satisfactory one. I find that too much smoke is a little disagreeable, but it is not necessary to use as much as for out of doors work, as the operator has nothing to do with the guards at the entrance which usually cause the greater part of the disturbance, and the apiarist does not have an excited mob following him from one hive to another.

I am satisfied that the bee escape for removing honey will work as satisfactorily here as out of doors, save that one will have to exercise a little more care in brushing the bees which adhere to the bottom side of the escape. This I generally do outside by giving it a throw, bees, escape and all.

For winter and spring protection I selected the warmest and most sheltered place I could find, the building being nearly surrounded with thick timber. A neighbor told me I would roast my bees in there, but during the hottest days we have had this summer it was nice and cool inside compared with the heat in the open sunlight.

The building cost about fifty dollars besides the work of building. This work will soon be gotten back in the matter of convenience, and the expense will be lessened in many ways. First, hives need no painting, and call pieces which would be unfit for out of door use are all right for hives to be used inside. The bee keeper is never bothered with covers blowing off nor leaky hives. The grass is always mown in front of the hives. The work of preparing for winter and the same for spring is lessened more than three-fourths. In the spring it is often quite advisable to feed and do other work with the bees which can't well be practically done out of doors without exciting robbing; but in the house, with a little caution to keep the entrance contracted, any work can be done at any time with safety.

This apiary is to be run for comb honey, and during swarming time it will be necessary to keep a hand here. My design was to have a work bench in one end of the build-

ing for his use, but this won't work, for he can't see the swarms when they issue, so I shall build a small two-story shop addition to the west end and have my work bench in the second story overlooking the building, which will give the operator full view of any swarming that may take place. Any serious disadvantage I have yet to detect, but of very many advantages more than I have here mentioned, I am well convinced.

PROPHETSTOWN, Ill., Aug. 7, 1891.

Doolittle Finds no Advantage in Handling Frames Instead of Hives.

G. M. DOOLITTLE.

I HAVE carefully read over the leader in the last REVIEW, and read the article by our friend Gravenhorst over and over again, and have tried to place myself right alongside of friend G. in all of his manipulations, going through them as near as any one can in mind, and in this way trying to get in just the position which he and the editor of the REVIEW occupies, to see if there was in reality a "shorter cut across apicultural fields" than the "round about way" I have been travelling. Well, after turning this thing over and over in my mind, after taking all the steps with friend G. which he takes, and then coming back and taking my own steps over again, I think I see just this difference between the two methods: friend G. and the editor take the "short cut" across the field, while I go around; but in the field there is a high hill, and they on their "short cut" climb up over the hill and down on the other side, while I go around, going perhaps the same distance, but save the climbing up and the holding back coming down which they have to do. In other words, I do not see where the average bee keeper, using the regular Langstroth frame, need do one particle more work to secure the same results that can be obtained with any other hive, while by using this L. hive, which he already has, he saves the climbing up (getting new hives and making of the same, etc.,) and also saves the holding back (necessary cash which such a change of hives will require.)

Knock the bottom-board off the L. hive, if it is a fast bottomed hive, and you can manipulate it to just as good advantage after the bees have been in it a year as you could a box hive or the G. hive, or the divisible

brood chamber, (beg pardon, in my opinion), and this I say after having used the divisible brood chamber hives for the past three years. To tempt me to adopt a thing, the "short cut," when viewed from all sides, must be a *short cut*, not something that lies parallel all along the way of the long route, yet having a different aspect. When I commenced to use the shallow frames necessary to the divisible brood chamber, I so made them that should I ever desire to go back, two of them could be put together so as to make one of my regular frames again, and after using them for three years, this summer found me making the 300 back into 150 again, so that to-day finds me without a single half depth frame in my yard. Why did I do this? Because I could not secure any better results, taking all in all, than I could with the others. To be sure I could control swarming almost entirely by a proper manipulation of the brood chamber, could shake out the most of the bees and the queen, could clip the queen cells by turning up the hive and driving the bees out of the way with smoke, could spread the brood by transposing the parts of the hive, contract the hive for new swarms by hiving them in only one part of the brood chamber, but when the end of the season came around I could not see that it took any less work, or that I had a pound more honey to show for it, than by the old way or with the hives I had been using for the past twenty years; so I said, "I can see no saving here, but I can see a pile of work and expense in changing hives if I go on and adopt this short cut (?) plan.

Now I will say this, that had I fifty colonies in these divisible brood chamber hives, (if I could winter the bees in those hives: so far I have failed in wintering to any degree of satisfaction in them,) I would not change and adopt any other hive, and had I the same number in the L. hive, the Gallup or the Quinby, I should stick to them, for any one who can make a success of bee keeping at all can make a success with either, for all are good hives. Because a hive has frames in it, it does not necessitate handling them all the time, neither does it follow that it is necessary to handle the frames to know the condition of the inside of the hive, for it can all be done in the manner pictured out by Mr. G. and in the leader. The question lies right here, is it any easier, or is it any shorter cut in cutting

out drone comb, to turn the hive over, rig a tool that will go in between the bottom bars of the frames, and work away, largely by guess, *a la* Gravenhorst, and finally have to handle "one or two frames" to secure perfect combs, than it would be to commence and handle the combs (where needed) on the start? Is it any less work to shake away on a hive till the queen is shaken out, and a lot of bees hunted over to find her, and the hive put back in place again, than it is to quietly sit on a stool and lift out the frame she is on, see her and know what she is doing, and place the frame back in the hive again? And so on to the end of the chapter with all the *necessary* operations in the apiary. If so, then I have handled the divisible brood chamber hive for the last three years in vain. It is easy enough to write up a reform on paper, but what we want is reform in practice. My bees, with the use of the hands and brains of one man, have paid me \$20,000 during the past twenty years, as I have hired no help to produce this result. Has any one, single handed, done better with their bees? If so, I am glad of it; and if any one will tell me how I may make \$1,500 a year, with these same hands and brains, out of bees, with no more exertion than formerly, I shall be glad and thankful to hear how: but if I am to put out \$500 or \$600 into something which will only give the same results attained in former years, then I say no, I thank you, gentlemen, I will put the \$500 into something where it will bring me interest to show for it. I presume in the past I have allowed it to appear that I handled frames more than I really do. Three times a year, at the outside, is all that is necessary to handle the frames in a hive having a colony in normal condition, and yet I often do more than this. I am still an enthusiast along the bee line, my wife often saying I had rather work with the bees (I call it play) than to eat my dinner, and this undoubtedly has had something to do with my manner of writing. Now don't anybody go and report that Doolittle is worth \$20,000. I only said the bees had given me a salary of \$1,000 a year for the past twenty years.

BORODINO, N. Y., Sept. 5th, 1891.

Accompanying the above was the following private letter:

FRIEND H.:—Yours to hand asking for an article on "handling hives instead of frames." Enclosed find the same. While

you will see that you and I do not agree, yet I have tried to give my views in a way that they should not give offence to any. I think this matter of the "short cut" in bee keeping has become a sort of craze and is being overdone. We need sober thoughts in such times as these and not run wild over a new thing, and thus throw away the dollars we have earned in the past. I have tried to answer your question "Why cling to those hives, fixtures and methods that compel the handling of frames?" in no uncertain way; but to you, privately, I would say that no hive compels the handling of frames, for the frames need not be handled at all if the apiarist does not wish. It is in the handling of the frames, *if handled judiciously*, that the profit comes. Where there is no profit, don't handle, that is all. Do you catch on?

G. M. DOOLITTLE.

The Kind of Hive Needed When Handling Hives.—A Prospective House Apiary.

GEO. R. WELLER.

AS I understand it, what we as honey producers want, is to reduce the cost of production. If the net cost per lb., when ready for market, can be reduced one cent, it is that much more profit, no matter at what price sold. The interest and insurance on the money invested in fixtures and appliances, in an advanced apiary, is about fifty cents per colony. The main cost is labor; how to reduce this is one of the live issues of the day. Among those laboring to bring it about, the REVIEW keeps well to the front. Handling hives instead of frames is directly in this line. To accomplish this the hive must be suitable, should be fixed so it can be moved in any way without injury to comb or bees, and yet can be opened and interchanged in any manner with the least time and work, and should be simple and of few pieces.

The Heddon and kindred hives are an advance on the loose, hanging style; also on the Quinby as commonly used. The box in which the frames set is not necessary, and often in the way. An outside case is considered best by those who winter in the cellar, and is indispensable for the best outdoor wintering, no other protection being necessary for the frames. The sides that enclose them are extended enough to allow bolts to pass through, across the ends of the frames,

one in the center at each end, and then make it so solid that it can be carried about, reversed, etc. By loosening the tops, the frames can be tipped over, one after another, the light coming in from ends and above, the ends of the frames can be got at their entire length, making their separation easy. A stiff case knife is just the thing: with it one or more frames may be slipped up, the crack made for the purpose not being wide enough for a bee to get in. If a number are raised at once, the propolis holds them together nicely. The center ones can be moved to the outside, or *vice versa*, as rapidly as this is written. No hitch, or catch, no swelling tight, no killing of bees, the sides "stand up" when the frames are all removed. My section holders are interchangeable with the frames, of same width as sections, are held in place with bolts and side pieces, like the frames, with sheets of perforated metal the size of frames. Perpendicular division of the brood chamber is easily accomplished when using this arrangement. To regulate brood rearing, sheets are slipped between the frames, confining the queen to as few as desirable. A sheet laid on top keeps her down, and when frames of comb, or sections are placed above, the bees are not disturbed. The frames containing the queen are known in a few days by the fresh eggs. Frames containing sections can be put in the center of the brood nest, or at the sides. The control of the queen is absolute. Sections can be started or finished at any time when honey comes in. Any amount of room can be given with sections. Extra swarming from contraction or crowding is avoided. Other advantages, such as queen rearing, uniting, etc., will suggest themselves. The limits of this article will not allow of my pointing them out. It is simple, and cheap, but not new, except perhaps in its present combination.

I am figuring on a house apiary next year, 8x9½ wide, 6x8 high, can be built at less cost per colony than a larger size, and contains as many entrances on a side as can be distinctly marked. It gives room for manipulation, extracting, etc, and some storage room. I shall tile drain and fill six inches with earth for floor, to avoid jarring bees, and shall ventilate and light from all sides. The building will be balloon frame, barn sided, lined with waterproof (rosinized) paper, flat roof finished with roofing paper,

made of good material, painted, etc. Complete it will cost about \$20, and will hold thirty-six colonies, hives for which, affording the same protection, would cost \$50. There will be no outside cases, shade boards, covers, etc., to handle, and all needed articles will be in easy reach, and there will be much less cost for repairs. It certainly will enable me to do the work quicker, easier, and with more pleasure. Walls packed with sawdust are not necessary, if not a disadvantage. They hold dampness, do not let in enough heat for evaporation, curing, etc. But few days are too hot in the shade for bees. If thin outside cases are the thing for single stands, why not for more? For winter and spring they will be packed with cushions. It certainly will cheapen the cost of production.

BERLIN, Mo.,

Sept. 9, 1891.

House Apiaries Must be Close and Warm in Winter.

J. P. MOORE.

I THINK Mr. Hains has too many holes in his scimmer. With all those bee escapes and screen doors open all winter he might as well have his bees in a barn. Of course they are better off out of doors without protection than in a barn, for out of doors they will get the benefit of the sun. A building for bees in this climate should be thoroughly packed on all sides so as to shut out all cold as much as possible, and it must not be too large for the number of colonies it contains—not over thirty cubic feet to the colony. There should be no bees on the north side in winter. If loosely built, with wind blowing through, it is a bee shed and not a house apiary.

BINGHAMTON, N. Y.,

Sept. 4, 1891.

House Apiaries and Bee Escapes.

C. E. BOYER.

THIS is the subject I have wished to see discussed. My idea for the past three years has been that a warm house apiary would be the most practical place for wintering bees here in the North. A fire could be kept in the building in cold and damp weather, thus preventing moisture in the hives. No paint would be needed on the hives, which, according to the experience of

some, would prevent dampness. It would lessen the cost of hives also. Cheaper and lighter lumber would be used: no stones would be needed on the covers, and no shade boards to make and use. Hives would not blow over, and would always be level.

Bottom boards should not be fastened on, for when swarms issue I would wish to hive them on the stand they came from, setting the old hive with the queen cells on top, with a queen excluding honey board between it and the swarm, and in about twelve days after, or when I knew the queen cells had hatched and been destroyed, I would remove the top hive with virgin queen to a new stand.

If sections are given the swarm, a bottom board with a three-quarter inch hole through it and a piece of excluding zinc over this must be placed between the sections and the top hive.

I think, though, that I would not allow much swarming, but give or raise young queens before swarming commenced, or divide, as seemed best.

I think hives should be set in pairs, placing two close together and leaving a space of eight-or ten inches between these and the next two hives, thus giving room to adjust, remove and replace cases. A cone escape placed in front of each pair of hives (through the wall) would probably be all the escapes needed.

Here is my way of using bee escapes: I use flat covers the same size of hives in length and width. I make a rim of this size, one or two inches high, placing a cone escape in or near one corner; remove the surplus cases, smoking the bees down partly, putting on other surplus cases at once, and replace the cover; now place the rim on the cover with the cone coming to front end of hive. Set on the cases removed, putting on cover and shade board, and in two hours time the bees will be practically all out of them. I have only used a single cone. But robbers bother some in a dearth, so that perhaps a double cone would be better. When honey is plenty, no robbers bother and bees come out promptly, except the few very young bees. It is on the same principle as Manum's escapes. By this means the colony is disturbed but once, as the cover is put in place and left there when removing cases.

I wish J. F. McIntyre, Fillmore, Cal., would try this method and report how it

suits him. I think it will allow him to extract all his honey without holding it over night, and more than he could by brushing each comb. Any one having out apiaries should try it.

TINGER, Ohio,

Aug. 5, 1891.

The House Apiary in Process of Development.

—Some of Its Advantages.

JOSHUA BULL.

I AM glad you have chosen house apiaries for the topic in the August REVIEW. A free discussion of this subject will be interesting and instructive; and doubtless productive of much good and valuable information. Although bee houses have been tried, condemned, and abandoned in the years that are past, because of some unsatisfactory features about their workings, yet all that should not prevent further effort to overcome and remove those objectionable features. Let us remember that some of the most valuable and useful conveniences now in use were, in their first stages of development, but crude, imperfect, and sometimes bungling affairs: yet, as their defects became known they have been improved upon step by step, their workings perfected until they have become indispensable necessities in the business life of this fast age. Just so it may be in a measure with bee houses; and I believe that the ideas have already been conceived and are now being worked out which will render the house apiary one of the most commodious and desirable features in practical bee keeping.

The cost of building need not be great; a cheap one will answer a good purpose if properly constructed. It should be large enough to allow sufficient room so as not to feel "cooped up" when at work therein.

I should prefer to have regular movable hives the same as for open air, only the bottom board stationary in the house; then the hiving of swarms can be managed the same as when all is in the open air. If the queen is clipped she can be caged and the bees allowed to return to their old location, where an empty hive can be placed in waiting for them (first removing the old hive, of course), or the swarm may be hived wherever it clusters and then placed in the house at pleasure.

In your "leader," on page 187, you ask "What are the advantages of a house

apiary?" and then proceed in a concise manner to enumerate many of the principal advantages, which I will not try to improve upon, but would like to corroborate your statements by adding my testimony thereto. And further, in case of cool nights during the honey harvest bees will not be so much disposed to withdraw from the supers to the brood nest, not being so quickly affected by the night air as those out of doors.

"A covert from the burning heat,
A shelter from the cold."

About a year ago I constructed a small house apiary, an outline description of which is given in the last February REVIEW, page forty-one, and now with one year's experience in the use of it, I am well pleased with the results both for winter and summer use, and am more than ever in favor of house apiaries.

SEYMOUR, Wis.,

Aug. 5, 1891.

House Apiaries, and What I Have Been Thinking of Them.

R. C. AIKIN.

HAVE no experience to record in regard to bee houses. During the past year or more I have been thinking over the problem, and hoped some day to experiment. Here are some of my thoughts:

Build a honey house, bee house and shop in combination. Have the shop on the north side. Have the honey room in the center, leaving a hall or passage-way about six feet wide all around the south, east and west. Make shelves to place bees on, so as to fly out on the three sides last mentioned. Make the walls of the house decidedly good and warm. A warm house in winter is cool in summer. If the bees are to remain permanently in the house—not removed to out apiaries—make permanent chambers against the wall, and hang frames parallel to the wall, the house wall being one side of the hive, and each division between chambers of one piece only. Make inside hive wall movable like a follower. Thus, except the brood frames and surplus fixtures, the hive is composed of but two pieces, viz.: One end and one side, the shelf forming the bottom, the house wall the other side. This plan would leave but one board between each colony and its neighbor. Above, have windows all around to give plenty of light and ventilation when needed.

I have thought, when colonies became strong, a hole might be so arranged between

chambers, with excluding zinc, that the stronger colonies might pass through and so intermingle and even up. Thus, the colonies occupying one side of the house might practically become one colony and do grand work in the supers.

Now, for winter, just have a heating arrangement and keep up the temperature in this bee room on the outside, and the honey house would be snug and warm in the center. The whole house might be kept warm with but little expense above the heating of shop for work. I believe better work could be done in the house than outside in hives. At nights, shut the door to keep up an even heat. No deserting of supers, or check in brood rearing; no stoppage of work for winds, rain or robbers. And don't you see it would be so easy to contract, expand, and feed at will?

I used bee escapes some last year, mostly of the Dibbern pattern, but not his latest. Twenty-four hours will usually clear a super; sometimes twelve hours will. Did not try them on extracting combs. Have not used any this season yet, but will when the flow ceases and robbing time comes. So far I smoke and brush, and can get ten to twelve cwt. off per day. I think, however, it would be speedier and better to use escapes, leaving them on from twenty-four to forty-eight hours. Twenty-four hours would no doubt be sufficient with a good escape.

FT. COLLINS, Colo.,

Aug. 6, 1891.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN. SEP. 10, 1891.

THE AMERICAN BEE KEEPER has bought the *Bee World*. This makes the third periodical that has been absorbed by this enterprising journal.

MARRIED, Sept. 16, at Bangor, N. Y., Mr. Augustin E. Manum and Miss Hattie C. Barnum. The REVIEW wishes them happiness and prosperity.

EPILOBIUM, the great willow herb, has been found growing in small quantities near Mr. Heddon's, and he is hopeful that it may yet grow in sufficient quantities to be of some benefit.

"HANDLING HIVES Instead of Frames" is a topic that really deserves a more thorough discussion than it gets in this issue. If what has been said incites others with a desire to write upon the subject, I shall be glad to receive and publish their communications.

WHERE THE WORD gallon appears in the article of Mr. Wilkins, in the June REVIEW, it ought to have been *pound*. Mr. Wilkins used that peculiar double cross that may mean pound, or gallon, or yard, or what not. There was not time to write him and I was obliged to guess "gallon."

HONEY DEW FOR WINTER STORES.

Mr. Heddon, in the *Missouri Bee Keeper*, says he thinks we have no reason whatever to fear any disastrous results from wintering our bees on stores of honey dew. He relates an instance of where Dr. Southard, of Kalamazoo, once fed honey dew to five colonies until they had no other stores for winter, yet they wintered perfectly.

IMPORTATION OF BEES NOT NECESSARY.

A dozen or more leading bee keepers answer the query, in the *C. B. J.*, if further importation of bees is necessary, and the majority say "nay." We certainly have as good bees here as anywhere, and further importation is really unnecessary. As Prof. Cook wisely says, "Importation of new blood if not better blood is of no use."

THE NORTHWESTERN CONVENTION.

THE NORTHWESTERN Bee Keepers will hold their annual convention Nov. 19 and 20, at the Commercial Hotel, corner of Lake and Dearborn streets, Chicago, Ill. This date occurs when excursion rates on the railroads will be one fare for the round trip. I have tried several times to analyze my feelings and decide *why* I always look forward with unusually happy anticipations to these annual meetings of the Northwestern Bee Keepers. Can it be that it is because it is

the one convention that sails in without any essays or even so much as a printed programme?

DEEP FRAMES AND CLOSE FITTING CASES.

Mr. C. F. Thomas, of Dorchester, Nebraska, writes as follows:—

"I am a little surprised at your agreement with 'E. R.' on page 212 in regard to his theory on 'frames' and 'bureau drawers.' It seems to me that a man with just a little mechanical 'knack' ought to know that the greater the depth or length of a drawer or frame in comparison with the width of it the less 'hitching' in drawing it out. If he don't know it he ought to *think he does*, and that would amount to the same thing."

Mr. Thomas is correct, and I can only say that in my former article I did not give the matter sufficient thought.

In connection with this subject I may say that my editorial on this subject was copied into *Gleanings*, and its editor defended his position by saying that his Heddon hive was made differently from mine—that lumber *does* swell endwise, slightly—that the frames are sometimes diamond shape and the corners touch the ends of the case—that propolis works in and reduces the space—and, I believe that is all.

In reply I will say that hives can be made as I described them; that, if lumber *does* swell endwise, the more it swells the larger will be the hives; that frames made as I described (sawed square and nailed, not dove-tailed) are never diamond-shaped; if a frame *is* diamond-shaped, a little lift on the upper corner that touches the end of the hive will bring the ends of the frames parallel with the inside of the ends of the hive. I have handled large numbers of these hives that have been in use several years, and the propolis has yet to accumulate in such quantities that the frames will be swelled fast in a damp atmosphere. It is not a matter of theory with me but of actual practice with a large number of hives for several years, and I *know* that my frames are not swelled against the ends of the hive and *cannot* be swelled against them.

Mr. B. Taylor in an article published in *Gleanings* for Sept. 15, says that he has had frames swelled fast in hives made on the Heddon *plan*, but just *how* they were made he does not say, and that is all-important.

AT THE FAIRS.—MR. HUNT'S CASTLE.

As mentioned in the August Review, I made an exhibit at the Detroit Exposition, also at our State Fair. It is very hard work to attend these fairs three weeks at a stretch and I was *nearly* sick for a week after reaching home. My absence at the fairs and my indisposition since my return have made this issue late. I am quite well now, however, and shall probably pull through without my "usual" fall sickness.

There is not room in this issue to give a detailed account of the exhibits at the fairs, and perhaps it would not be advisable to do so if there were room. With the exception of Mr. Hunt's castle of wax and honey, the exhibits were about the same as usual.

This castle was 8 x 32 feet with a central tower about 20 feet high. With the exception of the tower, the castle was about 8 ft. in height. The lower part was simply a counter like a store counter, except that into the panels along the front were fitted sheets of queen excluding zinc. Above the counter, all was open (except the posts at each front corner and the central tower, which was at the front) until within about two feet of the top. This space of two feet around the top was covered with comb honey interspersed with panels of nicely molded yellow wax. The corner posts and central tower were covered with comb honey. It resembled a castle built of comb honey and wax, and was really unique. Upon the lower part, (the counter) extracted honey in fanciful glass packages was arranged in artistic forms. Mr. Hunt had eight varieties of bees (including Punics from Pratt and a nest of bumble bees shown in a glass case.) This reminds me that, over at the Port Huron fair, where I went to award the premiums, Mr. R. O. Gould had a nest of large, white-faced hornets on exhibition in a glass case.

In one respect the fairs seemed different to me this year: I missed my old friend and chum, H. D. Cutting, who, for the last year, has been working for the Muskegon Chemical Fire Engine Co., and could not get away as he had expected to be able to do. For 10 years I had had him for a companion at all of the fairs. We had tented, cooked and eaten together, slept in the same bed, helped each other through tight places, sympathized and rejoiced with each other, and without him I felt like a bird that had lost its mate.

I must not neglect to mention that Mr. J. Van Deusen came all the way from

Sprout Brook, N. Y., to make an exhibit of his foundation, and that he was rewarded by seeing the blue cards dangling from his exhibit.

HOUSE APIARIES A SUCCESS.

The REVIEW has brought out the most complete knowledge that it is possible to gather in regard to house apiaries. That they are a success, or, at least, can be made such, there is no longer any doubt. The first expense is the only drawback; the ease and quickness with which work may be performed will repay the interest on the investment.

If I were to build just such a cellar, honey house, shop and house apiary as I wanted, I think now that they would all be combined in one building. I see only one objection to the plan, and that is the increased risk of loss from fire. If the building burned, bees, honey, tools, implements and all would be lost, but I should exercise every care against fire and keep everything fully insured. I should keep everything insured anyway, whether under one roof or a dozen, and as an insurance company will pay two-thirds or three-fourths of the loss, I should prefer to take the *risk* of losing one-third or one-fourth in exchange for what would probably be *years* of greater convenience in the management of the apiary.

It is superfluous to more than enumerate the advantages of such a house apiary. Hives, tools and bee keeper always under shelter; everything right at hand, no carrying of honey; bees always ready for winter, or so nearly so that their preparation is a very slight job; no carrying them in and out of the cellar; while they enjoy the advantages of both out-door and in-door wintering. In other words, by having a cellar under the building, the walls packed with sawdust, and using stove heat when necessary, the temperature of the room may be kept above freezing, the same as a cellar, while the bees are in a position to take advantage of any warm day in winter by enjoying a cleansing flight.

One thing shown most clearly by the discussion is the folly of having the hives stationary in a house apiary. The old style was to have the side of the building form one side of each hive, the shelf under the bees formed the bottoms of the hives, while

stationary division boards formed two more sides of each hive. A movable division board, or follower formed the back side of each hive. As I think the matter over I do not wonder that, with the bee keeper hampered in this manner—the hives all tied together—house apiaries failed to become popular. The hives and fixtures used in the house apiary should be *exactly* like those used in the open air. This enables the operator to do something. His hands and hives are no longer tied. He can manipulate hives instead of frames the same as in the open air.

RENDERING AND PURIFYING BEESWAX.

How well I remember the first beeswax wife and I made. We worked all day over the hot kitchen stove, dipping, melting and re-melting and straining wax. We were rewarded with *three pounds!* of wax, and the stove, the floor, and I honestly believe half the dishes in the house were daubed with wax. But we learned wisdom. The next time I made beeswax only one dish was coated with wax, and that not seriously. This dish was the wash boiler. I put the refuse combs in a large sack made of burlap, put the sack in the boiler, filled the boiler with water and set it upon the stove. As the water boiled the sack and its contents were turned and poked and pressed with a hoe. When I thought the wax was all melted and as much as possible had been pressed out, the boiler was removed from the stove, or the fire allowed to die down, and a weight placed upon the sack to keep it at the bottom of the boiler. When the water and wax had cooled, the latter would be found in a cake upon the surface of the former. I have since tried the steam wax extractor, also the solar extractor, but I honestly find myself debating, in my own mind, whether these methods are better, for rendering small quantities of wax, than the sack and hot water.

A solar extractor is very convenient for throwing in small bits of wax or odd pieces of comb. No more handy, perhaps, than a box or a barrel, but, unless this refuse comb is frequently made up into wax, it is almost certain to become infested with the bee moth's larvæ. I have known of a barrel of such refuse comb, pounded down solid at that, to be forgotten, no, *neglected*, until it was one mass of cocoons. Enough wax wasted to have paid for a solar extractor,

and if a solar extractor had stood in the apiary it would have been exactly as easy to have thrown the refuse wax into it as into a barrel.

As already mentioned, I have extracted wax with steam: using the extractor sold by A. I. Root. The emptying and re-filling of this is not pleasant and the comb basket does not hold very much. Of course it is not necessary to empty out the refuse each time before filling the basket, but when it is emptied the refuse is always soaked full of melted wax, as full of wax as a sponge can be filled with water. I never emptied it without thinking, "what a waste of wax," as I poured the mass out upon the ground. It needed squeezing. Some kind of a press is needed. I believe many of those who make wax on a large scale do have a press of some kind, but the man who makes but little wax cannot afford a press. There is too much cost and paraphernalia connected with it. At least that is how it appears to me. Another thing. When making wax by boiling the combs in water, the refuse seemed almost entirely free from wax. It seemed as though the water had soaked into the cocoons, bee bread and other debris and crowded out the wax.

When wax is made in the solar extractor the residue is more free from wax than when an ordinary steam extractor is used, but I suppose it is because more time is allowed the wax to run off. In making wax with the sun extractor it is doubtful if the heat is sufficient to destroy any germs of foul brood, and it would probably be a better plan to render foul broody combs with boiling water.

Of late much has been said about rendering and clarifying wax by the use of sulphuric acid. The acid seems to "cut" or disintegrate the cocoons and other refuse so as to free the wax. There is some discussion in *Gleanings* in regard to whether the use of acid is of any injury to the wax. When the acid is used in so diluted a manner—one part acid to 300 or 400 of water—it does not *seem* as though the wax could be injured, and all are agreed that it is greatly improved in color.

I am well aware that I cannot write a leader upon this subject commensurate with its importance, but I well know that I have readers who can come to my aid and make the October REVIEW a symposium for the man who has wax to render, let the quantity be great or small.

EXTRACTED.

Who Shall Have Credit for an Invention?

Mr. Root is not inclined to give all the credit to the man who first publishes an invention. He closes his argument with the following:—

“Now, let us simmer this discussion down into this illustration: Mr. A, a quiet sort of man, has been using a bee escape, say ten years. Mr. B, quite independently, a prominent bee keeper, some ten years later, invents the same thing, patents it, and publishes it to the world. Is it fair or just that Mr. B should go to Mr. A and say, ‘Here, you have got to stop using that. I was the first one to publish that bee escape. To me belongs the credit and royalty?’ That is the way we look at this ‘first publishing’ matter.”

It may not be right that A should pay royalty to B, as he has received from him no benefit, but to whom shall the general public give credit, or royalty if royalty is given? Of what benefit is it that inventions be made and then “kept still about?” Has Bro. Root so soon forgotten the parable of the unprofitable servant who hid his talent in a napkin?

A Warning of Swarming.

Bro. Jones, in the *C. B. J.*, tells of a peculiar action on the part of a few bees in front of a hive from which a swarm is almost sure to issue during the day. All colonies do not give this warning, but all giving it swarm within a few hours. Here is an extract from an interesting little article on the subject taken from the issue of July 15th:—

“On looking round we pointed over to a colony, perhaps eighty feet away, and said, there is one that will swarm very soon. ‘How do you know?’ was the reply, and we remarked, do you not see those two or three rows above the entrance, running up the hive, apparently biting with their mandibles, and backing down again, that is, they move backwards and forwards, continually working their feet and their mandibles, or holding their heads down closely to the hive, and we noticed them doing the same thing on the entrance board. One of our students once named it the bee dance, or balancing to their partners. ‘Well,’ he said, ‘that movement is distinct, and we shall never forget it,’ for while standing there the swarm issued.”

Gleanings for Sept. 15 has the following:—

“On page 728, current issue, J. A. Green doubts the statement made by some, that the raking motion on the part of the bees in front of their entrances is prognostic of swarming. We have observed this scraping or raking, hundreds of times, and it usually,

with us, occurs some three or four weeks after the honey season is closed, and swarming ceased. Almost any time during the latter part of July and all of August we can find a good many of our colonies doing this ‘washboard act,’ and yet, so far as we can discover, it means nothing. The bees at the entrance evidently have nothing to do, and think they must clean off the paint from the alighting-board, as the paint to them is foreign.”

Successful Advertising.

An editorial in the *American Bee Keeper* for August describes so well my own experience in advertising, and contains such good advice upon the subject that I copy it entire. Before doing so, however, I wish to say that one of my advertisers, who begun last December to advertise queens, withdrew his advertisement in July, saying that there was no use in keeping it running when it was impossible to keep up with orders. At the same time some queen breeder who had had his advertisement in for perhaps two or three issues only, but right in the height of the season, would be complaining that it didn’t pay him:

“To be a successful advertiser requires as great sagacity and business ability as it does to be a successful merchant or manufacturer. In fact, the successful business man is almost invariably a wise advertiser. Of course, there are many ways in which one can advertise, but the mediums most universally preferred are the newspaper and magazine. A great many people send an ad. to a paper for one insertion and expect enough returns from it to keep them busy for the balance of the season, and when but two or three or possibly a dozen inquiries come in, they are disappointed and conclude that advertising does not pay. If every ad. would net the advertiser a profit, it does not take a very intelligent mind to comprehend that there, and there only, is the sure road to success, but experience proves that the small and timid advertiser is not a successful one. To make a success of advertising you must keep everlastingly at it. We frequently have persons send us a small ad. to occupy from three lines to an inch of space, and after it has appeared once or twice we get a letter from them saying take it out, we don’t think it pays very well. On the other hand, almost every one of our large advertisers have told us that their ads. in the *Bee-Keeper* paid them splendidly. There is another noticeable mistake made by many advertisers, in that they advertise too late. They wait until the season for selling their goods is fully here and then they advertise and are disappointed at the result. In the July REVIEW we are credited by Rambler with saying, ‘We are greatly astonished at the folly exhibited by some of the manufacturers and dealers in aparian goods, in that they advertise only during the selling time

of the year.' Let us reiterate that remark. (Our experience shows that of all the months in the year when it is the least beneficial to advertise, April, May and June, (the best selling months,) are the least. We are without doubt by far the largest advertisers in our line in the world, and we find first, that it pays best to advertise *all* the time, and secondly, that the best results are obtained by advertising from three to six months before the class of goods advertised will be in demand. Contrary to what might be supposed, we are receiving at present more inquiries for catalogues and price lists than for several weeks past. In fact, during the present week we have received more inquiries than in any week since March."

Yellow Carniolans are Never Pure.

In the *C. B. J.* for Aug. 15th its editor has the following to say concerning the so-called "yellow Carniolans:—"

"A lady bee keeper has just written us asking which we prefer, dark or yellow Carniolans. We know of no pure Carniolan bees which are yellow. Mr. Frank Benton, who has been among the Carniolans, in their home in Carniola, and examined them, should be undoubted authority on that point. He says there are no yellow Carniolans. We have bred them for years on our isolated islands in the Georgian Bay, and there were no traces of yellow, so long as they were kept isolated, but when bred in our own apiary, or in the most isolated places we could find on land, we were unable to breed pure ones, and traces of the yellow race could frequently be found, proving that they were hybrids. While some of our Carniolans give considerable promise, we do not think that they in their purity, are equal in all points to our best Italians, or the best yellow races, as there has been so much Cyprian and Syrian blood scattered through our country, also through Italy, the home of the Italians, that we believe there are very few pure Italians, although called pure Italians from their general appearance. It is easily seen how difficult it is to keep a race of bees pure, when there are unquestionable cases of mating between different races, for ten or fifteen miles apart, but the crossing is no detriment so far as honey-gathering and dollars and cents are concerned. Hybrid bees of the best strains give as good or better results as the pure bees of any strain."

Clarifying Small Quantities of Wax With Sulphuric Acid.

J. A. Green, in *Gleanings*, tells how sulphuric acid may be used in clarifying even small quantities of wax. Here is what he says:—

"The articles on this subject, while very valuable to those handling large quantities of wax, have been, as some one has complained, of very little use to the average bee keeper, because they conveyed the idea that expensive apparatus, and especially steam under pressure, was necessary. Small quan-

ties of wax can be clarified in this way just as well as large ones, and by the simplest means, though of course with a little more trouble and labor, proportionately.

Take the ordinary earthenware milk-crock or stew-pan, such as are found in most households. Put into this about a quart of water, and add a dram or two of sulphuric acid. Put in wax enough to fill within an inch or two of the top, and bring to a boil. Care must be taken not to heat the crocks too rapidly, or to have the stove too hot where they are. You will save time by heating the water, crocks, and wax, separately, but great care is necessary in uniting sulphuric acid and water. The union of sulphuric acid and water, even cold water—generates a large amount of heat; and if the water is already hot there may be an explosion, which might be dangerous. Let it boil gently for fifteen or twenty minutes, stirring it well meanwhile. Watch it very carefully, that it does not boil over. Keep a dipperful of cold water in one hand, while you stir with the other, and add a little whenever there is any sign of boiling over. Let it cool in the crocks; or, the top may be carefully dipped or poured off into moulds. You will be surprised to see what nice yellow wax you can make from the blackest and dirtiest scrapings. With crocks enough, a great deal of wax may be clarified in this simple way without much labor, though if you have much to refine you will want something less fussy and more expeditious.

Packages for Shipping Extracted Honey.

I have used barrels, half barrels, kegs, and the 60-lb. square, jacketed tin cans for shipping extracted honey, and it has always been a puzzle to me how *anybody* could prefer anything except the last mentioned. *Gleanings* for Sept. 1 has the following upon the subject, and it is reproduced with pleasure:

"From our experience, we say emphatically, 60-lb. square cans, not kegs or barrels. Several years ago, when the square cans were first brought prominently before bee keepers as a convenient package in which to ship extracted honey, we were continually having trouble by the barrels and kegs springing a leak; and before we knew it the bees would find it out and be set to robbing. We had so much of this that we well nigh made up our minds that we would not buy honey in kegs or barrels at all, or, if we did, we would transfer it into cans as soon as it arrived. About a year ago, inquiries were sent to the commission men to find out what kind of packages they preferred for honey, both comb and extracted. Some few favored the cans; but the majority said that, while they preferred cans for California honey (because they could not get it in any other way) they would rather have extracted honey, so far as possible, in kegs and barrels. From these reports we concluded that, maybe, we were prejudiced, and have gone so far as to offer honey-kegs for sale. This year we have received five or six lots of honey in

kegs and barrels, and in every instance they were leaking on arrival, while we very seldom have a case of leaking with cans. Is this merely accidental, or are the cans really better? We certainly have good grounds for thinking so. And if we put aside this matter of leakage, are not the cans a much more convenient package for the retailer to draw from than a keg or barrel, especially if he uses the screw-top honey-gate? For storage the cans take less room; and though they cannot be rolled around like kegs and barrels, yet on the whole they are convenient to handle. We are much inclined to think that the commission men or their customers prefer the barrels, for the same reason that some of us stick to old things and notions that we are used to, simply because we are used to them and dislike to try new things; and yet if they have had the same experience we have with leakage, it would seem as if they would welcome something better. Leaky kegs and barrels can usually be remedied for the time being by driving on the hoops; while if a can springs a leak a tinner has to be called in, or the can emptied to stop the leak. Maybe this is the explanation of it. We greatly prefer to contend with an occasional leaking can than to be continually tinkering with leaky barrels and kegs."

House Apiaries; How to Make Them a Success.

"The last BEE KEEPERS' REVIEW is an excellent number. It discusses the subject of house apiaries. In our judgment, the best article on the subject is from the pen of James Heddon, and it covers every point. Among other good things, he says, "Never let any one advocate the use of any hives, frames, cases, or brood chambers that are fixed within the building." You are quite correct, Mr. Heddon; and you might have added that they prevent the bees from escaping into the room, for all outside hives are supposed to be bee-tight. One great reason why the house apiary was abandoned was because the hives or compartments for holding the frames are fixed to the sides of the building, and it is not easy to make these so they are bee-tight. Again he adds: "The annoyance from robbers is the one great cause of irritability among the bees of an apiary; and I want to tell you that, if you have a colony that is so confounded mean that you expect to be stung even when using the smoker, put them into the house apiary and the bees will behave perfectly." I have noticed this very thing myself; and, in fact, it is a very rare thing indeed for bees to sting inside of a building. To suddenly find themselves indoors takes all the fight out of them. In winding up, Mr. Heddon concludes: "On the whole, I think the house apiary, when rightly made and managed, is, in many localities, a thing of comfort and profit. It is an easy thing to pack colonies in for winter; and after being packed, I can see what splendid advantages can be gained from stove heat during extremely cold weather.—*Gleanings.*"

Punic Bees.

The so-called Punic bees have been so extravagantly praised by those interested in their sale that I think it no more than fair that the other side of the story be told.

Some one who signs his name as Inquirer writes to the editor of the *British Bee Journal* asking for information in regard to the Punic bees. Below will be found the inquiry and the reply:

"In your contemporary, the *Journal of Horticulture*, there has been frequent reference to 'Punic bees' by a 'Lanarkshire Bee Keeper,' and in this week's number of that journal there is a long statement by 'A Hallamshire Bee Keeper,' giving the opinions of certain gentlemen who appear to have had some experience of these bees. As none of the names of those mentioned are known to me, would you kindly say if they are known in the bee world as men of experience, and as pioneers in their own counties? It is, I fear, too much the case for beginners in bee keeping to catch at anything new whether in appliances or bees, and endeavor to invent something, or to give their opinion as if they had a long and varied experience. Readers of a technical paper, particularly those who are novices, naturally look to its editor, who is supposed to be 'well posted,' as the Americans put it, to be their guide, and not allow them to be misled by admitting articles or statements of a questionable kind without giving some word of caution.

It often happens that after some glowing account of a new hive, a feeder, or a *new kind of bee*, puffed up by some person having such to sell, or by some friend whom he gets to write for him, and in some cases not even a bee keeper, that those anxious to have the right thing part with their money, and in the end find that what they already possessed was far preferable. In this way, what was taken up with an idea of making a profit, turns out to be a dead loss. If this is followed by one or two bad seasons, novices get disgusted with bee keeping and give it up—tell their friends and those they meet that it is a delusion and a snare.

To return to Punic bees. 'Hallamshire Bee Keeper' (by the way who is he, and what is his real name?) says, 'I first received these bees safely in 1886.' How is it, Messrs. Editors, if these bees have been introduced so long, and (as reported in the same article) 'construct hundreds of queen-cells,' that some of your able correspondents have not met with them, or given us some account of them? The introduction of a single queen in 1886 that would raise hundreds of queen cells would, I should have thought, in skillful hands, have stocked the whole country by this time. But what does he say? 'I am afraid that I could not count on more than 100 queens in one season.' 'I am charging 5*l.* 5*s.* for them in this country for what I have to spare, and I must say that I consider them cheap at the price.' One can hardly think that any one could be found so rich as to pay this amount for the queen of a

Punic race, of which so little is known after seven years in this country.

Will you, Messrs. Editors, for the benefit and protection of your readers, give us any information as to the value of this bee, and what is known of it in its own country? Reference is made to *Gleanings*, the *American Bee Journal*, and the *Canadian Bee Journal*. Could you give any of the articles?—INQUIRER.

[As a rule we do not like to import into our columns controversies originating in other journals, but as our correspondent asks for information for the benefit of our readers we will give all we know about African bees. We know nothing of the experience of the persons mentioned, and have received no reports from any of our numerous correspondents about Punic bees. We know of no such race. Amongst African bees with which we are acquainted are those from Algeria, Morocco, and Tunis—all varieties of *Apis mellifica*. They are prolific black bees, said to be good workers, but which have not sustained their reputation when introduced into Europe. Queens of any of these varieties could be purchased for a few francs, and some years ago Algerian queens were offered for ten francs apiece by M. Feuillebois at Beni-Amran. The variety cultivated by the Kabyles is shiny black, and the workers much smaller than the average European bee; the drones, however, are quite as large. The Kabyles inhabit the mountains lying towards the desert of Sahara, where they live in small villages, and derive a considerable income from honey, and more particularly from wax. These bees are called '*thiziona thik' arriin*,' and are cultivated in cylinders of cork-bark, basket-work, or earthen-ware. Some of the natives have as many as 500 such hives. They were first imported into France in 1874, and, by their behavior, showed that they came from a warm climate. They are great propolisers, which shows that they are not used to the cold. Although quiet at times, if stimulated they become very savage, and not only attack persons, but even enter the houses in their vicinity. They have not proved satisfactory in Europe, and we know no one now who cultivates them.

We know nothing about the so-called Punic bees and can give no information as to their value. Possessing as we do one of the largest libraries of bee literature in the kingdom, it is strange that we have never found such a race alluded to. The word *Punic* means faithless, treacherous—neither of which should be considered good qualifications for bees. Punic bees are said to come from Africa, but the only varieties of African bees we know of are those alluded to above, besides the various species mentioned on page 306 of *B. B. J.* for 1888. With regard to the American papers above referred to by our correspondent, the only other person besides 'A Hallamshire Bee Keeper' (otherwise John Hewitt) who has written in favor of Punic bees, is E. L. Pratt, a queen breeder and dealer, who is advertising queens imported by 'Hallamshire Bee Keeper' at 80 dollars (16*l.*) each.

We wonder how many bee keepers will be induced to give this price, or even 5*l.* 5*s.* for one. As so little is really known about these bees we hardly think it necessary to advise our friends in their own interests to wait for reports from experienced and well known bee keepers. We shall take care to give any reliable information that may come to hand and be of value to our readers.—EDS.]”

I have received a queen of this variety from E. L. Pratt. She looks like a Carniolan queen, and the bees accompanying her look *exactly* like Carniolans—have the characteristic bands of whitish gray fuzz. Of course we ought not to say what kind of a queen a dark queen is, judging simply by her looks; and the accompanying bees may not have been her bees—may have been Carniolans. Mr. M. H. Hunt had some Punic bees and a queen on exhibition at the Detroit Exposition. They came from E. L. Pratt. They certainly were different from the Carniolan. They were blacker and more shiny—almost a jet black.

Securing Workers for the Harvest.—Hill's Review of Advanced Bee Culture.

In accordance with his promise, Bro. Hill, of the *Guide*, has reviewed the second chapter of "Advanced Bee Culture." I am happy to say that it is very fairly done. Here is what he says:—

"This article contains three pages of non-*pareil* type. We have read it carefully and we do not think a single prominent feature of it is true, nor are the directions generally followed by bee keepers. He commences with the old Hosmer theory of wintering weak stocks in the cellar to save stores, and then by special fine manipulation and protection build them up in the spring in time for the surplus honey yield. It is too bad to have our bee books filled up with such damaging theories.

If we contract the hive or so manage as to cause less than the usual amount of brood reared during July, August and September, our bees will be just that much weaker the following June and our surplus just that much less, and there is no advanced bee culture known that can change the results. Small colonies can be kept healthy and breeding well but they cannot be made to show much gain in bees until after warm, settled weather, about the first of June, then they gain very rapidly. To take bees out of the cellar in spring and pack them in sawdust and boxes as recommended to build up weak colonies, is a thing not practiced by advanced bee keepers. Then why should we fill up our bee books with directions that no bee keeper ever follows. Is the object just to injure the novice and cause him trouble and cost for nothing? He says he favors wintering in the cellar and then packing with sawdust on summer

stands during the spring, because he saves stores by wintering in the cellar. This is not true. I have demonstrated this by a test of fourteen years, weighing a whole apiary twice each year. The scales show a pound or two in favor of the cellar wintered bees, but those wintered out doors always flew and commenced breeding before the cellar bees were set out and were that much better. Experience and facts prove that a weak or medium colony consumes as much or more food during winter as a strong one does when neither one rears any brood. Quinby in his *Mysteries of Bee Keeping* recommends uniting two weak colonies in the fall because they would not consume much more stores double than each would separate.

Had Mr. Hutchinson written these pages telling bee keepers how to keep their colonies strong and in good condition all the year and advised them to take no chances on letting them become weak we would have had no occasion to criticise. If we pack bees in the spring with sawdust we prevent their receiving the warmth of the sun. The only way to protect them profitably and make them do their best is to protect them with sugar syrup and have them on good deep square frames. Sugar syrup is a good non-conductor of heat, and if on the first of April we put the feeders on and let the bees fill the combs above the cluster, side edges and side combs next to the brood, we then have them in the best possible condition to stand a freeze. The bees have only to cluster between the combs around the out edges of the brood, and with the aid of the syrup or honey can easily keep comfortable, and as fast as they grow in strength and the weather becomes more mild they will move the syrup from around the edges of the circle of brood putting it farther out so they can increase the brood.

When the weather is warm and the sun shines the bees leave the hive, and the brood and hive are warmed up by the sun; if cool and cloudy the bees cluster in the hive and keep all comfortable. With sawdust packing the sun heat would not reach the brood during the day. The great point I wish to make and bring out is that it is just as important to feed to keep the bees warm as it is to supply necessary food. Every bee keeper will be convinced if he will stop and consider for a moment how much better colonies breed during April and May that have the combs well filled with stores, than those that only have sufficient for daily use as food.

Really, a colony of bees with plenty of stores in April does not seem to ever need any advanced bee culture to get the workers ready for the season. I suppose it is intended only for those that have been worked on the advanced contraction brood chamber system during the fall. I can see under such circumstances how a visionary man would see the need of boxes, sawdust packing, quilts, cushions and a host of other worthless trash."

Hosmer's plan of wintering was to reduce each colony to about a *pint*. If there were more bees than that he shook them off. All

that I said that would entitle me to be accused of advocating the Hosmer theory was that by cellar wintering it was not necessary to have such strong stocks for wintering, that it enabled the bee keeper to reduce the number of consumers (bees) during the non-producing time of the year, but I had no idea of reducing any colony to a *pint* of bees or anything like it, and no one would get that idea from reading the book. I would have each colony in a good, healthy condition in the fall, not *weak* in numbers as that term is understood, but with perhaps half or one-third as many bees as there are in the hive at swarming time; and then by cellar wintering and by "special fine manipulation and spring protection bring them up in spring in time for the surplus honey yield." In the wintering of bees in the open air a weak colony may consume nearly as much food as a strong one, because with the greater population of the strong colony the requisite amount of heat is more easily kept up, while the weak colony must consume more food in proportion to its numbers in order to keep up the temperature. When the bees are in a warm cellar not so much food is needed as fuel, and the difference in the amount of food used by a weak and a strong colony is quite marked.

I have not kept bees so long as has Bro. Hill, neither have I resorted to so careful a system of weighing, but this I have done: weighed the bees in the fall and fed all that needed feeding, giving those to be wintered out of doors (protected) five pounds more stores, and both classes would come out in the spring with about an equal amount of stores. Sometimes I have taken honey from the cellar wintered bees to help out those wintered out of doors, but never the reverse.

The saving of five pounds of honey pays four times over the cost of cellar wintering, but this is not the most important point; cellar wintering in northern latitudes is more certain of bringing the bees through in better condition. I well know that in some localities, and in open winters, bees winter as well, if not better, in the open air, but on an average they do not.

Bro. Hill speaks about those bees that are wintered out of doors flying and beginning breeding in the spring before the others are set out. One of the reasons why I would protect the bees after setting them out is that it allows them to be placed upon their summer stands as soon as there are occasion-

ally days warm enough for them to fly, but this is not the main reason, it is that the warmth may be retained, which enables the bees to breed more rapidly, and averts any danger of loss by a cold snap.

It is undoubtedly true, that combs filled with honey or sugar syrup surrounding the brood would absorb and retain the heat from the bees, but for retaining the heat they would be nothing like a coating of some non-conductor entirely surrounding the hives. If combs of stores answered the purpose of protection there would be no necessity of protecting the hives in winter.

Surrounding the hives with sawdust does not rob the bees of the heat from the sun, unless the sawdust is used in too large quantities; it simply equalizes the heat; it absorbs heat from both the bees and the sun during the day and gives it up at night. We wish our hives white that they may reflect the heat in the summer, but we would have our packing boxes dark that they may absorb the heat. There is no doubt that the sun can more quickly and more thoroughly warm up the inside of a hive when the hive is not protected, but this heat lasts only as long as the sun shines. It does not help much on a frosty night. Without protection, it is first hot and then cold. Packing is an equalizer. With ordinary weather packing is not imperative, but right here allow me to quote a little from this chapter in *Advanced Bee Culture*:

"I have learned from repeated experiments that protection allows or enables the bees to develop greater quantities of brood; but I do not consider this the greatest advantage of protection. The point is just here. We often have nice, warm weather for three weeks. The alders, elms and maples bloom, possibly the cherries, and all this has encouraged the bees to extend their brood until the combs are well filled. Then comes a cold "snap." The mercury goes down to freezing, or nearly there, and remains so several days; perhaps the ground is covered by two or three inches of snow—a veritable "sonaw winter." More than once have I and my bees passed through such experiences, and to our sorrow. The cold drives the bees into a compact cluster in the center of the hives. Half of the brood, perhaps more, is outside of the cluster, where it perishes. The newly hatched bees, if any there are, are tender, like a newly hatched chicken, and easily succumb to the cold. The old bees have lost their vitality in bringing into existence the hive full of brood, and the cold snap is the "last straw" needed to send them to the bottom of the hive. Weak colonies, in passing through such severe weather unprotected, almost invariably die.

Ordinary colonies are rendered practically worthless for the season, and strong colonies are not improved. Such low temperature does not usually come so late in the season, but it is liable to come any year; while "cold snaps," even if not so severe, come almost every spring; while the loss that may occur from an unusually severe spell of weather late in the spring, will be sufficient to pay for the expense of protecting the bees each spring for several years. Several times, when protecting the bees in the spring after taking them from the cellar, I have left a few of the most populous colonies unprotected. In the early morning, or during cool days, the bees in the unprotected hives would be found closely clustered, while those in the protected hives would be found crawling actively about all over the combs, and a puff of smoke would drive them down an inch or two and expose large quantities of sealed brood. When the honey harvest came, a majority of those protected were actually stronger than those left unprotected. Some have compared this packing of bees in spring to a *stimulant*. It is not a stimulant, as we understand the word. It simply confines the heat of the bees, allowing them to spread out and rear and protect larger quantities of brood. Give them the proper conditions for following their instinct in the direction of brood rearing, and no additional stimulus is needed."

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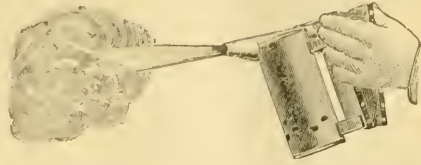
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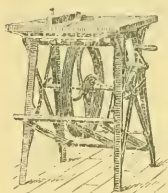
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CHICAGO, ILL.

The Value of Neat, Handsome PRINTING.

Many dealers look upon the style of their printed stationery and the "get up" of their circulars and price lists as unimportant matters. In this they are mistaken. Nothing is more certain to prejudice a would-be customer than a slovenly, poorly printed circular or to receive a communication written upon stationery the printing of which is a "botch job." While the sending out of handsomely printed matter does not always bring the desired orders, it is an *aid* in that direction. In other words, we judge of a man and of his business by what we receive from him; hence, the receipt of a neat, well printed circular, or of a communication written upon stationery that awakens our admiration, leads us (unconsciously, perhaps, but none the less truly) to conclude that *everything* from the sender will be of a like artistic nature.

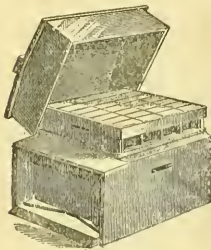
To turn out first class printing, five things are necessary. 1st, good type of neat and artistic styles; 2nd, good paper; 3rd, good ink; 4th, a good press; and, 5th, the skill to use all these things. If one of these factors is wanting, it is like taking a link from a chain. In what degree the above necessities to good printing

may be found in the REVIEW office, the REVIEW best shows.

Since it became known that the REVIEW was "home made" many of its readers have offered it the job of doing their printing. While I have most thoroughly appreciated this kindness, I have been compelled to decline the work, simply from lack of time. Since enlarging the REVIEW I have found it impossible to set all of the type myself, while there is not work enough to keep a compositor all the time. I am obliged to depend upon "picking up" a man for a week or two each month. This is rather unpleasant, as I am obliged to put up with Tom, Dick and Harry and sometimes I have trouble in finding even these. For these reasons I have decided to keep a man all the time and then do job work that he may be kept busy when not at work on the REVIEW.

Now, friends, if you wish for good printing I shall be glad to do it for you. Nothing will induce me to send out a poor job, but if you want nice work and are willing to pay for it (not an exorbitant price but what it is really worth) I shall be glad to hear from you.

W. Z. HUTCHINSON, Flint, Mich.



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa., **One of the Largest Bee-Hive Factories** in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue. 2-91-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. IV. FLINT, MICHIGAN, OCT. 10, 1891. NO. 10.

The special topic of this issue is

“Rendering Wax.”

That of the next issue will be

Moving Bees Into the Cellar.

Adapting the Ways to the Circumstances.

E. E. HASTY.

HOW do I make beeswax? Why, “all sorts of ways,”—and that’s as how you all ought to do, don’t you know? In the different sorts of wax material there are several very different sorts of refuse to be dealt with, and get rid of; and they require different sorts of treatment. One lot is full of dead bees crawled into the comb; another is full of old pollen; another is simple old comb, four-fifths cocoons and dirt; another is scraps and scrapings, nearly half propolis; another is cappings, and honey well dried or candied is the main refuse, with fiber and dirt and propolis as auxiliaries; and still another sample is comb with young brood in it. If I should tell you all I know, and all I don’t know, about proceedings in these six different cases—well, I ain’t a going to.

To dip in a little around the edges, there are the chunks of drone brood you cut out and fill the place with worker comb—or vainly hope the bees will do so. My, what a lot of it I had the first year I owned the apiary! I was green then, and thought I

must have my combs all worker cells, and, moreover, that I must not let any drones be raised except by the choicest queens. All comb with brood in it must be dealt with promptly or it will become putrid. It is a part of my apiary morals, that comb with decayed brood in it must be buried, not extracted. To digress a little, is it not possible that some of the brethren need a little reform along this line? No way I have tried yet of extracting wax from comb with brood in it satisfies me. I squeeze out the white juice with my hands, thus making the remainder into wads, and then boil up the wads. Nearly all wax material may as well be made up into hand wads, on hot days, or by first putting the material into hot water. Much more can thus be got into the same space; and space is valuable in wax rendering.

I guess I must tell you about my pail rendering. Take a tall tin pail and devote it to boiling up wax, and absolutely nothing else. Then you won’t have to wash it much, but can let it remain varnished with beeswax all the while. It wants a false bottom of tin, punched full of big holes, and fixed to rest about a “bee space” above the real bottom. A yard square of cheese-cloth is also devoted to the same purpose, until worn out or spoiled. You need never do it up as a pocket handkerchief; but it is to be rinsed and dried always as soon as the warm refuse is turned out of it. Then you want a big wire, like a coiled up snake half uncoiled, and sized to go in the top of the pail. Dent the cloth down into the pail; put in wads of

wax a sufficient quantity: gather up the edges of the cloth and tie the stuff in tight; put in a few quarts of hot water, and set the pail on the stove. Unless it is to be watched closely it should not be very full. By the way, if you have a superannuated stove out in the bee shanty, the moral atmosphere of home may at times be less sultry if you do the boiling out there. When the water begins to boil, the bag is to be diligently punched and mellowed with sticks. Let the boiling go on a good spell, with divers punchings. When the batch is cooked enough the pail is set away in a quiet corner; the bag of refuse is punched down to the bottom; the wire snake is laid in, and weights enough are put upon it to keep the refuse from rising. Then pour in hot water enough to fill the pail full, and let it alone till the cake of wax is cool enough to lift off. Usually such cakes will need re-melting. When I go in for a regular "time of it" making beeswax I run two pails; and instead of setting them away to cool, I turn the liquid contents out into a big crock of cold water. Instead of letting it get cool there, however, I make it again into hand wads, to be re-melted at leisure.

At times there is honey enough in the material to "bewitch" your wax, and it cools in a mush-like mass resembling fine shot. Remelting, and boiling in plenty of water will bring it to its senses. The scrapings from the bottoms of wide frames need re-boiling from this cause sometimes. (Yes, the burr combs and I are still so old-fogyish as to stick to wide frames.)

Another form of refuse is that in the ordinary "old comb"—cocoons and dirt. Absolutely nothing will please 'em but somebody to squeeze 'em. The solar extractor gets out very little, thorough boiling and punching somewhat more; but nothing less than a good, solid squeeze will make clean work. And don't you *buy* old brood comb at any price. The manipulator earns whatever he gets out of it. And comb which a queenless colony has rammed full of hard pollen, in the present state of my cerebrum I don't know but I must advise you to give it away rather than render it. Fuss with it if you choose, but don't mix it with better material.

Another form of refuse is propolis. When this superabounds in the material to be worked it is much inclined to capture your utensils and cloths, as molasses captures a fly. Keep propolized scraps entirely by

themselves, and free as possible from all non-meltable dirt. Melt it up in an open pail with plenty of water, stirring it well, and the propolis and part of the dirt will go to the bottom, and the wax with the lighter dirt will rise to the top. All that comes to the top must of course be subjected to a second operation. A better method I will speak of when I come to mention my solar extractor.

Just now let me drill the apicultural young idea on the properties of propolis. One noted writer on bees gravely maintains that there isn't any such thing; and we need not be surprised if some of the boys have not its qualities very clearly in mind. Probably some of them think it swims on the water like wax. The fact is that it sinks in water quite decidedly. Most of us speak about its melting. Propolis never melts, strictly speaking—will burn up first. What it does when heated is to grow salvy, and run a little in a jelly-like way. Often when propolis seems to be nearly pure we find, on heating it, that the bees have kneaded considerable wax into it. This of course rises to the top, and leaves the daub of propolis at the bottom. One redeeming quality of the vexatious stuff, and one we should keep in mind, is that its stickiness is gradually destroyed by boiling in water, until it becomes like a brown chalk. A cloth that gets soaked in it can be recovered by boiling awhile, and then roughly crumpling it in cold water, and shaking out the pulverized material.

The solar wax extractor I did not add to my possessions till last year. Didn't fancy the little things offered for sale, and didn't get around to make one. When I finally made one the plan of it was to use only such material as I already had. I had plenty of lath and tin and chaff. Also I had two glazed window sash, and a big dish-pan which had developed a hole in the bottom, and was not a promising subject for mending. I combined 'em, and the result is a pretty good extractor—renders the wax, and threatens to do plain cooking without a hired girl—leastwise you would think so, on putting your hand inside. I can remelt cakes of wax, and get them ready for market in it. It is shaped like a large lath chaff hive, with one tall side, and with the two sash as a double cover. One great sheet of tin is permanently hinged on to the tall side as a reflector, and two others can be placed by two other sides when I wish. The interior is large; but

space, not at the time needed, is filled with chaff cushions to prevent the loss of heat which would otherwise result from so much exposed wooden wall. The valuable novelty of the thing is the old dish-pan. A cheese-cloth is drawn over the top, not so tight but it can be dented in some, and the material to be melted is heaped upon the cloth. The wax works through in the course of time, while propolis scarcely any of it runs through. What little does drop remains on the slightly slanting bottom, and does not run through the hole into the wax-pan below. The solar is no good for old brood comb; but it just occurs to me that I have never tried it on drone brood. Maybe the roasted brood will furnish grease enough to prevent the wax from soaking into the refuse, and score a cheerful success on that kind of material. Complaint is made of other solars that they are hard to clean. Mine cleans in a jiffy. Leave it till next morning when cold, and the cloth can be peeled off from the propolis and refuse, like the enamel from the top of a hive. The cloth is fastened to the dish-pan by a lot of great tacks which rest in corresponding holes in the rim of the pan. Removing the tacks releases the cloth and its load of refuse at once.

RICHARDS, Ohio,

Oct. 9, 1891.

Making Small Quantities of Excellent Wax With Little Labor and Few Utensils.

CYULA LINSWIK.

WE HAVE a steam wax extractor. I mention this at the outset, that no one may conclude that it is from necessity rather than choice that we render our wax in the primitive way which, at the editor's request, I am about to describe.

Our refuse comb is seldom allowed to accumulate in large quantity, and I cannot remember that an ounce was ever destroyed by the larvæ of the bee moth. When our collection of cappings, gleanings from the hives, extracted combs not quite so good as they should be, etc., etc., has become sufficiently large to warrant our taking the time and trouble to put it in shape for storing away safely, we usually dedicate some cool, rainy morning to the work. We begin by building a fire in the old kitchen stove; and as the kitchen is an old, unused apartment adjoining our work-shop, there is no intrusion upon household comfort. In two bright tin

pans upon the capacious top of this stove, we melt all our refuse comb. There are no dead bees or brood in this comb, and we take reasonable precaution to keep it free from dust. A liberal allowance of water—hot water if we have used proper forethought—is put in the pans, and enough comb is added to fill them as nearly full as may be safely handled.

From the moment the melting begins, the wax is under constant supervision—one pan standing in a somewhat cooler place than the other. We hasten the melting process a little by punching holes through the thicker portions of the comb, and occasionally pressing it down beneath the surface of the liquid. If due attention be given the fire, which should be steady but not too hot, and if doors and windows be closed so that no cool draught strikes the surface of the wax, the contents of the first pan will soon be ready for straining. But should there be discernable the slightest film of cooled wax upon any part of the surface, it is not hot enough to strain out well and requires more heating.

It is now poured through new cheese-cloth into another bright tin pan. At this stage of the process an assistant is needed. The refuse is lifted up in the cloth, each gathering up one end and with a little care at first that none of the contents escape over the edges, the mass is squeezed by twisting the ends of the cloth in opposite directions. If this be done in a warm place—opening the cloth and stirring its contents once and then re-twisting *hard*—if it be done as quickly and vigorously as possible, finishing the operation while the refuse is still nearly boiling hot, there will not be enough wax left in it to sigh over.

When cooled the wax is not in what we consider salable shape, but it is ready to pack away for months, sometimes for years.

When ready to offer it for sale we re-melt it very carefully, but in much the same fashion as before, except that we use less water. We put several of the thin cakes together, using them in such proportions that the finished cakes may be somewhat uniform in size. This time we strain the wax through muslin considerably thicker than cheese-cloth. We cool it very slowly that the cakes may not crack—usually covering the pans during the cooling process. The pans are the same used when we melted the comb; they never need washing. They are simply

heated and rubbed smooth and clean with soft paper—never use *printed* paper about wax!—and then, with edges turned together, they are set away till next time. We deem it essential that they be good, bright tin.

This is not a very laborious, difficult, lengthy, or even disagreeable process, if rightly managed, and is the best method we know for rendering wax in comparatively small quantities.

"OUR CLEARING,"

Oct. 13, 1891.

[Wax made by the above correspondent has twice taken the first premium at the Detroit Exposition; in fact, Mr. M. H. Hunt, who has handled tons of wax, pronounced it the finest wax he ever saw. It has a beautiful, pearly yellowness, that is good to see. I presume that the cleanliness observed, both as regards the refuse comb and the utensils, joined with the double melting and straining, all combine to produce such excellent results.

What a simple press this wax maker has! (Only a woman would have thought of squeezing the boiling hot refuse by twisting it up in a cloth.—ED.)

Melting Old Combs.—Sun, Steam and Hot Water Wax Extractors.—Several Hints.

DADANT & SON.

FRIEND HUTCHINSON.—In reply to your request, we will give you our views on *rendering* beeswax, as the *clarifying* of beeswax is not a question of general interest. If we can get bee keepers to render their combs properly, there will no longer be any need of clarifying. In the first place, allow us to say that there is a great deal of beeswax wasted all over the country because many people think that it is not worth while to save little bits of it at a time. But a careful bee keeper will save every particle, clean or dirty.

I would advise every man to have a sun extractor, but every man should also be prepared to melt wax over water. The reason of this is that old combs when put into the solar extractor will yield nothing, the cast skins, residues and old pollen absorbing every bit of wax as it is melted. To succeed in getting everything out of the old combs, they should be well mashed in cold weather, at a time when they are brittle. This destroys the shape of the cells and avoids the lodging of particles of beeswax in the cells. Any one who has melted old combs has

noticed that it is in this way that the greatest waste takes place. After the combs are well crushed they should be put to soak in water till all is thoroughly soaked. This is to prevent the wax, when it melts, from soaking in the refuse, and it helps it to separate from the refuse as the latter becomes heavier than water and settles to the bottom. One need not be afraid that the wax will rot, for beeswax cannot rot, at least it does not during any reasonable time, as we have proven time and again.

As to the wax extractors for melting the combs over water, we think most of those in use are good, but a very cheap one can be made by using a common wash-boiler in which the combs are melted with a great deal of water. The wax, as it liquifies, comes to the surface. A piece of wire cloth about a foot square is made into the shape of a small round basket and forced down into the mixture and the wax can be dipped out of that strainer with a ladle. A great deal of water will be dipped out with the wax, but the whole is put into some flaring vessel and allowed to cool. These cakes will not be entirely clean, especially if the wire cloth strainer has coarse meshes, but with another melting very nice cakes are secured and the smell of the hive and of the honey is well retained. The wax must not be boiled much, but it must be thoroughly hot before it is removed from the fire. Soft water must be used. Propolis will not mix with wax, but will settle to the bottom of the kettle during the first melting. When the wax is melted for the second time, it should be placed where it can be allowed to cool very slowly, undisturbed, so that all light foreign substances may settle freely to the bottom. Bees and flies should be skimmed off when the wax is hot, as they will usually remain at the top. If there are any particles of beeswax left in the top of the residue or if anything has to be scraped from the bottom of the cakes, it should be preserved to be put with the next lot of combs. Cappings and pieces of light colored combs should not be melted with the old combs, as they will make a better grade of beeswax, which can be used for different purposes, but the very dirtiest, ugliest combs will make a fair article of golden colored or red wax, according to the locality, if properly rendered.

Cappings may be treated in the same way, or can be rendered in the solar extractor, but it is a mistake to render them before having

washed them of all the honey that they contain. Each year we usually get two barrels of capping water which can be used for either wine, cider, or to make the very best of vinegar. To test the strength of the capping water the cheapest method is to try it with an egg. To make good strong vinegar an egg should float in it so as to just show itself at the top.

The solar extractor is necessary for two purposes; first to render out the little bits that may be picked up during the season at different times and which might run the risk of being consumed by the moth if preserved during hot weather. It is also useful to render any wax that has been damaged by melting with very hard water or by over-boiling. Beeswax which has a grainy appearance and which some people have mistaken for grains of pollen is wasted by many and can only be recovered by the sun process. It contains a great deal of water, sometimes half of its weight, and this must be evaporated before the wax is fit to be used.

Wax extractors should be nearly flat and so made that every nook and corner be exposed to the rays of the sun through a glass. Beeswax can be melted in them, from May to October, but the best month for their use is June. They give a first class article of beeswax without much labor, and for this reason they will be much more extensively used in the near future.

HAMILTON, Ill.,

Oct. 18, 1891.

Advantages of the Solar Wax Extractor.

R. C. AIKIN.

MY EARLIER experience, friend H., was like yours. However, it was my mother's kitchen floor, stove and utensils that were besmeared with wax. It was melt and dip: boil both in and out of sack; next a steam apparatus, improved and changed several times. Then again I made a big boiler in the shape of a letter U with a wire cloth cylinder submerged in it. It looked nice, but no amount of turning would get the wax out of the refuse and dirt. Then, again, I tried the gunny sack. But, oh, my! The time and wax wasted, and the dirt and litter all about.

Then Demaree's solar came out. I read his description in the *A. B. J.*, then picked up an old trunk, minus the lid, got the re-

main of a worn out ten gallon tin can to make the concave bottom, invested forty cents in glass, and made an extractor.

I have never tried acid, but I think the solar ahead of any process I have tried. Some seem not to succeed with it. There is usually a tendency to use tools and appliances that are not adequate to the work required. I have observed this to be the case with extractors as well as other appliances.

Let me suggest to those who want to make a solar extractor, that they make it two or three times larger than they think they will need, and then it won't be a bit too large. It does not pay to save a few cents in first cost, and then always be in "hot water" because your machine won't do your work. Have the whole arrangement large enough to give abundant sun, and to hold a large amount of wax at one filling. When once filled, let it stand for days, yes for weeks, and the wax will gradually work down out of the refuse.

For a small apiary I think it will not pay to bother with water or acid, but use the refuse for kindling fires.

There is, however, so much wax left in the refuse that, in larger apiaries, it may pay to save it and subject to some other process. If this refuse be kept in some old crock, can, or even a box, moths will cause no trouble in it; and at the end of the season it can be again worked over with water or acid at some convenient time.

The wax cakes that are removed from time to time from the drip pan should be broken up and again put into the extractor, having the incline very slight, and allowed to melt again and cool with an inch or two of water in the pan that receives the wax.

Again, the extractor comes very handy at times to reduce candied honey. Scraps of comb containing honey, "and all such," can just be thrown into the solar and all saved, with almost no waste at all.

Others have laughed at me for saving scraps of comb, even that which seemed to be nearly all propolis; but later they were astonished to see the amount of nice wax I got from it. I save even the propolis scraped from sections when crating honey; and from the scrapings of nine tons of honey have two or three pounds of nice wax, done by sun heat in October.

When bees are secreting wax freely they often use quite a little of it in the place of glue.

Make the solar a catch all for all such things, and it will soon pay for itself in the saving of wax, to say nothing about time saved.

FORT COLLINS, Colo., Oct. 13, 1891.

Handling Hives More and Frames Less.

JAMES HEDDON.

WHY, you have written an article on this subject several years ago," says my stenographer, as I begin dictating under the above heading. "Yes, more than one," is my reply.

Several years back will be found articles in different journals upon the above subject, one or two of which I believe are headed almost exactly as above, as well as those headed "Readily Movable Hives." At that time I had been in the business for years, and constantly under a declining price for our product. I began to see that cost of production must in some way be lessened, else I must withdraw my capital and labor from the business which I always preferred to all others. These thoughts led me to experimenting, and that experimenting to the invention of the hive which I patented, and which Senator Taylor describes and properly credits to me on the first page of your last number. Ever since the advent of that hive, it has gone without saying, among my help, that we can manipulate double the number of colonies that could be handled equally well in any of the previous styles of hives, because, as Mr. Taylor truly states, this divisible brood chamber and style of close fitting frames, in combination with the rests and set-screws, allows us to make nearly every useful manipulation quickly and without moving a frame; neither must it be understood that the frames are not "readily movable" as well as all of the sections of the hive.

Mr. Doolittle (page 235, last No.,) seems to carry the idea that a hive specially adapted to cutting away one-half of our labors and doing our work so speedily as to thwart robbers, was of no special advantage because of the expense in a change of hives. He seems to forget that there are new bee keepers entering the field and that many of the older ones are increasing their colonies, necessitating new hives, and that the advantage in the improvements in hives are many times

great enough to warrant introducing a new pattern, especially when the same honey board and honey receptacle fits all equally well. I would like to enquire what kind of a new divisible brood chamber hive he can have been using that he can see no special difference between it and a common L. hive with the bottom knocked loose? If the frames used by Mr. Doolittle were such that two of them could be worked back into one of his old style, and other things about his hive were as badly disarranged, I don't wonder at his failure and the difference of opinion between him and Senator Taylor. But one thing must be remembered, Mr. D. has all these years schooled himself, as his articles show, to a tedious, round-about method of manipulation; much more so than methods used by others who have used suspended frames; so of course he must feel like a bird liberated from a cage, not knowing what to do when out in the broad field of speed and safety.

Mr. D's statement of the twenty thousand dollars his bees have paid him in the last twenty years is no argument; there are very many other conditions to be considered; and, better than I know that they have paid \$20,000, do I know that they would have paid \$30,000 had he kept double the number of colonies in hives that would have necessitated no more work in his apiary.

DOWAGIAC, Mich., Oct. 12, 1891.

Crystalization of Sugar Syrup.

F. A. GEMMILL.

I HAVE repeatedly had to feed sugar syrup to my bees in the fall to make up the deficiency in stores necessary for wintering them safely and successfully. You will observe, I feed to make up the deficiency, leaving any honey there might be in the hive. Now, I never had any difficulty worth mentioning in the syrup crystallizing in the combs, as I used tartaric acid *a la* Heddon, until this season, when I found thirteen colonies with honey (fall flowers) which I desired to remove completely. Five drawn combs, containing neither a drop of honey nor a grain of pollen, were placed in each brood chamber, and the bees from the thirteen colonies shaken off upon the empty combs. A Miller feeder was given each colony and never allowed to be empty till twenty-eight pounds of granulated sugar

syrup (with tartaric acid added as usual) were given. The syrup was fed the last week in September, and it was fed hot enough so I could put my hand in it. The weather was also hot. After feeding I looked the combs over and found the syrup *completely granulated* in each hive: in fact, so little remained in a liquid state that I fear the bees would starve if they were wintered on it alone. Little or none of it is sealed. It was the best of sugar, and was made by putting two pounds of sugar to one of water.

Do you think by closing all upward ventilation and giving plenty of lower ventilation, there would be sufficient moisture retained in the hive to moisten the sugar without injuring the bees, until spring, when I could then feed or give combs of "fall flowers" to them for brood rearing? Do you consider aster honey, sealed, a safe winter food?

You can send this to Mr. Heddon for his opinion, if you choose.

STRATFORD, Canada, Oct. 6, 1891.

P. S.—I know you prefer honey to tartaric acid. I have ten more to feed, but they have clover honey, only not enough. I think I'll try the sugar syrup and honey instead of the acid. I shall try one colony on the granulated syrup as an experiment.

[I have had no trouble with sugar syrup crystallizing in the combs, although the feeders and utensils in which the syrup was made would become pretty well coated with sugar. I prefer to add honey. It is more effective than acid in preventing crystallization. I think bees would die with crystallized stores alone. If I remember correctly, C. E. Boyer, of Ainger, Ohio, once reported a heavy loss from this source. I should give each colony one or two combs of honey, and I don't *know* why sealed aster honey would not be safe. I sent the above to Mr. Heddon and he replies as follows:—ED.]

DOWAGIAC, Mich., Oct. 9th, 1891.


Tell Mr. Gemmill to use plenty of the best tartaric acid (that is, increase the dose fifty per cent) and put one part of honey (amber preferred) to every three of syrup, and he will be all right. For the honey mixture, give Doolittle credit. I find the granulated sugar much different from what it used to be *once*. Then the regulation amount of acid would hold it every time; *now*, hardly any of the time. I get caught, with all of my former experience.

JAMES HEDDON.

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.  The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN. OCT. 10, 1891.

BRO. NEWMAN, of the *A. B. J.*, is an excellent punster. He asks "will the *Am. Bee Keeper* be satisfied now that it has got the 'World?'"

DR. MILLER SAYS: "Shake hands with me at Albany." All right, Doctor. Health and *wealth* permitting, I'll do that. If necessary, I *can* wear the old overcoat another winter.

EXTRACTING HONEY by the aid of a steam engine is what A. W. Osburn does in Cuba, using an extractor with a reel seven feet three inches across. The whole machine weighs 1,730 lbs. J. F. McIntyre runs his extractor with a water motor.

A NEW BEE PAPER is the *Bee Journal* of Winona, Minnesota. (Better get a new name Bro. What's-your-name? *Bee Journal* is not *very* distinctive.) This new comer is a monthly, at fifty cents, has sixteen pages, is well printed, and is going to try hard to be "second to none." Good.

THE HEADINGS to nearly all the articles in the REVIEW are furnished by the editor. Not one correspondent in ten sends a title to his communication. The headings to an article ought to be an index of its character, and to give this in a few words is sometimes quite difficult. If you think otherwise, just try it.

THE AM. BEE KEEPER asks what has become of the *California Bee Keeper*. That is exactly what the REVIEW was going to ask, as it has not been received since June. It must be unpleasant to suspend publication, but when it becomes evident that a paper is

being run at a loss and can never be a success, it is the height of folly to continue its publication until the last cent is expended.

ERNEST ROOT says that he is misunderstood in regard to the "hitching" and "catching" of deep frames when attempting to draw them out of a case. He says they are liable to "catch" because the frames are not always exactly square, are diagonal, and the deeper the frames the greater the opportunity for "diagonal-ness." I fail to see the point. Suppose a frame is diagonal, aren't the opposite sides just as *parallel* as though the frame was exactly square? See?

SWARMING OUT sometimes causes some trouble to the queen breeder. After the queen has filled the cells of a small nucleus with eggs, and perhaps gone over them the second time putting a second egg in many of the cells, she becomes discontented and swarming out is the result. J. F. McIntyre prevents loss from this source by covering the entrance with queen excluding zinc as soon as the queen begins laying. I find this in a very interesting account of Mr. McIntyre's apiary written by Geo. W. Brodbeck and published in *Gleanings*. Two splendid, full page illustrations of the apiary accompany the sketch.

CARNIOLANS, at least some strains of them, are good workers and not such great swarmers as some say they are. Mr. Andrews, of Patten's Mills, N. Y., writes that one colony gave him 120 pounds of comb honey, and three others over ninety pounds each, and they made no attempt to swarm. He agrees with Dadant that the presence of many drones incites the bees to swarming. What he wrote was not intended for publication—"just for a chat with you," he wrote—but when the Carniolans give a good yield of honey the bee keeping world wishes to know it.

NORTH AMERICAN CONVENTION.

The North American Bee Keepers' Society will hold its annual meeting at Albany, N. Y., Dec. 8 to 11. Reduced railroad rates have been secured from the West and South and the indications are that the meeting will be well attended. For further particulars address the Secretary, C. P. Dadant, Hamilton, Ill.

LABEL YOUR HONEY.

When over at Port Huron this fall, awarding the premiums in the apiarian department of the fair, I had quite a little chat with G. G. Baldwin, one of the exhibitors, who is quite an extensive bee keeper. Among other things he told me that he always labeled his honey, stamped each section, I believe he said, with a rubber stamp. At first he sold his honey through commission men, but soon the retail dealers and even the consumers began writing to him for prices, and the result is that now a large share of his honey is sold direct, without passing through a commission man's hands, thus leaving the commission charges in the hands of the producer who has the necessary enterprise to label his goods.

THE APICULTURIST A CIRCULAR FOR THE BUSINESS OF ITS EDITOR.

Bro. Alley of the *Api.* admits that the August issue of his paper was *intended* to be but little more than a "great, big, booming circular for his business," and boasts of its effectiveness in that direction. He says he pays the bill and asks why he *shouldn't* boom his goods in the *Api.* Yes, he pays the bills, that is true, but the money with which they are paid comes from the pockets of those who are foolish enough to pay him 75 cts. a year for his *circular*. Awhile ago his paper was *good*: so good that it was several times praised by the *REVIEW*; but it has degenerated into what is but little more than an advertising sheet for the business of its editor and a medium through which he can publicly abuse those with whom he does not agree.

THE NORTHWESTERN CONVENTION.

THE NORTHWESTERN Bee Keepers will hold their annual convention Nov. 19 and 20, at the Commercial Hotel, corner of Lake and Dearborn streets, Chicago, Ill. This date occurs when excursion rates on the railroads will be one fare for the round trip.

There is no city that offers greater facilities than Chicago for the getting together of a large number of successful, practical honey producers. It is the railroad center of a great honey producing country, and at the time when the convention is held a man living 200 or 300 miles distant can go and return for only \$5.00 or \$6.00 car fare. Reduced rates can be had at an excellent hotel,

and a room for holding the meeting is furnished free by the same hotel. The result is that these Chicago meetings are always well attended, interesting and profitable. For Western bee keepers there is nothing like a convention in Chicago. The Northwestern has suffered from dropping some of its meetings because the North American held its sessions either in or near Chicago. This year the North American holds its convention so far East (Albany, N. Y.,) that few Western men can attend, hence the Chicago convention will be the convention this year for Western bee keepers, and a good meeting may be expected.

ALFALFA FARMING.

The *Cosmopolitan* for November contains an illustrated article upon "Alfalfa Farming." It was written by John Brisben Walker, who was for ten years an alfalfa farmer in Colorado, and prominently connected with the introduction of alfalfa into that State, beginning with a few acres and experimenting until his crop exceeded 3000 tons per annum. He believes that "over at least one-third of the United States, alfalfa may be grown to so great an advantage that it is doubtful whether any other crop can equal it in productiveness." He describes very fully the process of sowing, irrigating and curing alfalfa, but, strange to say, if he has been an alfalfa farmer for ten years, not *one word* is said in regard to its value as a honey producing plant. When the area cultivated reaches 1,000 acres the process of harvesting goes on constantly from the first of June until the last of October. There are three cuttings during the year, "the second crop being ready for the cutting, where the machines were first put to work, by the time that the last field of the first cutting has been cleared." I should suppose that this course would result in a continuous bloom, and, if this is the case, it is not to be wondered that Colorado can furnish car loads of alfalfa honey.

OLD BEES CAN SECRETE WAX AND REAR BROOD.

Mr. E. France sends to *Gleanings* a most interesting account of an experiment made by himself the past season, that of removing the brood (just before it hatched) from a swarm of bees hived June 10th, until the bees had been rearing brood and secreting wax for a period of ninety days, yet not a

bee had been hatched in the hive. Except the stragglers that may have entered from adjoining hives, the hive contained no bees that were not hatched at least three months previous, yet quite a fair swarm remained, and, Sept. 14, they were yet building comb and rearing brood. Mr. France says he is not sure but that they would pass the winter if allowed to hatch the crop of brood that is coming on.

The experiment seems to prove that bees *can* live longer than some very good authorities have said they would. It also shows that old bees *can* secrete wax and rear brood, but it does not show that they can do so to so great an advantage as can the younger bees. It must be remembered, however, that in this experiment the colony was not exactly in a normal condition. The hatching of young bees would have sent *all* of the old bees into the fields where their wings would have been worn out sooner than in the hive. As it was, a large share of the workers were kept at home by the lack of younger bees for nurses, and thereby saved the wear and tear on their wings. The introduction of an Italian queen into a black colony June 1st shows that, ordinarily, the life of a worker in the working season is less than ninety days, and that the work of brood rearing, wax secretion (voluntary) and comb building falls to the young bees.

SHALL THE SPECIAL TOPICS BE CONTINUED IN EVERY ISSUE?

With the end of this volume the REVIEW will have taken up and discussed forty-seven of the leading debatable topics connected with apiculture. As I look the ground over it appears as though it had been pretty well covered. It seems as though, if the REVIEW continues to take up, each month, some subject for special discussion, that many times it will be necessary to choose some quite trivial topics. I think it would not be advisable to drop these special discussions entirely, as new things are being brought out quite often (like the bee escape, for instance), while other topics seem to come up almost of themselves, as, for instance, that of adulteration of honey. When there is any occasion for an extensive discussion let it be held, but it seems to me as though, now that the REVIEW has discussed most of the important, unsolved, apicultural problems, that its usefulness would be impaired by

keeping it tied down to these special discussions; by compelling its editor to choose a subject for discussion each month whether there is an appropriate subject or not. An editor needs plenty of latitude; at the same time it will not answer to ignore the wishes of his readers. I feel sure that one reason why the REVIEW has prospered as it has is because it has taken its readers into its confidence, asked for their advice and suggestions and tried to profit thereby.

And now I have reached the point I had in view when I began writing this editorial, that of asking the advice of my readers in regard to the advisability of the proposed change. Shall the REVIEW continue to make each issue a special number, as heretofore, even though the topics taken up may sometimes be unimportant, or shall its editor be allowed to devote a number to the discussion of some special topic only when he thinks it advisable? I wish every subscriber would write me on this subject. Will those who wish each number to be a special number, (yes, and those who don't, for that matter), send a list of subjects they would like discussed? Before doing this, however, let each one turn to the last page of the cover and look over the topics already discussed.

If the REVIEW does not have some special topic discussed in each issue what will it give in place of this feature? This is a question that may be asked. I don't wish to *discontinue* this feature, simply not be obliged to introduce it into *every* issue. I'll tell you what I had been thinking of giving next year instead of these special discussions, or in place of those that may be dropped, and that is a series of seasonable articles from some three or four of our most practical and successful bee keepers. A single article from a man does not always show him nor his methods to the best advantage. If we could see what had come before, and what was to follow, the present might appear to better advantage. How is it, friends, wouldn't you like to have a few of our best bee keepers tell you, in a series of articles in the REVIEW, how they manage their bees from the time they are wintering in the cellar until they are again stored in the same place, each article being given a month before the information it may convey will be needed? If so, please say whom you would like to have write such articles; as in the selection of the writers I should be guided largely by the preference of my readers.

I have introduced this subject now that I may have time to hear from my subscribers and decide upon the matter in time to announce the decision in the December REVIEW.

Friends, I wish you would consider this appeal just as personal as though written with a pen and you were compelled to puzzle over it to "make it out." Think the matter over carefully, and then write me your views.

MOVING BEES INTO THE CELLAR.

The main points to be considered are when to do it and how to do it. Two or three years ago the question of when bees ought to be carried into the cellar was considerably discussed. The drift of the matter at that time was that we were leaving our bees out of doors too long, that the one or two flights that possibly might be secured by the delay were of no particular benefit. The bees had ceased to store honey or to breed, they seldom flew and consumed but little food, either honey or pollen: in fact they had settled down into a quiescent state and were ready for their winter's nap. No cleansing flights were needed. The intestines were not loaded, because almost no food was being handled or consumed, and nothing was voided in these late flights, if the bees did fly. It was argued that it was better to carry the bees in before they had even felt the touch of Winter's stern hand, and before the hives were dampened by frost or snow or ice. Instances were mentioned where bees were carried into the cellar unusually early, yet they wintered well. Some bee keepers said that, as time went by, each year found them putting their bees in the cellar at an earlier date. All this appears reasonable, and, for ought I know, is good doctrine, I have put bees in the cellar as early as November 10, and as late as December 15, and, so far as results were concerned, I could see little difference. It is my belief that after bees have ceased active labors (honey gathering and brood rearing) for a sufficient time to allow their systems to get rid of the waste matter resulting from such labors, and they have had one or two flights after cool fall weather has set in, that any slight accumulations may be voided, I say it is my *belief* that nothing is gained by leaving them upon the summer stands. That anything is gained by putting them in unusually early I doubt. I believe it has been argued that it disturbs

them less to put them in early. That they have not yet reached so advanced a stage of "hibernation" as my friend Clarke calls it. Rousing a man just as he is on the point of falling to sleep is not so much of a shock as it is to awake him from a sound sleep, is the idea, but I don't take much stock in it, unless we are to use it in comparing the bringing in of bees early in the fall with that of bringing them in at mid winter. In short, I think it unimportant when the bees are brought in, provided they have really settled down for winter's inactivity and they are not left out until freezing weather sets in.

When the time arrives for carrying in the bees how shall it be done? If there are only a few colonies and they are near the cellar they may be picked up and carried in by "main strength," but if there are many to carry or the distance much, some other plan is needed. If there are two persons to do the work it simplifies matters, as the hives may be carried between them upon a hand barrow. The barrow used by my brother and myself is made of two pieces of fencing, each six feet long, the ends being shaved down to a convenient size for handles. The two pieces of boards are placed upon their edges, about fifteen inches apart, and then fastened together by two cross-pieces nailed in between them. As the bee cellar is in a side hill, four hives could be placed upon the barrow and carried directly into the cellar. Where the cellar is under a building and must be entered by going down stairs, this sort of a barrow would not answer very well unless there were stakes put in to keep the hives from sliding, and the frames were not of the swinging style. Mr. H. R. Boardman has a cart behind which he can walk and from the front of which project arms that may be thrust straddle of a hive and the hive thus raised from the bottom board and wheeled into the cellar without so much as touching the hive with the hands. Mr. F. H. McFarland, of Vermont, has a sort of neck-yoke to each end of which a hive may be attached by wire loops that pass under the hive. Mr. Doolittle and Dr. Miller have each, I believe, some sort of a device that enables them to use their strength to the best advantage when carrying bees into the cellar. I have forgotten just how their arrangements are arranged, the same as I have in regard to quite a number of other devices that have been devised for this purpose. Carrying bees into or out of a cellar is hard

work at best, and if there is any "best way," either for one man or for two, let us find out what it is.

If an attempt is made to carry bees into the collar during warm weather, or when the temperature is rising and the cluster expanding, there is trouble from the bees leaving the hives on account of the disturbance. When the temperature is falling and the cluster contracting is the time to move them in. If the bottom boards are loose (and they ought to be) and there comes a day when "its growing colder all the time," just raise each hive an inch or two, putting a block under each corner. This will allow the cold to "get at" the bees, causing them to cluster more quickly and compactly, when they may be carried into the cellar without leaving a little cluster upon the bottom board or very many bees leaving the hive.

No, I would not bring in the bottom boards with the bees, and I would stack up the hives as practiced by Mr. Boardman. That is, if I had room enough. Set the bottom row of hives a foot or more apart. Let the distance apart be such that when the next row is placed upon the first, each hive may set over the opening between the lower hives. In other words, the ends of the upper hive will just nicely "catch on" to the upper ends of the two lower hives. Each row would be placed in a similar manner, thus leaving a space below each hive. For the lower row I would use empty hives. I would manage in some manner to have an empty space below the combs, for, without being able to say exactly *why*, I have noticed for several years that colonies so prepared, whether in doors or out, have wintered better than where the bottom boards came up close to the bees. Put the weakest colonies at the top.

Friends, this is to be our special topic for November: you will please criticise what I have written.

THE WINTER PROBLEM IN BEE KEEPING.

This is the title of a new fifty cent book of seventy-seven pages written by G. R. Pierce, of Blairstown, Iowa. It is exceedingly well written and well printed. In fact the work might be taken for that of a professional, scientific writer. It is also evident that the writer has had some experience in bee keeping, and is somewhat conversant with current apicultural literature, yet he decides that bee diarrhoea is simply a cold—intestinal catarrh

—and will soon disappear if nothing is present to irritate the intestines while they are in a sensitive and inflamed condition. He attributes this condition—diarrhœa—to the combined influence of *cold* and *lack of food*. It seems strange that anyone who has read the bee journals and books as faithfully as Mr. Pierce appears to have done, could arrive at such a conclusion. Were it simply lack of warmth and food that causes bee diarrhœa, the wintering problem would have been solved years ago. Time, and *time* and *time* and again have bees been abundantly supplied with food and kept warm, so warm in some instances, after Ira Barber, at Detroit, advocated such a high temperature, that they even clustered *outside* the hives, yet have they died of diarrhœa. For a preventative of diarrhœa Mr. Pierce recommends covering the hives with newspapers, a dozen thicknesses at the sides and thicker yet on top, then setting a box over the hive and filling the space between the hive and box with leaves, chaff or similar material, *tightly* packed. He advises a two-inch space for the packing material. He also advises the inclining of the hive well to the front that the warm air from the cluster may be forced towards the stores at the rear. In short, he advises *thorough* protection, and says that a colony of bees prepared for winter as he has directed will not show signs of diarrhœa unless the stores fail. I cannot understand how an author can shut his eyes to the fact that thousands of colonies as thoroughly protected as he advises, and sometimes more so, have died like “rot” and left their combs well filled with stores. In many instances they died with stores above the cluster, for, be it known, Mr. Pierce places quite a little stress upon the importance of having the stores *above* the bees.

Our author also lays much stress upon the *instinct* of the bee in choosing a suitable home. The thick walls of the hollow trees afford great protection. He calls attention to the fact that the colony is greatly protected at the *top*, which is all-important. The honey is also above the bees. But bees do not always choose a hollow tree for their home. There have been frequent reports of some swarms entering an empty hive standing in an apiary, and swarms have been caught by putting up decoy hives in the woods. Neither do the bees always find the ideal hollow in a tree. Often they are found

occupying a nearly horizontal hollow in a limb with only a thin shell of wood above them and the stores to one side of the cluster. But all this is neither here nor there when we remember that the same causes that sweep the life out of our apiaries leave desolate the tree-top homes. If bees did not perish in the homes to which they have been led by their instinct, the “woods would have been full of them” long ere this. Mr. Pierce inadvertently admits this by saying: “When the runaways (swarms) are numerous, bee hunters tell me that every hollow tree contains a swarm.” Why not at other times, unless because the bees have died off?

Mr. Pierce lays but little stress upon the quality of the food. He admits that fall honey in some districts may possibly be a factor in winter mortality, but not if *sealed*. He says “the cap of a honey cell is a reasonable guarantee that the contents are ‘pure and free from all deleterious substances’—as far as the bee is concerned.” I don’t understand how he can ignore the many experiments by which it has been proven that food is all-important. I don’t remember that a case of diarrhœa has been reported when the bees had cane sugar stores, while thousands of cases have occurred with natural stores. Scores of colonies with natural stores have died with the diarrhœa while those with sugar stores, wintered in the same cellar, have not even specked the hive covers when they flew in the spring. Because Mr. Pierce wintered bees upon honey mixed with sweet cider, or upon honey-dew, isn’t proof that the character of the stores plays an unimportant part.

One objection urged by Mr. Pierce against the wintering of bees upon sugar alone, is that it has never been proven (so he asserts) that nitrogenous food is unnecessary in the winter diet of bees. I am neither scientist or chemist, I can’t argue these points, but this much I know, I have many times wintered bees perfectly upon sugar syrup alone; have never failed in the attempt, but have often lost them when they had natural stores.

In justice to Mr. Pierce I must admit that *he* admits that the consumption of pollen is a factor in the subject under consideration, but he will recognize it only as an *intensifying* cause—making the trouble worse after it has once set in.

It seems to me that if we know *anything* in regard to bee diarrhœa it is that it is the result of an overloading of the intestines in

confinement. If the temperature is such that the bees are *comfortable*, that they sink into a quiet repose, but little food is consumed. The less food consumed the longer can confinement be borne. If extra food must be consumed to keep up the animal heat, the sooner are the intestines overloaded. The advice to thoroughly protect the colonies is excellent, perhaps none better could be given, but to say that it will always, or nearly always, prevent diarrhoea, is a statement not in accordance with the experience of hundreds of bee keepers.

There are many excellent minor points in the book, and much good advice, and it is with real regret that I see the author, apparently at least, ignore facts with which every advanced bee keeper is well acquainted.

One excellent point that he makes is in showing the objectional features of absorbents about the bees in winter. Water is an excellent conductor of heat when compared with air, and when the absorbents become wet they conduct away the heat very rapidly.

In cellar wintering he thinks a complicated system of ventilation unnecessary.

He calls attention to the necessity of protecting colonies on *top*. To illustrate, he calls attention to the melting of snow in a circular spot on the top of a hive just over a cluster. I have noticed the same thing even on the roof of a packing box inside of which was packed a colony.

If colonies are weak in the spring crowd the bees to such combs as they can cover, protect well and let them alone. Don't add brood from strong colonies.

Stimulative feeding is discouraged. A prolific queen, enough bees, plenty of food and a warm hive is all that is needed.

EXTRACTED.

Having Steam Under Pressure at Little Expense.

Last February Mr. F. A. Salisbury sent an excellent article to *Gleanings* upon rendering wax with steam and acid. After reading the article, E. France commented as follows:—

“All right; that will do first rate for you chaps who have steam; but how are we poor chaps going to raise the steam? Can a man who makes from fifty to one hundred pounds of wax per year afford to put in steam-works on purpose to render out his wax? Now, give us some cheap way of raising steam, and I am with you.”

Ernest replied as follows:—

“It is not a very difficult matter to produce a jet of steam. Take an ordinary square tin can, and have your tinner attach to it a tin pipe, and let the same communicate with a barrel near the stove. I have tried a five-gallon tin boiler on the stove, and find that it will generate quite a pressure of steam. In fact, it will heat hot a coil of pipes in my bath-room; but the probabilities are that the wax-press and the ordinary methods of rendering wax will answer perfectly well for those who have only a hundred pounds or so.”

Dadant on Sulphuric-Acid Wax Rendering.

“*Friend Ernest*:—After reading your remarks on the use of sulphuric acid, pages 703 and 704, I had about made up my mind not to reply, because I thought the arguments which I could give you against the grounds you took would be of little importance, but in reading Dr. Miller's opinion on this subject as given in his *Stray Straws* I find his views to agree so well with my own that I will give you what arguments I have on this point.

We find the more beeswax is manipulated, the more it is re-melted, the more it loses its fine honey flavor, and therefore the more objectionable it is to the bee-keeper's taste, and the more readily bees will object to it. There is not a doubt in my mind concerning the healthfulness of beeswax refined by the sulphuric acid method, and I believe that this method is advantageous to cleanse black wax or refuse, since we use it ourselves; but to use it on all grades will simply make an insipid material of the sweetly perfumed article produced by the bees. I have often heard parties wonder what sweet-scented substance was used in the manufacture of foundation, when it was only the perfume that Nature put into the blossoms that could be so plainly detected. All the secret of this was the use of clean water in rendering the combs. For this reason, I should be sorry to see any of our bee friends use the dangerous oil of vitriol when another process much more simple will do as well. Let us teach bee-keepers to render their wax in the sun or in clean tin vessels with clean soft water, and we shall make the very best foundation that can be obtained.

C. P. DADANT.

Hamilton, Ill., Sept. 18.

[I believe what you say is true, that melting and re-melting does to some extent destroy the peculiar aroma that is present in virgin beeswax. Whenever visitors go down into our foundation basement, they usually exclaim, ‘How good it smells!’ adding that the odor is suggestive of honey. In regard to the sulphuric acid, perhaps I should explain that we have tested it on only the very darkest grades of wax, and the whole amount rendered in this manner will be small compared with the sum total used in foundation-making. But we find that bee keepers clamor more for the yellow color of wax than for its peculiar odor; so even if all the

wax were refined by sulphuric acid (which will never be the case by a long way) it would not be objectionable to bee keepers.

I have been making some further experiments in regard to acid testing in wax, and have finally succeeded in detecting a very, very slight trace of acid in wax rendered with sulphuric acid; but the amount is so infinitesimally small I feel sure it can do no harm; and although I do not know positively, yet I do not think it would be objectionable to bees.] E. R."—*Gleanings*.

Record Books Versus Queen Registering Cards.

In *Gleanings* for October 1st, Mr. J. F. McIntyre argues for record books in place of slates or cards attached to the hives. For a queen registering system he gives the only plan that I have ever heard or read of that seemed worthy of consideration, aside from the queen registering cards with pins for dials. He says:—

"I have dispensed with queen registers on each nucleus, because I could not see the whole at once, as it were, and know just where to go for what I wanted, and adopted a system of memorandum which I carry in a light paper clip with a pasteboard back. I give below a memorandum of twenty nuclei for one month, so you will see how it is done:

AUGUST.

No.	Cell.	Strain.	Virgin.	Laying.	Removed.	Cell.	Strain.	Virgin.	Laying.	Removed.	Cell.	Strain.	Virgin.	Laying.	Removed.
1	3	H	5	15	17	19	A	21	31						
2	3	H	3	3	5	8	I	10	20	20	22	S	24		
3	3	F	3	12	13	15	S	17	27	31					31
4	3	S	5	5	5	5	A	7	17	18	20	I	22		
5	3	A	5	15	15	I	I	17	27	29					
6	5	I	7	17	19	21	S	24	27						
7	1	H	3	3	5	7	H	10	19	20	22	H	24		
8	5	I	3	8	8	11	H	13	22	22	25	S	27		
9	5	I	7	17	17	17	A	19	29	31					
10	3	A	5	15	17	19	A	21	31						
11	1	I	3	15	15	17	A	*19							
12	1	I	1	8	10	12	S	14	24	26	28	H	24		
13	3	H	5	15	19	21	H	24							
14	5	A	7	17	17	20	A	22	31						
15	1	I	3	15	17	19	I	21	31						
16	H	I	1	1	3	5	S	7	17	19	21	S	24		
17	S	I	1	8	10	13	I	15	25	27	29	H	31		
18	H	I	1	10	10	12	H	*15							
19	3	S	5	7	7	A	A	9	19	20	22	S	24		
20	1	F	3	13	17	17	A	*19							

* Torn down. † Lost.

You will see that the plan is to write the number of nucleus down the side, and the condition along the top of the page, and the day of the month where the two lines come together. It requires three sets of names to run a whole month; and one sheet of letter paper is plenty large enough to keep the record of twenty nuclei for thirty-one days. Now, suppose I want some laying queens. Instead of running all over the apiary and reading all the slates and cards, I run my eye down the two last laying columns and

find that numbers 1, 4, 9, 14, 15 and 18 contain laying queens, and I go straight to the hive for them. You will understand that all the figures except the first column, which is the number of the hive, are the days of the month on which the hive was examined; and I claim that it is easier and quicker to put down one or two figures, in the column which represents the condition of the hive, than to manipulate the pins of a queen register on the hive. Now, suppose I go over 100 nuclei with queen registers, and mark the condition of each nuclei on the registering card; when I get through I have forgotten which hives have laying queens and which are queenless, and must run over the apiary again to find them. With this system you have the condition of every hive in your hand in the most condensed form, and can go straight to a hive having a laying queen, if you want one, or to a queenless hive, if you have a cell to put in, and no false moves are made, and no unnecessary steps taken. I rear all my queens now by placing the Doolittle prepared cells in the brood chamber of colonies that are superseding their queens; and the young queens bred from the best in the apiary are so large and fine it makes me feel happy.

J. F. MCINTYRE.

FILLMORE, Cal., Sept. 1.

[You have scored some good points for the record book. The system as you use it may be much better than ordinary records made on the hive where the position of the slate does not indicate anything; but where the position of the slate, tablet, or card on the hive cover indicates whether the colony is queenless, or possessed of a cell, virgin queen, laying or tested, I think I should prefer the slates. The system which we use is a written record on slates, and the same indicated by the position of the slate on the hive cover. From any part of the apiary I can tell at a glance which colonies are queenless, which ones have cells, which ones have virgin, laying, or tested queens. There are advantages in both systems. With the record book it is possible to say which colonies need attention, even though they may be miles away.] E. R."

My greatest objection to the use of a record book is the book itself and its accompanying pencil. They must be carried about and kept track of. That their use would sometimes save a few steps I will admit, but, with my plan of queen rearing, not many would be saved. I visit about one-third of my nuclei each day, carrying with me a box with pieces of comb containing unsealed brood, queen cells ready to hatch, or hatched virgin queens and shipping cages. I take a regular route, examining each nucleus that shows, by the registering card, that it stands in need of attention. It will be seen that I pass by each nucleus as often as once in three days, and, as a rule, this is as often as attention is needed. When hand-

ling little pieces of comb containing brood, or handling queen cells, the fingers usually become more or less daubed (yes, that is the word) and in handling a memorandum book it will eventually become soiled, and then how it looks! The pencil must dangle from the book by a string, or else be fished up out of some place. If that place is the pocket the soiled fingers soil the clothing around the pocket, and if there is anything that makes me feel more uncomfortable than to have my hands "stuck up" it is to feel the stickiness of honey on my clothing. I still think I should prefer to dispense with record books, although I must admit that they have some advantages, but Mr. McIntyre has given the most simple and compact method of keeping a record of nuclei with a pencil, and I certainly think it worthy of a place in the REVIEW.

Alley's Self-Hiver Does Not Fill the Bill.

One of my own townsmen, Mr. M. S. West, writes to *Gleanings* giving his own experience and that of his customers with the Alley self-hiver. He says:—

"In response to your call for reports concerning the Alley automatic hiver, I submit the following:

In the year 1889 I purchased a number of the queen and drone traps, and found them useful in hiving new swarms. In 1890 the automatic hiver seemed to promise so well that I purchased fifty as a trial venture. That year being an extremely poor one in this locality, though a few purchased them, no one had a chance to give them a trial. I could not try them myself that season, as I had not a single new swarm.

This spring, after selling the rest of the fifty, I sent for twenty-five more, about half of which have been sold, so that there are now in use between fifty and sixty among my customers.

I have not from this number had one really favorable report, but a number have reported unfavorably. A common complaint is, that the hiver becomes so clogged with drones as to interfere with the passage of the field workers.

Early in the season I placed three on the three strongest out of ten strong colonies belonging to a neighbor. Those colonies cast no swarms, though all the others did so. While most bee keepers have had a fair amount of swarming, it has not been an old-fashioned swarming season, or I should be inclined to recommend the hiver as a non-swarming device. I have noticed the same effect in my own yard, where hivers were early placed on colonies showing strong signs of swarming. Days went by before the swarms issued, and then the bees went back instead of into the new hive prepared for them. It was ten days before they came out again, probably with a new queen. That

time the hiver was off, so they were gathered off a tree. The next time a weak swarm was caught, the most of the bees returned to the old hive. At another time, with an after swarm, several young queens got through the hiver, rendering it of no use in that case.

The later form of the hiver may be made to serve an important purpose, aside from its main object. The two small sections, with perforated zinc in the front, may be used in retaining swarms after they have been hived.

I am very sorry that I am not able to make a favorable report on the hiver. A device that will effect its purpose every time will be eagerly purchased by the farmer members of the bee keeping fraternity, especially as it will enable them to keep bees without interruption to other work in swarming time, and consequent loss of time demanded by other interests.

I hope Mr. Alley may yet give us a really practical hiver; but this one, at least with me so far, does not fill the bill.

M. S. WEST.

FLINT, Mich., Aug. 24.

[This report may be exceptionally bad, but it rather strikes us that these automatic swarmers were boomed pretty heavily before they were even tested. If the majority of the others who have tried them have had similar failures, it means a big disappointment.]—Ed. *Gleanings*.

I presume some of my readers will wonder why I, as owner of an apiary and editor of a bee journal, have not given the hiver a trial. The main reason is that the past two seasons have been so poor that there has not been enough swarming to give it a test. For my own use I should not care for it, even if it were always successful, and this would probably be the case with every bee keeper who is constantly among his bees during swarming time. If the hiver would always, or nearly always, hive a swarm that issued, and do the work well, it would be a great help to all who own a few colonies that they are obliged to leave unwatched. Their use would also be a great advantage in the management of an out apiary. That these hivers have sometimes hived swarms there is no doubt, but with my knowledge of bee keeping I can see two objections to their use. Mr. West mentions both of these. One is that the hiver becomes clogged with drones, thus interfering with the passage of the workers. So long as the hiver is on the hive no drones can leave the hive. Of course they *try* to leave it, and the crowd of great, big burly fellows crowding and pushing to get out, must seriously hinder the workers. It is different with the drone and queen trap. In their efforts to escape the drones pass up through the wire cone and *never come back*

again. They may buzz and bump about as much as they please in the upper part of the trap to which they are confined, it does not interfere with the workers as they pass out and in below. The other objection to the hiver is that a large portion of the bees will return to the *old* hive in spite of the fact that the queen is confined in the new hive. When a swarm returns because of the absence of its queen, it comes back with a *rush*; fairly *pouncing* upon the entrance of the old hive, and a large share of the bees will enter the old hive even though the queen is soon found. To a returning swarm of bees there seems to be something peculiarly attractive about their old home. In hiving bees upon their old stand by putting a new hive there in place of the old one, the queen being clipped and then caught and caged, I have learned that it will not answer to simply set the old hive to one side a distance of two or three feet. The returning bees will find it, set up the "call" of "home is here," and many of the bees will return to the old hive, even with the queen at the entrance of the new hive. I have found it necessary to not only set the hive to one side but the entrance must be turned in an opposite direction to that of the new hive. Even with this precaution I have been obliged to pull grass and throw it over the entrance of the old hive.

In a large apiary, where several swarms are likely to issue at one time, a self-hiver would be of little value. Under such conditions a *swarm catcher* is what is needed.

Be Sure They are Carniolan Bees.

In the *A. B. J.* Mr. J. A. Green has the following to offer in regard to the discussion upon the "Golden Carniolans:—"

"The editorial comments on Mr. Andrews' article, on page 400, would seem to indicate a belief in the genuineness of the golden Carniolans. If this belief is well founded, the breeders of these bees are much maligned individuals, and the scores of prominent apiarists who ridicule their claims should be labored with in order that justice may be done. On the other hand, if these queen breeders are wrong, and their opponents right, justice to the public demands that the facts should be as quickly and widely made known as possible. This I trust will be sufficient excuse for a continuation of the discussion.

If the Carniolans are better than the bees we have had before, we want them. If they are inferior, let us discard them. But whatever they are, let them stand or fall on their own merits, and when we are testing them,

let us be sure they are Carniolans, and not something else.

Mr. Alley claims, on page 330, that '*The Carniolan race of bees are the original yellow bees.*' and in the article containing this statement, and elsewhere, he argues that the Carniolan race has a natural tendency to become yellow.

If this were true, as has before been pointed out, they would long ago have become a yellow race in their native land; whereas, Mr. Alley himself testifies that the progeny of imported queens showed no yellow whatever. The variation does not begin, as he admits, until we come to the progeny of queens reared in his own apiary.

The explanation of this is furnished by Mr. Alley himself, when he tells us that these queens were mated in an apiary but little over a mile away from a large apiary of Italians. Now, it is agreed by most authorities that the meeting between queen and drone may take place at some distance—a mile or more—from the hives. If they flew only a mile away, apiaries would need to be at least two miles apart to keep them distinct. I have evidence which I consider conclusive that different races will intermix if kept *four* miles apart. More than this, I believe—and this belief is shared by many—that a queen is more liable to be mated with a drone from an apiary a mile away than from the one in which she was reared.

At a time when all my bees were Italians, and no other bees were within a mile—except possibly a few in the woods—and even at that distance there were not over one-tenth as many as I had, a large proportion of my queens were mated with black drones. When I establish an apiary in a new place, although my Italian bees far outnumber all bees within several miles, experience shows me that nearly half the queens reared there will produce hybrids.

On the other hand, the common bees have become so mixed with the Italians, that in this part of the state it is difficult to find a colony of pure black bees.

To sum the matter up, the "golden Carniolans have been produced by crossing Carniolans with Italians, then breeding for yellow bees.

They may be very good bees. Probably they are, as the greater share of their ancestry (the Italian side) are known to be, while the remaining share certainly has some good points. But to cross Carniolans with Italians, and then breed out as much of the Carniolan blood as possible, is hardly the way to produce 'typical Carniolans.' Let those who wish to test the 'wonderful Punic bees' get them before the striped variety makes its appearance. It is all very well to test new varieties of bees, but let us call things by their right names.

DAYTON, Ills.

[The editorial comment, on page 400, expressed no opinion on the controversy. It quoted Mr. Alley's language on page 330 only to show that he had already answered the question again propounded by Mr. Andrews. This was done to save space for a reply, and *not* to endorse any views presented by either

party. Our own views do not materially differ from those of Mr. Green.—ED. A. B. J.

It seems as though no more discussions were needed in regard to golden Carniolans. In developing the golden Carniolans Mr. Alley depended upon having Carniolan queens mated with Carniolan drones by isolating them only *one mile* from Italians. Because *all* of the young Carniolan queens produced yellow bees, he argues that they must have all mated with Carniolan drones. He takes this position because he thinks it impossible that *all* of the young queens should have mated with drones a mile away when there were an abundance of *Carniolan* drones right in the apiary where they were. He thinks that *some* of them must have mated with the drones of the yard where the queens were, and because *all* of the young queens produced yellow bees he argues that they all met the same kind of drones and they must of necessity have been *Carniolan* drones. As I understand the matter, this is the foundation upon which is built the "golden Carniolan" boom. It is surprising that a man with Mr. Alley's experience should adopt or express such views. The first year I kept bees I raised eight young queens. My bees were blacks. A mile and a half away there were a few colonies of Italian bees. Six of the young queens produced quite yellow hybrids. When I began queen rearing I could have no success in getting queens purely mated until I Italianized an apiary of blacks and hybrids that had been recently located about a mile away. It does seem as though queens are more likely to mate with drones from an apiary a mile away than with drones in the home apiary. That *all* of Mr. Alley's Carniolan queens should have mated with Italian drones from an apiary a mile away is a little remarkable, but not impossible. If the Italian apiary were a large one, and the Carniolans that were carried away few in numbers, which I presume was the case, it is not even remarkable.

Why Spleen Against Honey Dew ?

Mrs. L. C. Axtell in *Gleanings* is rather inclined to defend honey dew. Among other things she says:—

"In this locality there was honey dew only upon hickory trees, which for a few days nearly dripped with it. I notice that nearly every writer in the journals who speaks of the dew honey, speaks disparagingly of it; but we are very thankful for it. If it does

not kill our bees this winter, it has saved us from feeding largely this summer, as our bees seemed to get scarcely any other honey.

The hickory trees could be seen glistening in the sun for a long distance with it on the leaves; and all shrubs that were underneath were covered with the same sweet substance, and swarming with bees. The very topmost leaves were just as wet with it as the lower ones, and no leaves were dry on vigorous young trees. The smaller and younger the tree, the more honey dew. Old and large trees had not nearly so much upon them. If that all came from aphides, I should think the trees would have had to be swarming with them, but they were not. There were a good many, or several, under each leaf, but more upon the top of the leaf. Why do we so spleen to eat such honey? Is it not just as clean as the milk of a cow or goat, and much cleaner than to eat oysters? In this case we eat only the product of the insect; but in the other case we eat the whole animal. If we could get only honey dew in the future, I believe nearly every one would use it, and like it too. At first I could scarcely bear the taste of it; but now I rather like it. We have sold it only in our home market, and people call for it nearly as much as for good honey. We tell them it is honey dew, and to return it if they don't want it. If they wish to buy it we can see no harm in selling it; and as to its being poisonous, as some have asserted, I am sure they are mistaken."

In another place I speak about honey dew being the result of a diseased condition of the leaves, or *suggest* that such may be the case, as I don't *know* that it is, and what Mrs. Axtell has to say in regard to their being very few aphides present, yet the leaves of the *hickories* were dripping with sweetness, would seem to support this idea. The sap of hickory is very sweet.

Honey Dew or Bug Juice.

In the last few years, in some localities, large quantities of so-called "honey dew" have been gathered by the bees. Probably in a fit of disgust *somebody* dubbed it "bug juice," because it is the secretion of bark lice or the aphids. Some of this honey dew is dark, rank and unwholesome, fit only for manufacturing purposes, while at other times, depending upon the source, it is of fair quality, and is relished by some palates. The name "bug juice" is against it. Call it such a name and no one would eat it. The very name is sickening, disgusting, and is not *much* nearer the truth than is honey dew. If bugs were treated like cider apples the result would be "bug juice," but before saying more allow me to quote an article contributed by Oliver Foster to the *A. B. J.*;

"No one who has read the *Bee Journal* can doubt the sincerity of its editor in his fearless defense of the rights of bee keepers, and in his efficient services for the promotion of their interests.

The readers of a periodical are sometimes responsible, however, for the best application of the editor's efforts in their behalf. The severe condemnation of honey dew or "bug juice," and those who sell it for honey, are applicable to some specimens of that article I have seen, but not to all.

The nectar produced by aphides in this section this season is of very fair quality. It sells readily in our retail markets at five cents for extracted, and eight cents for comb, while the best white clover and linden honey sells at eight cents for extracted, and fifteen cents for comb. While some do not like the honey dew (and I include myself in the number), I find many who do, and some who prefer it to white clover or basswood honey, among whom are people of refined tastes, such as our postmaster, our railroad agent, etc.

My largest sales are to those who have used it, and order it the second and third times. It has shown a remarkable medicinal value in promptly curing a severe case of throat and lung trouble of long standing. I call it honey dew, and explain its source only when asked to do so. A proper explanation will not change the attitude of a fair and reasonable mind.

As for appropriateness of names, I think the term "dew" is more appropriate for this kind of nectar than it is for that which exudes from the plants, since dew is *always deposited—it never exudes*.

To my mind, it would be as elegant, as appropriate, and as near correct to use the term "cow juice" when speaking of milk, as it is to call the natural secretion of the glands of the aphid, "bug juice."

MT. VERNON, IOWA.

[We admit that there are different qualities of so-called honey dew, and that even the bug juice varies in kind, but for all that it is *not* honey, and should never be sold for honey.

Milk is a natural product, common to animals, including humanity. As it is in no sense exclusively a product of the cow, it would be sheer nonsense to call it "cow juice!" There is no similarity between the two terms. The secretions of the aphide are neither honey nor dew, no matter how often, nor by whom they are so-called."—ED. A. B. J.]

Friend Foster is correct. When speaking of milk he, of course, had reference to cows' milk, and that it would certainly be as correct to call cows' milk "cow juice" as to call the natural secretion of the glands of the aphid "bug juice." Dew is water condensed from moisture in the air, and in all probability *real* dew never contains sweet, at least I do not suppose it does, and, as I understand the matter, what is termed "honey dew" is either a secretion from the

leaves through some diseased condition, perhaps, or else the secretion of some insect. It is not "dew," neither is it "bug juice." It has never been properly named, but it has long been called "honey dew." If given another name let it be one more exact and appropriate, and until such a name is found let's continue to call it by its old name, "honey dew."

Melting Combs Into Wax.

The chapter upon melting wax, to be found in *Langstroth on the Honey Bee, Revised by Dadant*, contains so much of value upon the special topic for this month that I cannot do better than to copy it entire:

"We will now describe the different processes used by bee keepers to render the combs into wax. To melt every comb, or piece of comb, as it is taken from the hive, would increase the work, and, as it is preferable to choose our time for this operation, we have to preserve them from the ravages of the moths by some of the methods that we have given.

The cappings after extracting are allowed to drain in a warm place for several weeks; very nice honey being obtained from them. They are then washed in hot water, and the sweet water obtained can be used for cider, or wine, or vinegar. These cappings, as well as the broken pieces of white comb in which brood was never raised, should be melted apart from the darker combs, for, not only are they easier to melt, but, the wax obtained being very bright in color, is unsurpassed for making comb foundation for surplus boxes.

When the combs are blackened by the dejections of the worker bees, or of the drones, and by the skins and cocoons of the larvæ, it is so difficult to render the wax, that many bee keepers think it is not worth the trouble. We advise washing these combs and keeping them under water for about twenty-four hours. Then the cocoons and other refuse being thoroughly wet and partly dissolved, will not adhere to the wax. This will be lighter colored, if the combs are melted with clear water and not with water already darkened by the washing.

But as this method always leaves some wax in the residues, for some of it goes into the cells during the melting, and it is impossible to dislodge it, a better result is obtained by crushing the combs before washing them. But this pulverizing can be done only in winter, when the wax is brittle.

The combs should be melted with *soft or rain water*, the boiler kept about two-thirds full, and heated slowly, to prevent boiling over. If the floor, around the stove, is kept wet, any wax that may drop will be easily peeled off.

During the melting carefully stir till all is well dissolved. Then lower into a boiler a sieve made of a piece of wire cloth, bent in the shape of a box, from which the wax can be dipped as it strains into it. If the

whole is thoroughly stirred for some time, very little wax is left in the residues. This is the cheapest and best method of rendering wax, without the help of a specially made wax extractor.

To obtain as much wax as possible from the combs, the large wax manufacturers of Europe empty the contents of the boiler into a bag made of horse-hair or strong twine, and place the bag under a press while boiling hot. All the implements used, as well as the bag, are previously wetted, to prevent their sticking.

Some bee keepers use a wax boiler in which the wax is melted by steam.

But the best wax can be rendered by a solar extractor, yet, by its use, some wax is always left in the refuse, for the cocoons, skins of larvæ, etc., being dry, always absorb more or less of it. This implement however is destined to overthrow all others for the rendering of wax in all countries where the heat of the sun is sufficiently powerful. At this latitude, the 42°, sun-extractors can be efficiently used during the months of May, June, July and August. The sun-extractor requires no labor from the apiarist, other than filling it with combs and removing the melted wax.

The dealers in France buy, from the bee keepers, for little or nothing, the residues of their melted combs. They dissolve them in turpentine, press the pulp dry, and distill the liquid, to separate the turpentine. As the wax is not volatile, it remains in the still. It is said that, when wax was dearer than it is now, large profits were realized by this operation.

To cleanse beeswax from its impurities, we melt it carefully with cistern water and pour it into flaring cans (wider at the top than at the bottom) containing a little boiling water. The wax is kept in the liquid state, at a high temperature, for twenty-four hours. During this time the impurities drop to the bottom and can be scraped from the cake when cold. Some wax can be obtained from this refuse, but some of it is always left in the dregs, as is proven by the impossibility of dissolving them by exposure. We have lumps of this refuse, as dark as ink, which were scattered on our farm, with manure, ten years ago, and are just as they were when put in the fields. Nothing can destroy beeswax, except fire, or the ravages of the bee moth. Exposure to the weather does not affect it, but only bleaches it.

To prevent the cakes of wax from cracking, it should be poured into the molds or cans when only 165° Fahr., and should be kept in a warm place to cool slowly.

The utmost care is necessary not to spoil wax in melting it. If heated too fast, the steam may disintegrate it. Then its color is lighter, but very dim; the wax having lost its transparency, resembles a cake of corn-meal. When it is in this condition, water will run out of it if a small lump is pressed between the fingers. The best way to restore it is to melt it slowly in a solar wax extractor. We have succeeded also by melting it with water, and keeping the water boiling slowly till all the water contained between the particles of wax had evaporated.

But this work is tedious and cannot be accomplished without the greatest care and a skillful hand. Whatever the means used, you may rely on more or less waste.

Whenever beeswax is melted in water, even with the utmost care, some small portions of it are water-damaged and settle to the bottom of the cake with the dregs. This water-damaged beeswax has often been mistaken for *pollen residues*."

As I understand the matter Mr. Dadant is now getting the wax out of the refuse that he formerly scattered about the farm with the manure, and it is sulphuric acid that enables him to extract the wax from this refuse.

Does Rendering wax with Sulphuric Acid

Injure the wax for Foundation?

In *Gleanings* for September 1, Mr. C. P. Dadant has the following to say upon the subject of rendering wax with sulphuric acid.

"I see that you are advising bee-men to use oil of vitriol to render their wax. I believe it is a mistake, for we have always noticed that beeswax rendered thus had an unpleasant smell, and we believe its general use would have a tendency to render the wax unfit for foundation. You will remember that we told you that we used it only for our residues, and such wax as could not possibly be cleaned otherwise; but we were very particular to use this wax only in a very small proportion to the water-melted wax. The fact is, we do not use this method on more than two per cent of all the wax we handle, and we consider wax thus cleaned as very much inferior to that melted by the ordinary methods. We should very much object to buying any beeswax produced by beekeepers, rendered in this way, for the sweet, balmy odor of the hive is all taken away by this process. We are satisfied that a part of our success in foundation-making is due to the fact that we used this way of cleansing less than several others to our knowledge, thus preserving the natural bee smell in the greater part of the foundation."

In reply to the foregoing, Ernest Root says:—

"As you are the largest foundation makers in the world, it may be well for us to heed your warning and go a little slow in this matter of rendering wax with sulphuric acid. So far we have used it only in our dirtiest refuse, such as we could not render in any other way. We have tried, however, a few very black cakes of wax, to see if we could not lighten them up, and the result has been highly satisfactory as to color. Since you have spoken of it, I notice a little odor, though very slight, clinging to the wax so treated; but I think that, if it is melted up into foundation again, this odor will disappear. In the first place, the acid is diluted some 300 or 400 times—so weak,

indeed, that the hands can be dipped into it with impunity, and I do not know but we could drink quite a quantity of it with no injurious results. It certainly cannot be poisonous to man or to bees any more, it seems to me, than soap used for lubricating rolls in foundation making. We find that there is a very slight residue of particles of soap left on the foundation, and this is not objectionable to bees."

Upon another page of the same issue Ernest gives the following:—

"Since that article from C. P. Dadant, and our footnote on page 702 were put in print, we have been making experiments. We took about 100 lbs. of wax, rendered with sulphuric acid, and placed the same in our regular melting-vat. From this we dipped wax sheets the same as we did for making foundation. There was absolutely no odor to these sheets, and absolutely no taste after chewing pieces of them for half an hour. To go a little further and make the test sure, we went to the druggist's and got what is known to chemists as blue litmus paper. This is so sensitive that it will show the least trace of any acid or alkali in a substance. If there is a trace of acid, the blue litmus on being dipped into the solution in question will turn red. Red litmus paper will turn blue in a mixture having a slight trace of alkali. Well, we dipped some of this litmus paper into melted wax that had been rendered by sulphuric acid; and, quite to our astonishment, it showed absolutely no trace of sulphuric acid left; i. e., the paper showed no tendency to turn red. We repeated the experiment in a number of different ways, with the same result. We feel very sure now that wax rendered by sulphuric acid, after being made up into foundation, can have no possible bad effect. We will admit that the cakes direct from the melting tank of the sulphuric acid mixture do have a very slight odor; but on remelting for making foundation, this odor seems to be all volatilized, or done away with in some shape or other.

There is another point, perhaps overlooked by our friend C. P.; and that is, that sulphuric acid has a specific gravity $2\frac{1}{2}$ times that of water; and by the methods which have been described in *Gleanings*, after the dirt and refuse have been boiled in the sulphuric acid mixture the melted mixture is allowed to stand for five hours. The wax comes to the surface and is dipped off. The acid, having a specific gravity $2\frac{1}{2}$ times that of water, settles to the bottom, and leaves the wax entirely, or at least practically, free. This shows that there is a very slight trace or practically no acid left in the original cakes. These cakes, on being melted up again to dip into sheets for foundation, are, so far as we are able to observe, perfectly wholesome and fit for the bees. There may be some missing links that we have overlooked. If so, our friend C. P. will straighten us out, for he is a keen observer and a bright bee-keeper; but in this we think he will admit our premises after he has tried the tests himself as above described."

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My New, Thin, Double - Wall Hive

Is the best summer and winter hive yet devised. Takes regular "L." furniture. Is lighter than $\frac{1}{2}$ single-wall hive; may be storified to any extent, etc. Send for descriptive circular. Special low prices for 1891 to introduce it. A full line of bee-keepers' supplies always in stock. Catalogue free.

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That is what our subscribers say, and they are coming in by every mail. Send 50 cents for a year's subscription to the **Missouri Bee-keeper**. Monthly; 16 pages and cover; nicely printed on good paper. Money returned if you don't like it. Sample free.

Address **BEE-KEEPER PUB. CO.**,
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Beautiful Bees ALWAYS PLEASE THE EYE.
Good Qualities ARE ALWAYS PROFITABLE.

If you wish for bees and queens that combine beauty and good qualities to a marked degree, write for descriptive circular giving low prices. No circulars sent unless asked for.

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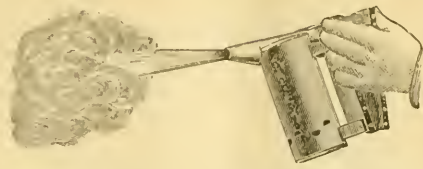
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HILL'S SMOKER and FEEDER.



Smoker burns hard wood chips without special preparation. Very reliable. Greatest smoking capacity. Easiest to start. Cheapest because it saves time. Price, \$1.30. By mail, \$1.40. Per dozen, \$10.80.



Best Bee - Feeder. Most convenient. Saves feed. No daubing or drowning. Two to seven feeders full may be given a colony at one time which will be stored in the combs in ten hours. Price, per pair, 30c; by mail, 40 c.; per doz., \$1.60. Has a sale of 2,000 per month. Address **A. G. HILL**, Kendallville, Indiana.

These smokers and feeders are kept in stock by **Thos G. Newman & Son**, Chicago, Ill.; **G. B. Lewis & Co.**, Watertown, Wis.; **W. H. Bright**, Mazeppa, Minn.; **Chas. Dadtant & Son**, Hamilton, Hancock Co., Ill.; **E. Kretschmer**, Red Oak, Iowa; **H. McWilson & Co.**, 202 Market St., St. Louis, Mo.; **F. H. Dunn**, Yorkville, Ill.; **W. D. Soper & Co.**, Jackson, Mich.; **Chas. A. Stoeckbridge**, Ft. Wayne, Ind.; **A. F. Fields**, Wheaton, Ind.; **W. S. Bellows**, Ladora, Iowa; **E. F. Quigley**, Unionville, Mo.; **Gregory Bros.**, Ottumwa, Iowa.

Send 25 cts for my book of **Discovery and Invention**, the

Queen Restrictor.

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1-91-12t

Clinton, Wisconsin.

White Poplar Sections.

We have **New Steam Power**, and **New Buildings**, and are now ready to furnish **White Poplar Sections**, **Clamps**, **Crates** and **Wood Sides** at short notice. **Workmanship**, **Quality** and **Price** unsurpassed. Send for sample and price list.

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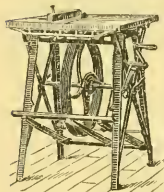
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Cuts Furnished for all illustrating Purposes.

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This cut represents our Combined Circular and Seroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

4-90-161

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EVERYTHING used in the APIARY. Greatest variety and largest stock in the West. New catalogue, 54 illustrated pages, free to bee-keepers. E. KRETCHMER, Red Oak, Iowa.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No 10 Spruce St., N. Y.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price \$1.00. Mailed, postpaid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 10 Spruce St., N. Y.

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Unexcelled for SIMPLICITY, CONVENIENCE and CHEAPNESS. Every part INTERCHANGEABLE, REVERSIBLE and INVERTIBLE. Adapted to interchange with the Simplicity and other frames and bodies. For introductory prices, etc., address LOWRY JOHNSON, 1-91-1f Masontown, Pa.

LEAHY'S FOUNDATION, Wholesale and Retail, Smokers and Sections, Extractors and Hives, Queens and Bees, R. B. Leahy and Company Higginsville, Missouri.

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Life and health being spared, I shall, in the spring of 1892, continue the breeding of Carniolan bees and queens. You can order now or when the queens are bred.

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10-91 3t

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THE LARGEST B. HIVE

Factory in Michigan

Is turning out hives and bee-keepers' supplies at the following prices.

One 8-frame, L. hive, 2 T supers,	\$1.00
Ten ditto,	8.00
Brood frames, per 100,	1.00
One-piece, V-groove sections, per M,	3.00
10,000 ditto,	25.00

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W. D. SOPER & CO.,
118-120 Washington St., Jackson, Mich.

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Names of Bee-keepers

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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

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Weighs 15 lbs. Adjustable. Many Thousands long in use.

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Artificial Sea Bath. Artificially heated. No fire needed.

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ADVANCED BEE-CULTURE;

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This book is now "out" and ready for delivery. It contains 88 pages the same size as those of the REVIEW. It is bound with enameled paper tinted to resemble perforated zinc.

It begins with The Care of Bees in Winter, and then tells how they ought to be cared for in the spring in order to secure the workers in time for the harvest. Then Hives and their Characteristics, Honey Boards, Sections, Supers and Separators are discussed. The best methods of Arranging Hives and Buildings and Shading the Bees are described. Varieties of Bees, Introducing Queens and Planting for Honey are next given a chapter each. Then the Hiving of Bees, Increase, its Management and Control, and Con-

traction of the Brood Nest are duly considered; after which Comb Foundation, Foul Brood, Queen Rearing, the Raising of Good Extracted Honey, and "Feeding Back" are taken up. After the honey is raised, then its Preparation for the Market, and Marketing are discussed. Then Migratory Bee-keeping, Out - Apiaries and Apiarian Exhibits at Fairs are each given a chapter. After this comes the question of Wintering, which is discussed in all its phases. The influence of Food, Ventilation, Moisture, Temperature, Protection, etc., etc. are all touched upon. There are also chapters upon Specialty versus Mixed Bee-Keeping, Comforts and Conveniences in the Apiary, Mistakes in Bee-Keeping, etc., etc.—32 chapters in all.

PRICE of the Book is 50 cts. The REVIEW and the book for \$1.25. Stamps taken, either U. S. or Canadian.

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Dadants' Comb Foundation.

Half a Million Pounds Sold in Thirteen Years. Over \$200,000 in Value.

It is **the best**, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year.

SAMPLES and CATALOGUE FREE to ALL. SEND YOUR ADDRESS.

1852 | Langstroth on the Honey Bee. Revised. | 1891

Those who wish a book in which they will find, without difficulty, whatever information beginners desire, should send for this work. Its arrangement is such that any subject and all its references can be found very readily, by a system of indexing numbers. It is the most complete treatise in English.

HANDLING BEES is a chapter of the Langstroth revised, and contains instructions to beginners on the handling and taming of bees. Price 8 cents.

Bee Veils of Best Imported Material. Sample FREE. Instructions to Beginners sent free with Circular.

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

THE REVIEW.

The distinctive features of the BEE-KEEPERS' REVIEW are those of reviewing current apicultural literature (pointing out errors and fallacies and allowing nothing of value to pass unnoticed) and the making of "special numbers"—those in which special topics are discussed by the best bee-keepers of the country. If you wish for the cream of the other journals, already skimmed and dished up, and to learn the views of the most experienced bee-keepers upon the unsolved, apicultural problems of the day, read the REVIEW. Published monthly at \$1.00 a year.

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Jan., Disturbing Bees in Winter.
Feb., Temperature in Wintering Bees.
Mar., Planting for Honey.
Apr., Spring Management.
May, Hiving Bees.
June, Taking Away the Queen.
July, Feeding Back.
Aug., Apiarian Exhibits at Fairs.
Sep., The food of Bees in Winter.
Oct., Ventilation of Bee Hives and Cellars.
Nov., Moisture in Bee Hives and Cellars.
Dec., Sections and their Adjustment on the Hive.

VOLUME II.—1889.

Jan., Bee Hives.
Feb., Mistakes in Bee-Keeping.
Mar., Which are the Best Bees.
Apr., Contraction of the Brood Nest.
May, Increase, its Management and Control.
June, Shade for Bees.
July, The Influence of Queens upon Success.
Aug., Migratory Bee-Keeping.
Sep., Out-Door Wintering of Bees.
Oct., Bee Conventions and Associations.
Nov., Speciality Versus Mixed Bee-Keeping.
Dec., What best Combines with Bee-Keeping.

VOLUME III.—1890.

Jan., Brace Combs and their Prevention.
Feb., Foul Brood.
Mar., Queen Rearing and Shipping.
Apr., The Production of Comb Honey.
May, Raising Good Extracted Honey.
June, Apiarian Comforts and Conveniences.
July, From the Hive to the Honey Market.
Aug., Marketing.
Sep., Management after a poor Season.
Oct., Out-Apiaries.
Nov., Apicultural Journalism.
Dec., Use and Abuse of Comb Foundation.

VOLUME IV.—1891.

Jan., Buildings for the Apiary.
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Mar., Protection for Single-Wall Hives.
Apr., Introducing Queens.
May, Adulteration of "Honey."
June, Bee Escapes.
July, House Apiaries.
Sep., Handling Hives Instead of Frames.
Oct., Rendering and Purifying Wax.
Nov., Moving Bees into the Cellar.

As the supply of volumes I and II is quite limited, the price is five cents a copy, except for the Jan. 1889 No., which is twenty cents, there being only a few copies left. Of volume III there is a fair supply, and the price is four cents a copy. With volume IV the REVIEW was enlarged and the price raised to \$1.00. Copies of volume IV are eight cents each. Remember that each number is, in one sense, a little pamphlet giving the views of the best bee-keepers upon the topic named.

WHAT OTHERS SAY.

O. H. TOWNSEND, Alamo, Mich., writes: "I never waited here for any other paper to be read until the REVIEW commenced coming."

ARTHUR C. MILLER, Providence, R. I., writes that "there is no paper the coming of which I look forward to, or miss so much when over-due, as that of the REVIEW, and I take nearly all the bee papers published in the English language, as well as several other periodicals."

O. S. COMPTON, Goshen, Ind., writes: "The REVIEW has been worth—well, I will not attempt to place a value upon it—but this much I must say, it is looked for days before its time and no matter how many other bee papers or even letters are received at the same time, the REVIEW is opened first."

S. A. RUSSELL, New Market, Canada, says: "I am pleased with the REVIEW, as you have such a happy manner of stating practical facts without so much of this 'what may have been done, or what we might have tried if our patient had not died.'"

C. K. BIXLER, Hoyt, Iowa, writes as follows: "I think the REVIEW away ahead of any bee paper I read, and I read several. It is certainly pure and clean and free from mud-slinging; while, from a literary point of view, it stands above every other bee paper. I was glad when Dr. Miller induced you to give up that 'we.'"

When the REVIEW started I thought it was to be simply a Heddon live circular, but I am glad to say I was mistaken. You sometimes give the hive a lift, but such action is all right if the hive is the "ne plus ultra," which I am beginning to believe."

"Advanced Bee Culture" (see advertisement on another page) and the REVIEW for one year for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, FLINT, MICH.

Nov. 10, 1891.



THE BEE-KEEPERS'

REVIEW

Published Monthly

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Poultry Journal,

EDITED BY D. A. JONES.

EDITED BY W. O. G. PETFR.

75 cts. a Year.

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These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Samples free. Both journals one year to one address, \$1.00
 Until June 1st ^{Journal} ~~trial~~ trip for **6 mths 25 cts.**
 THE D. A. JONES CO., L'd, Beeton, Ont.

Wanted: To correspond with parties having Potatoes, Cabbage, Apples or Honey for sale or to consign. Prompt returns. All correspondence promptly answered. Best of reference. EARLE CLICKENGER, Columbus, Ohio.
 Reference: Editor REVIEW



For Simplicity and Durability,

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3 1/2 inch,	\$2.00
Conqueror Smoker, ...	3 "	1.75
Large Smoker,	2 1/2, "	1.50
Extra Smoker,	2 "	1.25
Plain Smoker,	2 "	1.00
Little Wonder Smoker, 1 1/2	" .....	.65
Bingham & Hetherington Knife,	.....	1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,

1-90-tf.

Abronia, Michigan

Italian - Queens.

6 Warranted Queens, \$5.00.

Send - for - Circular.

J. T. WILSON,

4-91-tf

Pink, Kentucky.

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MUTH'S

Honey - Extractor,

Square Glass Honey-Jars, Tin Buckets, Bee-Hives, Honey-Sections, &c., &c. Perfection Cold-Blast Smokers.

Apply to CHAS. F. MUTH & SON,

CINCINNATI, O.

P. S.—Send 10-cent stamp for "Practical Hints to Bee-Keepers." 2-88-tf.

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JAS. HEDDON,

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Please mention the Review.

BEE-KEEPERS' GUIDE. Revised, enlarged, improved, illustrated. Every bee-keeper ought to have it. Price \$1.50. A. J. COOK, Agricultural College, Mich.

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ITALIAN QUEENS AND SUPPLIES FOR 1891.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf.

Augusta, Georgia.

Please mention the Review.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market. Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

G. B. LEWIS & CO.,

11-91-tf

Watertown, Wisconsin.

Please mention the Review.

Names of Bee-keepers

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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

W. Z. HUTCHINSON, Flint, Mich.

BASSWOOD HONEY, Extra Quality.

USUAL LOW PRICES.

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If you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No 10 Spruce St., N. Y.

Our Catalogue of Bee-Supplies. Send for it. Contains all you Need. Prices to suit the times.

Your Success in Bee-Keeping depends very much on the queens, hence you see that only the best queens are really cheap. We have the best and want you to try them. As for prices—well, you'll find them reasonable

R. STRATTON & SON,

1-91 121

Hazardville, Conn.

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DO YOU KEEP BEES

If so, send your name and address for a Free Sample of the **AMERICAN BEE JOURNAL** Weekly—32 pages—One Dollar a year.

THOMAS G. NEWMAN & SON,
PUBLISHERS
CHICAGO, ILL.

A Stove for \$6.00.

Since living in Flint my office has been warmed part of the time by an oil stove made by the Monitor Co., of Cleveland, expressly for heating purposes. This company makes what are probably the best stoves made for burning kerosene oil. We have, for several years, used an oil cooking stove of this make and like it very much. The heating stove that I have will comfortably warm a room 12 or 15 feet square, unless it might be in the most severe weather, and is particularly adapted for using nights and mornings or on cool days in the fall before it is cold enough to need a steady coal fire, and again in the spring, or for warming bath rooms, bed rooms, etc.

The stove cost \$12.00 when new, but, as the office has been moved to another part of the house where it will be warmed from the sitting room stove, I would gladly sell it for \$6.00, and it is really as good now as when bought. An illustrated, descriptive circular will be sent on application. W. Z. HUTCHINSON,
Flint, Mich.

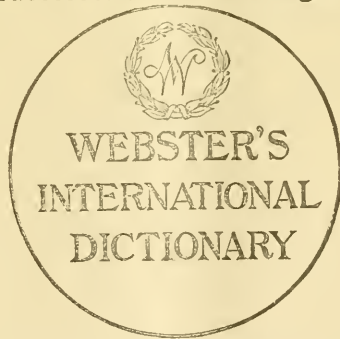
BEE SUPPLIES

RETAIL
— AND —
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THE NEW WEBSTER

Successor of the Unabridged.



A GRAND INVESTMENT

For the Family, the School or the Library.

The work of revision occupied over ten years, more than a hundred editorial laborers having been employed, and over \$300,000 expended before the first copy was printed.

SOLD BY ALL BOOKSELLERS.

A Pamphlet of specimen pages, illustrations, testimonials, etc., sent free by the publishers.

Caution is needed in purchasing a dictionary, as photographic reprints of a comparatively worthless edition of Webster are being marketed under various names, often by misrepresentation.

GET THE BEST,

The International, which bears the imprint of

G. & C. MERRIAM & CO.,
PUBLISHERS,

SPRINGFIELD, Mass., U. S. A.

The Value of Neat, Handsome PRINTING.

Many dealers look upon the style of their printed stationery and the "get up" of their circulars and price lists as unimportant matters. In this they are mistaken. Nothing is more certain to prejudice a would-be customer than a slovenly, poorly printed circular or to receive a communication written upon stationery the printing of which is a "botch job." While the sending out of handsomely printed matter does not always bring the desired orders, it is an *aid* in that direction. In other words, we judge of a man and of his business by what we receive from him; hence, the receipt of a neat, well printed circular, or of a communication written upon stationery that awakens our admiration, leads us (unconsciously, perhaps, but none the less truly) to conclude that *everything* from the sender will be of a like artistic nature.

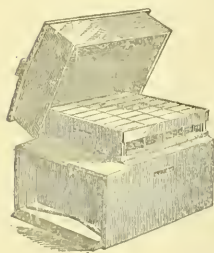
To turn out first class printing, five things are necessary. 1st, good type of neat and artistic styles; 2nd, good paper; 3rd, good ink; 4th, a good press; and, 5th, the skill to use all these things. If one of these factors is wanting, it is like taking a link from a chain. In what degree the above necessities to good printing

may be found in the REVIEW office, the REVIEW best shows.

Since it became known that the REVIEW was "home made" many of its readers have offered it the job of doing their printing. While I have most thoroughly appreciated this kindness, I have been compelled to decline the work, simply from lack of time. Since enlarging the REVIEW I have found it impossible to set all of the type myself, while there is not work enough to keep a compositor all the time. I am obliged to depend upon "picking up" a man for a week or two each month. This is rather unpleasant, as I am obliged to put up with Tom, Dick and Harry and sometimes I have trouble in finding even these. For these reasons I have decided to keep a man all the time and then do job work that he may be kept busy when not at work on the REVIEW.

Now, friends, if you wish for good printing I shall be glad to do it for you. Nothing will induce me to send out a poor job, but if you want nice work and are willing to pay for it (not an exorbitant price but what it is really worth) I shall be glad to hear from you.

W. Z. HUTCHINSON, Flint, Mich.



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa., **One of the Largest Bee-Hive Factories** in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue. 2-91-tf

OLIVER HOOVER & CO., Riverside, Pa.

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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. IV. FLINT, MICHIGAN, NOV. 10, 1891. NO. II.

The special topic of this issue is

Moving Bees Into the Cellar.

That of the next issue will be

Remedies for Poor Seasons.

When and How to Carry Bees in the Cellar,
and How to Arrange the Hives.

G. M. DOOLITTLE.

THE old saying "there is a time for everything" is very applicable to setting bees in the cellar. It used to be thought that this time did not occur till cold freezing weather arrived in the month of December, but of later years the month of November seems to be taking the preference. I have set bees in the cellar as early as the third of November, and as late as the twentieth of December, and after an experience of twenty years, I now set them in from the tenth to twentieth of the former month, on some day when it is nearly warm enough for the bees to fly: for I find that the bees can be carried in with the least disturbance to them on a warmish day, rather than on a day when the mercury stands below freezing. One year I set my bees in when the mercury marked 52°, that being seven degrees warmer than the temperature in which they fly without loss in the spring of the year, and yet, strange to say, scarcely a bee flew in carrying them into the cellar, and were I to choose I would much prefer the mercury

that high, to a temperature of from 10° to 28°. At all times when it is freezing, the hives come up off of their stands with a creak and a jar, which always irritates the bees to such an extent that nearly if not quite every colony is set into an uproar, which is detrimental to the bees and unpleasant to the operator. If the reader of this has been in the habit of carrying in his bees in cold weather, and will now make it a point to carry them in with the mercury at from 35° to 48° I think that he will never again carry them in when the weather is cold, and will be thankful to know that warmer weather is better.

I employ two methods in setting in my bees. The first is as follows: I go to my harness maker and have him make me a strap one and one-half inches wide and of the required length. To each end of this is sewed a large snap, such as are usually used on the breast or hold back straps to a heavy harness. I now take out the tongues of these snaps and file the hook part sharp. To use, throw over the neck, take one hook in each hand, guide them to the hand holes of the hive and straighten up. Just before the hive is raised from the stand, and after the hooks have taken good hold in the hand-holes, take hold of the hive with each hand so as to balance it and keep it out from the person. In this way any person of ordinary strength can easily carry a colony of bees ten to fifteen rods, while to pick one up with the hands and carry it that far is a feat few wish to undertake, especially where from

fifty to five hundred hives are to be carried. My second plan is the easiest and best where the entrance to the cellar is such that a wheelbarrow can be run right into the cellar, and the one I would use in any case if the bees were from fifteen to thirty rods or more from the cellar. I have a spring wheelbarrow which I use about the apiary and premises, and since using it I would by no means change it for one without springs, no matter what I wanted to use it for. On this wheelbarrow I place several thicknesses of old carpet, letting the same run up over the front board, to which it is tacked on the back side, to keep it from slipping down. I can now set the hives on the wheelbarrow so still that not a bee knows that the hive has been touched, and as the springs take off all the jar of the wheel, and my hands allow no jar to the handles, the bees are rolled into the cellar with all ease, and so quietly that they are not aroused enough so they break the cluster, as they do in the way usually employed in handling by most parties. As the entrance to my bee cellar is level with the floor the bees are run right into the cellar on the wheelbarrow, by putting down a plank or two over the thresholds to the doors. Being in the cellar all I have to do is to take from the wheelbarrow and set in place.

I formerly piled the hives top of one another or set them on shelves, but as many of the combs became moldy in this way I soon abandoned it for the Boardman plan of setting each hive from six to eight inches apart and setting the next tier on these so that they "broke joints" as it were. This brought the center of the cluster of bees right over the open space left between the hives below, as I left the bottom boards of all the hives on their stands. This is a good plan and one which gives the bees plenty of the right kind of ventilation, so they winter well, the combs do not mold, etc., etc.: but it has this unfavorable thing about it where the cellar room is limited, it takes up lots of room. To obviate this, I now spread over the top of each hive some old newspapers, so as to keep the droppings from the hive above from going directly on top of this lower hive, for I find that these droppings will injure the top of a hive very much, especially where this top is covered with tin. On top of these papers I place two sticks of stove wood, about one and one-half inches square, so spaced that they will come near each end of the hive, and on these sticks the next hive

is set. The top of this hive is now arranged as was the first, and so on till the top of the cellar is reached, when another tier is put up in the same way. Under the lower hive I use a stand which is about four inches high, and on this the sticks are put, so that the first hive in each tier is about six inches above the cellar bottom. In this way my bees winter equally well with the Boardman plan and not nearly as much room is taken: besides, should I happen to jar one hive in some way, only one tier is jarred, while with the other the whole of one row suffers. If the temperature of the cellar can now be kept at from forty-three to forty-five degrees Fah. I have no fears regarding how they will come out in the spring.

BORODINO, N. Y.,

Nov. 3, 1891.

The Time for Putting in Bees is Unimportant.—Put Them in Quietly.

JAMES HEDDON.

“WHEN to place bees in the cellar?” Well, as something else is the principal cause of bee diarrhoea, which is the prime cause of loss of bees in winter, it does not make much difference whether they are put in early or late.

My rule is to have them in as soon as I guess they have had their last good, thorough flight. Of course I have to guess at it, and then if we have such open winters as the past three or four, I am sorry I put them in doors at all, even if they should sit out doors unpacked all winter. But who can foresee?

I think it a good plan to pick up, carry, and set down the hives so quietly as not to disturb the bees. But, here I am, going to be doubted again, as I was when I said I moved into a bee house thirty-three colonies and only two or three ever knew they had been stirred. As my statement of the facts was so generally doubted, perhaps I had better tell *how* I did it.

In the first place, said bee house had shelves on both sides and the farther end, on which to place the hives of bees. The floor to the house and these shelves were covered two inches deep with sawdust. My man and myself would walk out into the yard, pick up a hive, hold it out away from our bodies and carefully carry it in and shelve it. The next the same way, and placed about two inches one side from the

first, and so on. These hives had fast bottoms, these bottoms were not stuck to the stands, and even away back fifteen years ago, or more, I had seen, adopted and advocated the use of thin lumber for hives, so the hives didn't weigh as much as their contents.

I think the above a good way to put away bees. Disturbance causes bees to consume bee bread. That is yet the cause of bee diarrhoea, and I suppose it always will be. I will leave the rest to be said by other writers on this topic. I hope to meet you at the Northwestern Convention, at the Commercial Hotel, on the 19th of this month. I look for one of the best meetings of the kind ever held in America.

DOWAGIAC, Mich.,

Nov. 3, 1891.

Having Things Too Handy.—Putting a Rim Under the Hives.—Put the Bees in Early but Don't Shut Them In when Carrying Them.

B. TAYLOR.

IN one respect, at least, I am in a good condition to comply with your request for an article on "Carrying bees into the cellar". Myself and son of seventeen years have, since yesterday noon, carried nearly 200 colonies and placed them in nice winter quarters, and we can now report "All quiet on the Potomac." With us there is no romance about placing our bees in the cellar. We just take right hold of them with naked hands and carry them right in. The bee yard is located conveniently near the wintering cellar, and one person just walks to the rear of a hive previously prepared, picks it up with a hand under each side of the bottom board, raises it up to his breast, and then walks straight to the cellar and places it in position. I have tried several of the labor savers but have found none that I would use. As a rule we carry our bees into the cellar without waking them up at all. And to do this there must be no jars or jolts. We have a nice spring wheelbarrow, but its use would only increase the work of getting the bees properly placed. I believe in having things handy, but don't want them *too* convenient. I once lived by a neighbor who had a rope suspended from the ceiling directly over the cook stove with a loop in the lower end into which he would put his feet on a cold day, and thus he sat in his easy chair from morning till night, while his wife chopped wood

and kept up a good fire. Of course, his house was cold; and he, like Dr. Miller, did not paint his bee hives. This man was not lazy, of course not, and I do not suppose Dr. Miller is, but they both had handy things, the one for warming his feet, the other for carrying his bees into the cellar.

I had resolved to put the bees in this time without the bottom boards, but after trying a few, which we got into position without difficulty so far as disturbing the bees was concerned, I found it would greatly increase the work both in setting in and taking out, and I never cultivate any new "fads" unless there seems to be some show of raising a paying crop, and as I had, in the old way, succeeded in wintering my bees with more than average results, I concluded to try the "old way" once more. The old way consists of having a shallow rim $1\frac{1}{2}$ inches wide and size of the hive placed between the hive and bottom board. This rim has an entrance three-eighths the entire width of the hive, directly on the bottom board, both in front and rear, is left open on both sides all winter, and I believe it secures all the advantage of removed bottom boards at far less cost, as the cellar will hold nearly double the number of hives, as in this way we place the hives in piles on top of each other, and the piles only four inches apart. It keeps mice and rats out, which is an important item with some. In weight our hives were in that puzzling condition of "which and t'other" that leaves us in that doubtful condition of mind that we are unable to either laugh or cry.

A few years ago we not only laid strips of lath against the entrances of our hives but nailed them there lest the bees get out and we be destroyed: but for several years back we have used a wet cloth in place of wood, and gave it great praise. This year we concluded to try them without closing the entrances at all, and we succeeded in getting our bees into quarters with less disturbance than ever before. Thus our cherished ideas, like ruined temples, strews the pathway of experiment and progress. I wonder how many of our idols are to fall. After all my skill with the best fixtures, I find I cannot get a large yield of honey unless the flowers yield nectar properly, and in good years I find that even the heathen round-about with any kind of hive can get so much as to nearly ruin the markets. Yes, friend H., I guess plenty of honey is of first importance in getting big crops of surplus.

In regard to the time of putting the bees into the cellar, I have been in the habit of putting them in early and taking them out late—the first of November for putting in, willow bloom for taking out,—and the large numbers of bees that perish on the outside clusters even in early October, which I only found out this fall, leads me to say earlier rather than later.

FORESTVILLE, Minn., Nov. 3d, 1891.

The "Puzzle" of "Guessing" When to Carry in the Bees.—How to Carry the Hives.—Reversible Bottom Boards.

C. C. MILLER.

AS to the time of taking bees into the cellar, I am fully in accord with your leader, unless it may be that I am not so sure as to leaving them out till freezing weather sets in. What do you mean by "freezing weather sets in?" You say you have put in bees as early as Nov. 10. Well, if your climate is like mine, you have some pretty hard freezing before that time. On the morning of Nov. 2, this year, my thermometer stood at 24°. Yet the days seem quite pleasant. To-day, Nov. 3, in the middle of the day the sun is shining bright, and it seems a very pleasant autumn day, with the thermometer at 48°. Scarcely a bee is flying. Now, would you say freezing weather has set in?

The question in my mind is, should the bees be put in the cellar yet or not? I am quite a little inclined to the opinion that it might have been well to have put them in a week ago. They have flown so little since, that nothing has been gained in that direction, and if they had been in the cellar they would have been warmer, and the cellar doors being left wide open they would have had just as good air. If taken in just as they are, to be sure they have not suffered any, but are they any better for staying out? But suppose to-night there comes a cold rain and then it freezes solid, as it may do any night, then they are worse for staying out. Especially if no warm days come again before spring. Of course it makes a difference where you are and what is *likely* to happen in *your* locality.

Now as to "how," I'm not sure that I agree with you fully. For some time I used a barrow such as you speak of, but the jarring is objectionable. If bees can be picked

up, carried into the cellar, and then put in the place they are to remain, without ever knowing they have been touched, it is very much pleasanter for the carriers and perhaps better for the bees. As I now carry them I can hardly agree with you that it is "hard work at best." Take a rope, or several strands of light rope, tied together so as to be endless, let it be long enough to reach a little more than around the hive, and then slip it over the two end cleats, and two persons can walk along side by side and each one take a side of the rope. The work is so light that my eight years old nephew teases to help, although I don't think he would want to help long. If there are no end cleats, then the rope can't well be used, but for other reasons I would have cleats anyhow.

If the hives are so arranged that you can easily put something under the bottom, then the carriers such as Mr. Root describes and sells, are good. They are much the same as two pail bails or handles, with bent hooks to catch under the hive. Although I occasionally use them, I don't think they compare with the rope.

Yes, I *would* bring the bottom boards in with the hives, and I have bottom boards purposely made for winter with a two inch space under the frames, reversing them for summer. With coarse wire cloth at the entrance there is then no danger of mice getting into the hives.

With the deep bottom boards there's no need of piling hives so that each hive rests on two others, for in that case if you jar one hive you jar the whole lot, and when piled up in a straight pile, jarring one can only affect three or four others.

MARENGO, Ill.,

Nov. 4, 1891.

Too Late or Too Early Moving in of Bees Objectionable.—How to Carry the Hives.

Special Topics.—Chicago Convention.

J. A. GREEN.

DON'T know when is the best time to put bees into the cellar, but I think both extremes are bad.

If they are put in too early there may be a spell of warm weather afterward during which the cellar would become too warm, making the bees uneasy. Only a few days ago it was for a time almost as warm as August, and I should consider it a decided

detriment to have bees roused up by warm weather soon after they were put in. On the other hand we should put them in before cold snaps begin to kill the bees on the outside of the cluster and before the hives become covered with snow and ice. It is a bad plan, too, to move or handle bees in extremely cold weather. When disturbed at such a time bees will often fly worse than when it is only moderately cold.

For carrying bees into the cellar I have used various contrivances. Doolittle's plan of a strap to go over the shoulders having at each end a large harness snap with the spring broken out, and the point sharpened so that it will readily catch on the bottom board, is simple and good. I have no use for any plan which requires two men to carry one hive. Generally I have used a hand barrow made somewhat as described in your leader only having legs to support it at a convenient height, making it much easier to handle. If you use swinging frames and have to go down steep steps put the hives on the barrow so that the frames run lengthwise.

My favorite way of carrying bee hives at all times is to put them on my shoulder just as I would a sack of grain, the hive being upside down while it is on my shoulder. Of course this cannot be done with all hives, and if the cellar door is low the hive must be taken down and carried in front of the bearer when the cellar is reached. It might be supposed that hives could not be carried in this way without the bottom boards, but they can, and it seems to me that the bees are much less inclined to fly than when carried in the usual way, because they see nothing of the bearer and not much of anything else except the sky. Bees are not apt to fly very much even when disturbed unless they see something to fly at—especially something in motion.

I think you are right in regard to the matter of special topics. While I hope to see this feature continued in the future as occasion may permit, it will certainly be impossible for you to go on forever selecting for each issue a special topic worthy of discussion.

I do not envy you the task of reading and assorting the large amount of advice you are likely to receive in answer to your request. Almost everybody likes to give advice, and usually a large share of the readers of a paper think they could run it better than the editor does. As the general result of advice

is to cause us to become more firmly fixed in our own opinions, I hope you have a well defined idea as to what will be best for the Review and its readers. If you have, I think we may rest easy.

I heartily commend what you have to say in regard to the Northwestern Convention at Chicago. There is no city in the United States that offers so many advantages for the purpose. Aside from the fact that it is so easily and cheaply accessible to so large a number of practical honey producers, it is a city which a large number of these want to visit at least once a year anyhow, which makes it still easier to attend the convention so that even in poor seasons we can always count on at least a fair attendance and a good time at Chicago. You may expect me to be at each meeting there and I hope that no more of them may be dropped.

DAYTON, Ill.,

Nov. 4, 1891.

The Proper Time to Cellar Bees.

EUGENE SECOR.

IN your October leader you have brought out the main arguments for putting bees into the cellar before *very* cold settled weather.

About the only thing left for us to do who agree with you in this is to give our experience. I have done this, too, before, but as the November number is to be a symposium on the subject, perhaps we may be pardoned for repetition in order that the subject may be treated by all together.

My bee cellar is under the house where I live and have lived for twenty-five years. It was not built for that purpose, but with the sole view to being frost proof for storing vegetables. It is a cellar within a cellar, so to speak—as “dark as Egypt,” with no ventilation except the door, until quite recently. When the “sub-earth ventilation” theory got possession of me I had a six-inch tile laid, opening into the bee room, and the outlet some 200 feet from the house. Some nine years ago I put a hot air furnace in a room which corners with the bee room. This draws off a good deal of air undoubtedly which must be replaced by pure air from the outside.

I mention these conditions that a better idea may be formed of my cellar conditions.

I am not sure that my bees winter better since the sub-earth ventilator and furnace were added.

I have begun putting them in as early as October 26th, and have left them on their summer stands as late as Christmas. I do not advocate either extreme. If I could only know just what kind of weather to expect I would be pleased, because, if we take them in in the early part of November, and then, as for the last two or three years, the winter proves to be mild, with no colder weather till after holidays, the bees are apt to be a little restless in the cellar, especially as the furnace affects its temperature.

But those carried in early always come out in the spring in as good condition as those left out for more flights, and with the advantage of having consumed less honey.

But as I said, I am no extremist. The "happy medium" is about the "right gait to strike." I believe the activity of bees after brood rearing ceases, and of course after the honey flow has ceased, is rather injurious than otherwise. Every bee that dies from the time brood-rearing ceases in the fall till it is resumed in the spring, is a drain upon the perpetuity of the colony. The cluster ought to be kept as large as possible till young bees are reared in the spring. As activity shortens bee life, it is better that they are quiet.

And I am not one of those who believe it toughens the individual to freeze him. It may toughen the race by killing off all weaklings, but the chances of improving the bee by this process are too remote for me to hope to reap its benefits.

The chief objection tho' to putting them in very early is the difficulty with me of maintaining the proper temperature. If that could be adjusted *just right* and the bees kept in that peculiarly sluggish state that we have noticed in the fall, they would undoubtedly be better off than flying over frost-bitten fields, sucking decaying fruit and rotting vegetation.

FOREST CITY, Iowa,

Oct. 30, '91.

Advantages of Putting a Self-Hiver on Top of the Hive.—How to Manage when Most of the Bees Return to the Old Hive.

C. H. DIBBERN.

FRRIEND HUTCHINSON.—I have carefully read your comments on Mr. West's article, page 271 of the REVIEW, and while your conclusions are pretty correct, they are by no means entirely so.

During the past two years I have had from 100 to 200 self-hivers constantly in use, and consider them a grand success. It is true that my hiver is quite different from Mr. Alley's, though the principle is the same. I place the empty hive, or an empty super will do just as well, on *top* of the hive expected to swarm. In 1890 I made my hiver similar to Mr. Alley's, but after watching two swarms issue through them, and noticing that the queens persisted in running *up*, and paying no attention to the hole at the side, I concluded that placing the hive at the side was wrong.

This year I remodeled all my hivers, and so confident was I that the thing would work, that I made 100 more, all having the upward escape for the queen and drones. During the past season I had some fifty swarms issue through the hiver, in fact all I had, except two that swarmed before I got the hivers on. Now I do not mean to say that all there is to do is to put the hivers on, and that the "bees will do the rest." They will do no such thing! Now just what they will do is this: When a swarm issues the queen and drones readily find their way to the new hive, but, as you state, most of the returning bees will go back to the old hive. I do not now see how that can be prevented, unless one is present, and removes the hive. This I generally do when in the apiary, and it is quite satisfactory.

It is not best to remove the hiver too soon after a swarm is hived in this way, or the queen will take wing, and the whole swarm will soon follow. It is good policy to keep the hiver on, of course stopping up the tubes, at least for several days, as the bees sometimes try to abscond. I have saved several swarms in that way.

When no one is present when the bees swarm as is usually the case at my out apiary, only small swarms will be found in the new hives. The queen is there, however, all right, and one knows exactly the condition of the old hive. There will usually be bees enough in front of the new hive to show that the bees have swarmed. I usually visit the out apiary every three or four days. It consists of about 100 hives, and on one visit I found that seven had swarmed.

The way I usually do when I find a hive has thus swarmed is to put the new hive on the old stand and brush off about three-fourths of the bees from the combs in the old hive, thus making a booming good

swarm, and then remove the old hive at once to a new stand. On my next visit I cut out all the queen cells, and drop in a virgin queen from the queen nursery which I keep running during the swarming season.

Now I suppose some one will say that all this is work, and what is the good of the hiver? Well, in the first place I do not have to hire some one to watch the bees, and, perhaps let them go off at that. Then I can fix them up when they have swarmed much easier than I could get them out of tall trees if allowed to have their own way. Then, too, I can fix the bees to suit me much better than if they had been hived by ordinary help. By this plan all my queens are raised from cells from my best colonies, thus constantly improving my stock.

The question may be asked, will I get as much honey when using the hiver as I would without? It may astonish some, but I think that I really get more! You may well ask "how can that be?" Well, you see I trap all the drones, except from one selected hive, about as fast as hatched, and, of course, have no army of idlers to feed. Then I am sure that the scarcity of drones greatly lessens and delays swarming, thus retaining the working force in the supers.

You are wrong I think in stating that the drones clog the hivers, and prevent the ready passage of the workers through the excluders. In my hiver there is no trouble on that point. The escaping tubes for the queen and drones must not be less than $\frac{3}{4}$ inch or the bees in their efforts to drag out the dead drones from below will get them clogged there. That is the worst trouble to overcome, but I anticipate no further difficulty on that point. There may be other difficulties that I have not yet encountered, but I think I have been through the mill pretty thoroughly. There is one difficulty that you do not mention, that is, two or more swarms isuing at about the same time doubling up. I have had but one case of that kind at the out apiary, and for once I got a rousing good swarm, self-hived. I simply gave them an extra super and all was well.

I want to say that I lay no claim to inventing the self-hiver, though I think I have improved it. Mr. Alley has a patent on the principle, and I think he is entitled to it. I have no hivers for sale, and am in no way interested in booming them. I think, however, that the hiver, like the bee escape, has

come to stay, and that bee keepers will soon learn what a good thing it is.

MILAN, Ills.,

Oct. 30, 1891.

[Friend Dibbern, you have given us an *exceedingly* valuable article. We all know of the disposition of the queen and bees to crawl up, and you have taken advantage of this disposition. I have not a particle of doubt that the hiver, as you describe it, works exactly as you say it does, and I can see how valuable it would be in an out apiary. Your plan of management after you have found a swarm hived is such that nothing is lost, even if most of the bees have returned to the old hive.—ED.]

Carry in the Bees After They Have all Hatched and Flown.—How to Carry and Arrange the Hives.

H. R. BOARDMAN.

CARRYING hives, not only in and out of the cellar, but elsewhere about the yard, is an important item of work. To the practical bee man this suggests a hive constructed convenient to carry. A hive of proper dimensions for carrying can be picked up and carried by one man much quicker and steadier with less disturbance to the bees than when it is carried by two men.

Hives are, or should be, constructed for the convenience of the apiarist. The hive I use is nearly cubical in form, with cleats near the top upon which the cover rests. I could not be induced to dispense with these cleats on account of the convenience they afford in carrying, not only by hand but also with the hive cart, although their original intent was to strengthen the hive, which purpose they serve well.

I do not attach as much importance to the time of setting in as I once did. Before storing, the brood should be all hatched and the young bees have a few flights. During the interval when there is no brood, disturbing the bees seems to have no bad results. It is not until after brood rearing begins that we are to look for any bad condition of the bees. They will bear almost any kind of reasonable treatment up to this time.

For the purpose of protecting the stores it would be prudent to set in before cold weather.

I certainly would not carry in the bottom boards where they are not attached to the hives. It is entirely unnecessary. If it had been I should have found it out before now.

I can suggest to E. R. or any others who insist on carrying in the boards how to dispose of at least a part of them to better advantage than piling them up. Put them down to set the hives on instead of stringers at the bottom. Set an extra board in the corner at the end of the row where you will begin to set the hives. Then your first hive brought in set just where you want the second board to remain, leaving the desired space between. Now lift the hive from the board and move it over the open space between the boards. The hive will now rest with one edge upon each of the two boards with the open space below. Proceed with the next in the same way and so on. Then in carrying out you have only to reverse the process. See how much time and fussing this saves.

I use bottom boards (which are my regular hive covers) for this purpose entirely, just in this way, only I have extra covers which I place in position before I begin carrying in, and then I leave the bottom boards where they stand until I set out the bees again in the spring.

If handled right the bees are disturbed less in this way than by trying to confine them to the hive. The fresh, cool air, only makes them cluster up the closer. They make a fuss very quickly on finding themselves shut in, and the disturbance is communicated very quickly to the whole colony. The temperature should be falling as you say. In an article in *Gleanings* two years ago I gave considerable emphasis to this. As you have called attention to it in your leader I will only add, it is important and illustrates again that there is a right way to do everything.

I make the open space between the hives about two-thirds of the width of the hive. It seems to be as good as more.

This plan of an open space below the colony for wintering, which I commenced suggesting in a very modest way to my brother bee keepers a good many years ago, I consider valuable both for indoor and outdoor wintering. I have been experimenting for several years along this line, and recommend it with confidence. This principle was embodied in the plan of friend Clark's hibernating hive.

I use a hive cart. I consider it a success. It has come to stay with me. It converts the laborious work of carrying into a pleasant exercise, a mere pastime. If the yard is not smooth enough for this purpose I would

advise by all means to make it so, not only that you may use the hive cart, but because it makes the other work in the apiary more pleasant.

When I am ready to set the bees in I letter and number each hive with a piece of chalk, lettering the rows and numbering the hives in the row, so that I may be able to set each hive back on the stand from which it was taken. I have always practiced doing this, and I think it saves much confusion among the bees on taking their first flight.

EAST TOWNSEND, Ohio, Nov. 6, 1891.

Carrying in the Bees Without Labor Saving Devices.—Arrangement of the Hives.

R. M'KNIGHT.

MOVING BEES; when to do it and how to do it," seems a simple subject to treat, and may be answered in a few words. Move them into the cellar, or bee house, at the proper time and by the shortest and most convenient way. The proper time cannot be well defined, as it depends upon locality and the condition of the weather. Here in Ontario I consider the proper time is the second week in November if the weather is suitable. They should be dry when put away. I consider five months as the limit that bees should be confined, and this should regulate to some extent the time they are put away.

How to move them is a question that will remain open. The man of devices will contrive something he thinks may aid him in the work (and the devisors amongst bee keepers are legion). The man of good sense and muscle will pick them up and carry them off without fussing much over devices. My method of moving hives is to remove the cover, bend my back, turn the first and second joints of my fingers under the bottom board, then straighten my back and walk off with them. I have frequently an assistant in the work, and then sometimes we use the old fashioned hand borrow. Where there are no abrupt descents to be made I consider the hand borrow the best aid available.

You tell us of people who use hand-carts, slings and neck-yokes as aids in the work. I think we have seen Dr. Miller, Mr. Boardman, Mr. McFarland and others depicted in bee papers, each harnessed to his hobby, and the situation appears to me a trifle silly.

That yoke is an old device. I saw it used by butter-milk venders and water carriers forty years ago, but that was where porridge was a staple article of food and wells and pumps few and far between. It was generally on the shoulders of an old woman in those days. Mr. Boardman's horned cart would be a good thing if hives were all cleated at top and bee yards as level and smooth as an asphalted avenue; but they are not. In most yards I fear the jolting of the wheels would create an uncomfortable commotion among the tenants of the impaled hive.

Your method of arranging the hives in a cellar differs somewhat from my practice. Instead of leaving a vacant space between the hives when piling them up, I place mine as close together as I can put them when the first row is completed. I remove the honey boards (there is still a cloth covering on top of the frames). I then spread two or three thicknesses of old carpet on top of the entire row. Upon this I put two 2x4 scantling, one along the back of the hives and the other along the front. Upon these I place the next tier, and so on to the top. After trying a number of devices I have settled down to the above plan and have practiced it with satisfactory results for six or seven years.

(OWEN SOUND, Canada, Nov. 9, 1891.

Trying New "Fads."—Double Wall Hives
Objectionable.—Advantages of Divisible
Brood Chamber Hives in Winter.—
A Little House Apiary.

B. TAYLOR.

FRRIEND HUTCHINSON.—The press of work has eased up a little and I have concluded to write you a line or two. In a late number of *Gleanings* the junior editor gives it as his opinion that I am given to trying all the new "fads." Thank you, friend Ernest, for the compliment. What a skeleton this world would be if there were no cranks to try the new "fads:" for how can we know things unless we *do* know them? For instance, I have been for thirty years using a fixed frame that is pronounced by all who have fairly tried it in comparison with the Hoffman frame to be incomparably better than the one friend R. believes in and recommends. But how could I have known this unless I had given his favorite frame a fair and exhaustive trial? I did so and can now speak as one having authority.

The small outside clusters of bees in good, tight hives chill to death in large numbers

even when the weather is no colder than frosty nights in October. But I should have never known this if a new "fad" had not caused me to lift the combs and bees of 150 colonies out of their hives into other cheap ones for wintering. I made 100 nice double walled hives last spring for the very purpose of having the bees kept warmer in late fall and early spring. But how would I have found out that there were more chilled bees in the double walled hives than in single walled ones of the same size and number of frames, had I not made this experiment? But such was the fact. I am greatly surprised at it and should never have known this strange truth if the new "fad" had not led me to look into every part of the many hives. I can account for the fact only by supposing that the double walls cut off the benefit of the warm rays of the sun during the day. Now these same hives as well as single walled ones when used two stories together, as double brood chambers, had no dead bees on the outside of the clusters, and this was easily accounted for by the fact that there was a bee space through the center of the hive, and this gives all parts of the swarm easy connection with the center of the warm cluster. Yes, the double brood chambers are splendid hives for winter for this reason, and I am trying a new "fad," that of putting a rim one-half inch deep between the brood chambers, making, with the bee space, a three-quarters inch chamber right through the center of the hive for the bees to cluster in and thus bring all the small rooms of the hive into immediate connection with each other by a warm *hall* in their midst. Dr. Miller once said he would like the "warmth that the entire closed-end frame would give." No sir, a deep closed-end frame is cold and bad just because it cuts the brood chamber into many small rooms having no convenient connection with each other except around the cold outside, and on this very account shallow frames are good for wintering even in single brood chambers, because it is less distance around them.

Yes, I have the new "fad" ready to set the hives into. It is a nice little house 6x8 feet, 7 high, nicely made and painted in fancy colors. The hives, twelve in number, are placed eight on the south side and four on the east end. The entrances are made so as to use the swarm catchers on them. My! Do you suppose that after last summer's experience I am going to have any kind of

hive that I could not use the swarm catchers on? No sir, I am not going to plow my ground with a forked stick when I can have a good swarm catcher to do it with. The hives are to be packed with fine planer shavings and excelsior sawdust one and one-half inches thick next the building. I want the benefit of the warm sun near the hives there, and on top, bottom and back ends the packing is five inches thick. I have it fixed for a small stove in the space back of the hives to warm and dry up with occasionally if needed. I have a three inch hole over each hive closed by a slide. There is one window with both wire cloth and glass. I can slide one or both out of the way. I shall place twelve of my very best swarms in double hives in it, and next year I shall know things that I only guess at now, for I shall pack six or eight hives in first class shape on their summer stands, shall bury six or eight more in a clamp, notwithstanding I have plenty of No. 1 cellar room. "Fad." Don't you see? Half past nine p. m. Adieu, friend H., until the Chicago N. W. Convention on the 19th and 20th Nov.

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W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, NOV. 10, 1891.

FRESH, BRIGHT, NEW, crisp, original ideas are what the world is clamoring for.

IN THE CELLAR is where my bees were put Nov. 13. The hives were stacked up *a la* Boardman.

IN THE STATE OF N. Y. is where I was born and lived until I was four years old. Since then Michigan has been my home, and I have never "been back East" farther than Cleveland, Ohio; hence I am looking forward with pleasurable anticipations to a trip through my native State when attending the North American Convention at Albany, December 8 to 11.

MEDINA, OHIO, is a place I have often longed to visit; and on my way to the Albany convention I expect to stop off there a day or two.

GLEANINGS for November 1 gives a bird's eye view of the "Home of the Honey Bees," accompanying it by a brief description of its size and growth. The manner in which Mr. Root's business has grown is really something wonderful. There are probably several reasons for this, but none have been more important than those of *promptness* and *fairness*. Goods are not misrepresented, are sent promptly, and every customer is so treated that he comes back again and again.

TWO CONVENTIONS, the Northwestern and the North American, will probably be visited by the editor of the REVIEW ere the December number is gotten out. It will be desirable to have as much as possible of the December issue in type before leaving for Albany, so correspondents will please send in their communications as soon as possible. A generous space will be left for giving some of the freshest, brightest things that can be gathered at these two national gatherings.

HOW INTERESTING and piquant (at least, to *me*) are the extracts from the letters sent in reply to my request for suggestions in regard to how the special topic plan should be treated. If every subscriber would only write, if only on a postal, when he had some little item or suggestion to give, what a spicy page or two might be given each month in something the same style as this "advice" to the editor has been given. If *you* will help, I'll start such a department. What shall it be called?

MR. LARRABEE, who has charge of the apiarian experiments at the Mich. Agricultural College, rode over from Lansing on his bicycle and made us a short visit a few days ago. I went out in the road in front of the house and tried, for the first time, to ride a bicycle, while the "folks" gathered at the window to "see the fun." I went down "ker slap," "full length," just once; and after half an hour's rather exciting exercise I found myself dripping with perspiration and went back into the house. "Honest John" admitted, however, that it *seemed* as though I had learned how to *get off*.

Mr. Larabec says he shall experiment no more with planting for honey, and he would be very glad if bee keepers would write and tell him what experiments they would like tried.

THE NORTHWESTERN CONVENTION.

The Northwestern Bee Keepers' Convention will be held in Chicago, Nov. 19 and 20, at the Commercial Hotel, corner of Lake and Dearborn Sts. This date occurs when excursion rates on the railroads will be one fair for the round trip, and there will be reduced rates at the hotel. This meeting comes at the pleasantest time of the year in which to take a trip—no heat or dust nor cold or snow—and I feel sure that many will take advantage of all these pleasant features. In fact, almost every day brings me letters from some one who will be in attendance from Ohio, Ind., Ill., Mich., Wis., Iowa, Ark. or Minn.

MICHIGAN STATE CONVENTION.

The season of conventions is here. Let no bee keeper allow it to pass without attending at least his own State convention. Michigan bee keepers will hold their convention at Grand Rapids, Dec. 31 and Jan. 1, thus allowing those in attendance to take advantage of the holiday rates on railroads. The meeting will be at the Eagle Hotel, where rates to members of the Association will be only \$1.25 per day.

The Secretary, Geo. E. Hilton, after writing me the above particulars, continued as follows: "Now if you are willing to sacrifice a new coat to go to Albany, you can spare a pair of pants to go to our own State Association. Please don't say no." Fortunately, Mr. Secretary, my "panties" are in pretty fair condition, so I can go without making another sacrifice.

CARNIOLANS VERSUS ITALIANS.

The editor of the *Mo. Bee Keeper* says that for three years he has been comparing the Italians with the Carniolans, keeping them in the same yard. He says that with a steady flow of honey the Carniolans stored more surplus than the Italians, with about the same per cent of swarming. With a poor season, the Italians came out ahead. He says the Italians, as we all know, were prolific up to the commencement of the honey flow,

then checked brood rearing and filled a part of their combs with honey, while the Carniolans kept up brood rearing until late in the fall, using up their stores and in many cases requiring feeding for winter. The Carniolans swarmed many times when no honey was coming in. He did not find them as gentle as the Italians. During the three seasons the Italians gave more honey with less labor and stings.

CARRYING IN THE BEES.

Judging from the correspondence in this issue, the only real objection to carrying in the bees, soon after the young bees have all hatched and had a cleansing flight, is that a warm spell of weather may come and make the bees uneasy in the cellar. If the cellar is deep in the ground a few days of warm weather will have but little effect upon its temperature, especially if it can be opened nights to allow the entrance of cool, fresh air. If left out too long there is danger that bees in the outside spaces will be chilled. It is a somewhat difficult question to decide just *exactly* when is the best time. The best we can do is to wait until the prospect of having any more warm weather is very slim, but not wait until there is danger of snow storms and weather cold enough to freeze the ground. I prefer to run the risk of putting them in too early rather than too late.

As a class, bee keepers are always "in for" anything that makes work easy, and I must admit that while I enjoyed the "fun" poked at those who used labor savers for carrying their bees, I *was* surprised that such contrivances should be laughed to scorn.

A NEW SYSTEM OF BEE KEEPING.

A Mr. Alpaugh, of Canada, has devised a new system in bee keeping. Mr. D. A. Jones says that Mr. A. has not yet decided when to bring the new system before the public, but he (Jones) thinks there will be a charge of \$5.00 for full printed instructions. Mr. Jones devotes considerable space in the last *C. B. J.* to telling what he knows, or *thinks* he knows, about the new system. From this I gather that it is that of placing a hive between two colonies and starting a colony in the central hive. The colony in the central hive is to be devoted to the storing of surplus, while the two outside colonies are to be "feeders" to the central colony.

These outside colonies are to be manipulated something as the old hive is managed in the Heddon system of preventing after-swarming. When the three hives are standing all in a row close beside each other, the entrances all facing one way, the outside hives are to be reversed—their entrances turned in the opposite directions. This would throw the working force all into the central hive. The outside side hives are again brought gradually around so that their entrances are the same as that of the central hive, only to be again reversed, throwing another force of bees into the central hive. Swarming is prevented and great crops secured. Just how all this shall be managed to make of it a success Mr. Alpaug has not yet told, but he is wonderfully enthusiastic over his plan.

MOVING BEES IN COOL WEATHER.

I went out to Rogersville the first of Nov. and brought home a load of bees—twenty-five colonies. I had never moved bees in cool weather, and it required considerable confidence in the reported experience of some of my fellow bee keepers to induce me to leave off the usual wire cloth covering over the hives. I knew that when bees are moved in warm weather they need *room* as well as ventilation, so I compromised by putting two empty supers over each hive and nailing the covers on top of these. The supers were held in place by pieces of sections tacked on, one at each corner. The entrances were closed up tight. About two feet of clover chaff placed on a hay rack made a nice cushion for the hives to ride on. Covers to packing boxes (about 3½ feet long) were set up on end all around the hives, a rope put around to hold all in place, then empty supers, covers, honey boards, feeders, empty hives, etc., etc., were piled on top of the hives of bees until the load resembled a load of hay in size. Usually, when I have moved bees they would roar; but this time the day was cool (about 40°) and it was necessary to listen carefully, when the team stopped, to hear even a faint hum from the bees. When the load arrived in Flint and the covers were removed for examination, it was found that not a bee had crawled up into the supers—all were down in the brood nest. From this I should judge that in *cool* fall weather bees might be moved a few miles with no more ventilation than would come through the few cracks and crevices about the hives.

OPINIONS OF READERS ON CONTINUING THE SPECIAL TOPICS.

Most sincerely thankful am I to those of my readers who have so kindly written me in regard to continuing the special topics. There seems to be a feeling, and I feared there might be, that the discussion of special topics is to be dropped, or, at least, seldom taken up. Nothing is further from my mind. They will be continued whenever there seems to be an undecided question of sufficient importance to warrant devoting a number to its discussion. All that I contemplated was that of being allowed the privilege of *occasionally* dropping this feature when it seemed that only trivial topics remained undiscussed. Occasionally some new invention or method compels us to entirely remodel our plans in many respects, and the REVIEW will always hold itself in readiness to discuss these changes. I have not yet decided *positively* that the proposed change shall be made; so long as there is plenty of time it is best not to decide too hastily; in the meantime I will give a few extracts from letters received; enough to show the drift of opinion. If others wish to write after reading these extracts, I shall be *glad* to hear from them, as I have gotten some excellent hints from the ideas already sent in. Remember, friends, that to a certain extent the REVIEW is what *you* make it:

“The discussion of special topics has been the making of the REVIEW; if compelled to continue them in *every* issue, it will be the *death* of it.—I long ago wondered if you had looked forward to the time when you would run out of topics, and I smiled when I read the heading of your editorial, ‘To topic or not to topic, that’s the question,’ and my opinion regarding it is, to make the REVIEW topical when the subject in hand can be best treated in that way.—The best advice I can offer is for you to use your own judgment; it does not seem to have led you astray in the past, and I don’t think it will in the future.—‘A series of articles from some of our most *practical* and successful bee keepers (I am glad you did not say *noted*) will be excellent, *provided* they emphasize the special features to which they think the success of their system is due, thereby avoiding a rehash of the text books. ‘Who shall write such articles?’ Can anyone judge better than the editor of the magazine that is to publish them? Be they who they may, don’t

depend entirely on the specialist for 'copy.' Let us hear from the men and women who keep bees for profit and who have to care for them at such times as can be spared from their regular business. They are the men who *have* to use short cuts, and they frequently have valuable ones. Let us also hear from the *practical*, enthusiastic amateur (not novice) who rides his hobby at its best paces.—By all means don't discontinue entirely the special discussions. The conclusions arrived at from the discussion of a single subject are more satisfactory and correct for practical use than can be reached in any other manner. I would suggest that you allow your regular correspondents to select their own topics until, in your judgment, some subject is brought up that might be improved on by a joint discussion; then announce it for special discussion in the next issue. This will be a compromise on the two alternatives.—I would say, do just what *you* think will make the REVIEW the interesting, instructive paper it has been in the past. If the important topics become exhausted, and it seems to me that they certainly will in time, then just introduce some other style into it occasionally. There is one thing I would like to see in the REVIEW for a time, and that is the photographs of your principal correspondents. I would like to see 'Unfinished Sections' discussed. Would it not be best to extract the honey, cut out the comb and melt it up and burn up the sections? It seems to me that nothing in the way of comb honey can be obtained that is so nice as when everything is new and fresh.—About continuing special topics. No other paper has followed up the plan so continuously and persistently, and if the REVIEW changes from it, it will, to just that extent, be no longer a *review*. In that line it has been a success. Will it be equally a success in any other line? But if the topics run out they can't be continued. Well, even the more unimportant topics are worth discussing. Even so trifling a thing as the best smoker fuel may be worth discussing, if in the discussion I can learn how to save a dollar a year in fuel, or a dollar's time in preparing and lighting. But if the minor topics run out? Well, then go without special topics, but as soon as a topic turns up, *specialize* it. At any rate, the discussion of special topics is *the* special feature of the REVIEW, and I would not give it up until I had to, and then only as long as I had to.—

Make each number of the REVIEW as interesting and good as it is possible for you to make it, regardless of topics or special numbers. If by making a number a special topic number you can make it more interesting and more valuable, make it a special number regardless of advice; but refuse to be 'hide bound' above all things else. Retain your liberty to make each succeeding number the best. In regard to a series of articles, get them from the best *apiarists* in the country. Don't select the old, hackneyed writers, whose writings we have seen for the last fifteen years in all the bee and agricultural papers, who make their living writing advice to others instead of striking out into new and untried fields and methods. If you could get a series of articles from some number one man in each of the irrigated regions of Colorado, Arizona and New Mexico, one who counts his colonies up among the hundreds and his honey by the tons, I think it would be a taking series, especially if these writers would go sufficiently into details.—When I met you at the Brantford convention I asked you what you would do when the topics were exhausted. Your reply was: 'It is time enough to cross the bridge when we come to it.' Well, you seem to have reached the bridge, and I think it will be well for you to follow the course you have mapped out. I have no fear, however, that, if the matter is left to your own judgment you will always furnish us a first class journal.—By all means keep the character of the REVIEW as it is. Get opinions from all sources. For the good of all, don't engage one man only to write up a series of articles, if that plan is adopted. A few old by-gones are leading us around by the nose: get some *new* writers. Again I say, give me a paper similar to what the REVIEW has been.—While it is perhaps best to give up the special feature in *every* number, it is hardly best to do so altogether. New subjects will come up and old ones can occasionally be worked over at a profit. It is very convenient to have all of the one subject together in one pamphlet. If you get a series of articles get them from men who have nothing to sell and no special hobby to ventilate, as a suspicion of either destroys their interest and usefulness in a great measure. Let them contrast well with one another. Make the REVIEW broad. While one gives his methods and results with the divisible brood chamber, let another state his way and success with the Quinby,

Langstroth or Hoffman frame as the case may be. Let these men give their views from both a comb and extracted honey view. Let these articles come from different honey districts, but not be much given to detail that applies only locally. After all, correspondence should make us think, it is not simply to be followed blindly. Keep out personalities and interested articles. What I value about the REVIEW is that *everything* in it is worth reading, and it is so compact that it is easily read through. I say, as some of your other readers have, don't mix in anything on other subjects.—In its field, I think the REVIEW the best journal I read, because of its practical articles on *advanced* bee culture, and because of its pure, correct English. As to the change you propose, I think it will be a good one.—One thing I wish to call your attention to in particular, and that is, of what use are the experimental stations to bee keepers unless that which is being done is laid before them from month to month, as the work proceeds. Michigan probably has the best station and I would like to have its apiarist tell the readers of the REVIEW each month the progress made—the failures as well as the successes. I suppose these stations are kept up to advance the science, then why not let us know what is going on without waiting for the yearly reports? I think all would be glad to aid, and would take more interest in the work at the station if they were kept informed of the work as it progresses. If the stations can give any light, let it shine!—The unvarying special topic rule is a narrow, contracted one, which interferes with a broad, free discussion of the data of advanced bee culture. I believe this is a better reason for making the proposed change than the one you give. True, as you intimate, it is by no means necessary to abandon the special topics altogether, only the *rule*. You have been breaking into this rule some the past year—that does not look well—better alter the rule. New and living questions will come up to which it will be well to devote an issue exclusively, and old subjects will occasionally need a thorough re-sifting. So you can still keep the topical idea prominent, yet allow yourself a greater freedom in making up the journal. Ever since the discussion of apicultural journalism I have wished you would take up a companion subject—writing for bee journals, I would call it. Take up the making of bee journals with special refer-

ence to *our* end of the double-tree. Who should write, when, why, how, etc. The different editors could give us some wholesome lessons on this point. The keeping of apiary records is something that bothers me, and I would like to see the subject thoroughly aired."

REMEDIES FOR POOR SEASONS.

For the ten years previous to beginning the publication of the REVIEW, I had never failed to get a fair crop of honey. When raising comb honey I had obtained at least fifty pounds per colony, usually about seventy-five pounds, and one year more than one hundred pounds. In those years I had trouble in wintering my bees; but if I could only get the bees I could get the honey. Now the conditions seem reversed. I have little trouble in wintering the bees, but can get no honey. The bees come through the winter and spring in splendid condition. At the opening of white clover the hives are literally *packed* with bees, sometimes to overflowing, yet the end of the harvest shows but few finished sections in the supers. In 1888 the average yield in my apiary was ten pounds per colony; in 1889 it was twenty pounds; in 1890, not *one pound*; in 1891, five pounds.

My wife has several times said: "I guess we commenced publishing a bee journal just in time to keep from starving." She is right. The honey stored in my apiary the past four years would not have kept us in food more than one year. I am forced to believe that hundreds of bee keepers could make a similar report. The last four years have been, practically, failures in a large share of the apiaries in the Northern States. Every spring there have been prophecies that "*this* year would be a good one;" but it was not, and some are beginning to ask, in all seriousness, "will we *ever* have any more good years?" No, I'm no croaker; any one who knows me knows better than that; but the first step towards removing a difficulty is to acknowledge its existence.

Some man in Ohio has several times written me that we were discussing hives, implements and methods and neglecting a far more important topic, that of why the flowers fail to secrete honey. I will admit that a good honey flow is of more importance than all else, but right on top of this comes

the question, if the flowers don't "give down," "what are you going to do about it?" It seems, on the face of it, like a foolish topic, but I am going to propose, for discussion in the December Review, "Remedies for Poor Seasons."

Of course there are conditions under which the failure of the honey crop is easily explained. When a large swamp is drained and its acres of bloom supplanted by fields of grass, there is no occasion for wonder because there is no longer a fall honey harvest in that vicinity. When all the basswoods in a locality are transformed into broom handles, buggy boxes or barrel heads, the failure of the basswood harvest is easily explained. When a wooded country is being stripped of its forests, there are often acres and acres of land that lie unplowed several years, "while the roots are rotting." These newly cleared fields are plowed as seldom as possible. They are kept in grass, and often used for pasture. In these new fields and "clearings" white clover has a chance. When there are no longer any forests to be cleared away, and the cleared land is largely devoted to wheat, corn, oats, potatoes or red clover, it is not to be wondered that honey crops become slim. "Rambler" has repeatedly called attention to the fact that in many places in N. Y. beekeeping as a business is no longer profitable. On the other hand, Ernest Root mentions that the extensive raising of buckwheat in some parts of this same State (N. Y.) has again made beekeeping profitable where it had become an uncertain business. I think we make a mistake in ignoring the changeability of many localities as regards their honey producing flora. I am sometimes led to wonder if the failure in my own locality might not be attributed, in part, at least, to the scarcity of uncultivated fields and the cutting away of so much of the basswood. What puzzles me in this direction is that I had good crops for ten years and then poor ones for four years. It seems as though the change ought to have been more gradual. I would give quite a little to know whether I am to have any more good seasons. If I am not, I should give up trying to raise honey and devote the whole apiary to queen rearing; in fact, that is what I am seriously contemplating. About how many years must a man wait, and hope, and have faith that there will be a change, before he changes his plans, methods or business? This may

be a difficult query to answer, but it is a living, burning question of the day with hundreds of beekeepers. I have mentioned what I am thinking of doing, raising queens, but it is not every beekeeper who is cut out for a queen breeder, while, of late, the market has been so well supplied with queens that a beginner would experience some difficulty in selling. Then there is the business of selling bees, either by the pound, nucleus or full colony. A honey season affording but little surplus will often admit of an increase in stock. A little feeding may be necessary to bring all colonies up to the proper condition for wintering. I have never known a spring when bees could not be sold at a fair price—sometimes at high prices.

I have always plead for specialty, and my faith in its advantages is as strong as ever, but I cannot shut my eyes to facts, and one of these facts is that honey production is not adapted to specialty where it is liable to fail four years in succession. Something else must be made a specialty and honey production changed into a by-play or else dropped altogether. The difficulty with this change is just here: many men have kept bees for years; they are adapted to the business and have learned it thoroughly to the neglect of other pursuits; they have an apiary, together with tools, buildings, etc., and to change is loss, at the outset at least. But if a man is well satisfied that his apiary no longer yields a profit because of the lack of pasturage—lack of flowers—he must either go to the flowers, or bring them to him, or else throw up the business. There are localities where failure seldom comes. In the article on alfalfa, in the *Cosmopolitan*, as mentioned last month, I was much interested in the fact that the bloom lasts the *whole season*. Think of this in connection with the car loads of alfalfa honey that have been shipped from Colorado. One great trouble with many localities is that there are only one or two sources from which honey may be gathered in quantity, and these are of short duration. But little more than a month is as long as the white clover harvest can be expected to last, while a cold rain, or cold without a rain, or a parching drouth, cheats us of any surplus from this source. Basswood seldom yields honey longer than ten days and is very easily "upset" by the weather. In other words, we usually have enough "honey weather" during the year,

if it would only come when our honey plants are in the right stage of bloom to furnish nectar. If we could only prolong their bloom, as is done with the alfalfa, or add some other source to our locality, as instanced in the buckwheat fields of New York, and, in other instances, by the raising of alsike, the risk of disappointment from poor seasons would be greatly lessened. As I have often said, I have no faith in planting for honey alone, but if farmers can be induced to raise some honey producing crop, well and good. A letter received to day from Geo. E. Hilton contains the following sentence: "For twenty-five miles north of here (Fremont, Mich.) there are thousands of acres of the great willow herb." You will remember that Mr. Heddon has found this most excellent honey plant growing within a few miles of his place, and is hopeful that with proper care it may spread to such an extent that it will be of some benefit.

There is such a thing as having a good honey flow and not securing any surplus, because the bees are not in readiness for it, but when they have been kept in good condition by care and feeding if necessary, and the flowers bloom but yield no nectar, or yield but sparingly, I must admit that I know of no remedy. Sometimes we know, or think we know, that the failure is due to wet or dry weather. So far we have not been able to control the weather, although enough has been done in the way of producing rain to enable the funny men to crack their jokes. I must be pardoned for repeating one I saw lately in a comic paper. It was entitled: "A Scene in 1920." There was a picture showing the interior of a country store. Around the stove, seated on benches and soap boxes was the usual group of loungers. An old graybeard, glancing out of the window at a drizzling rain, removes his pipe long enough to remark: "Yes, this does purty well fur one o' them cheap machines. I tell you boys, I kin remember when we used to hev to wait fur it to rain." Joking aside, the time *may* come when the amount of rain-fall in a certain district may be increased at will. In the meantime, what can beekeepers do to guard against poor seasons?

Well, I'll give a recapitulation. First, study your field most thoroughly. Before selecting a remedy we must know the cause of the trouble. When the clover is in bloom, go about and examine into its quantity. Do

the same with basswood; with fall flowers, or whatever sources there are. If at any time the bees store honey rapidly, learn its source and consider well the abundance of the bloom. Strive to learn, if possible, whether the poor seasons result from a lack of bloom or from meteorological conditions. If a drouth kills the clover, take that into consideration the next year. If satisfied that the poor seasons result from a lack of blossoms, then reduce the number of bees or else increase the number of blossoms. The former course may be the more profitable, and in this case, unless the surplus bees are used in establishing an out-apiary, it will probably be advisable to take up something else in connection with bee keeping. If you can raise bees and queens for sale, well and good. It is impossible to give specific advice, as there are so many varying circumstances. If you decide to attempt to increase the number of blossoms, don't, I beg of you, devote good soil to the raising of plants that produce honey alone. Neither be led into the folly of raising, at some sacrifice, a field of buckwheat or alsike, thinking it will benefit a large apiary. If the *natural* conditions are such that some honey producing crop, alsike, buckwheat, or alfalfa, can be raised at a profit, by the hundreds of acres, on surrounding farms, if farmers can raise these crops to better advantage than they can *any others*, and by calling their attention to the matter you can induce them to engage in their cultivation, if you can accomplish this without at the same time encouraging others to engage in bee keeping, well and good. If there is sufficient waste land near you upon which you can, without too much expense, induce the growth of sweet clover, or some honey producing plant that, once it gains a foot-hold, will spread and take care of itself, once more I say, well and good. If none of these plans are feasible, yet you feel that you *must* raise honey for a living, then I see no opening except that you *go to the flowers*. Go to some locality that has several sources from which a crop may be secured, or else to one having one source "long drawn out," as the alfalfa fields of Colorado.

The bearing that out-apiaries have upon this subject ought, perhaps, to receive a little more consideration. Putting the bees in two or more apiaries gives them access to a larger territory, and this alone may make the difference between success and failure.

Then, again, it often happens that one of two apiaries a few miles apart will yield surplus when the other does not. And this brings up migratory beekeeping. When the blossoms begin to "give down" plentifully at one apiary, and not at the others, "bunch" the bees where the nectar is flowing; that is, if it is flowing in such quantities that there will be no danger of overstocking. Moving an apiary in the fall to the vicinity of a river bottom or a swamp is often a most effectual remedy for a poor season.

I hope what I have written will not induce any one who has passed through one or two poor seasons to hastily conclude that beekeeping does not pay in his locality, and for this reason to drop it or sell out and seek for pastures new. Such decisions should be arrived at only after the most thorough investigation. My object is to *encourage investigation*; to stir up my readers to *think*, to *plan* and to try and discover some way in which they may lessen the risk of loss from poor seasons.

Write to me friends, tell me how *you* have managed to tide over poor seasons: tell me what you think of the plans advised and the views advanced. Let us make the December REVIEW a sort of text book for the man who does not know whether next year is to be a good one or not.

EXTRACTED.

Starting Bee Journals.

"It is now approaching the time to start another crop of bee journals. Perhaps a suggestion to prospective editors may not be out of place. If you think there is a mint of money in bee journalism, you may be disappointed; and if you think it will advertise your supply business, and lead you on the highway to success, you may be disappointed again. At any rate, do not put out the first edition poorly printed with poor ink or poor paper. If you do, its doom is sealed at once. Bee keepers as a class have come to be quite fastidious.—" *Gleanings*.

Opposing the Editorial Opinion.

Ever since the beginning of the publication of the REVIEW I have striven to eradicate the feeling that seemed to pervade the minds of some that I preferred articles containing views in accordance with my own. I came across an item the other day in the *Household*, a supplement to the *Michigan Farmer*, that expresses so nicely my views

on this subject that I take pleasure in reproducing it. The *Household* has a lady editor, and, as might be expected, it is well edited. A correspondent in venturing to differ from the editor remarked: "I am aware of the hazards we run in entering into a controversy with an editor." The editor's reply was prefaced with the following:—

"I sincerely hope I am 'too much of an editor' to take offense or feel pique or ill-will toward any person who differs from my views. I emphatically object to being regarded as the autocrat of the *Household* or to having its readers infer that there must be no dissent from my opinions because I exercise a supervisory right over the little paper. An editor often finds it necessary to refuse articles which are outside the field and beyond the scope of his paper; the editorial adaptability lies in power to discern and courage to live up to this principle. But to refuse publication simply because an article does not agree with the editor's views on the subject would be deserved death to any newspaper. I can say truly that I have never refused an article which came within the field of the *Household* because of a personal feeling or opinion; I hope I never shall. And articles criticising my opinions have *always* been given space—in the interest of fair play if for no other reason."

Small Combs for Nuclei.

In queen rearing I have used only two sizes of frames—American and Langstroth. I have often thought that I should like to try rearing queens with smaller combs. With the large combs the bees cannot cover the brood to so good advantage as they can in a greater number of smaller combs. As I have several times remarked I should like to try queen rearing with pound sections for combs, using an old style Heddon super for a nucleus hive. I would use from four to six sections for each nucleus. I think now that I shall give it a trial another season. I believe Mr. Alley makes a success of these small combs; but Mr. S. F. Trego seems to have had some difficulty in using them. Here is what he writes to the *A. B. J.*:—

"I want to say that small nuclei are a nuisance. In 1890 I used nineteen of the Pratt style until the bees absconded, and, if I remember right, I got three queens from those nineteen nuclei.

Then I reasoned that if J had some to work on the Pratt system, with frames twice as large, they would work O. K. So in February, 1891, I had 200 hives made to hold three frames one-third as large as the Langstroth frame. These worked some better, but I was kept busy from noon until two p. m., hiving absconding nuclei, and sometimes I would put in half a day trying to keep them from leaving.

I fed them whenever there was any danger of their starving, but still they swarmed. The following are a few of their tricks: Following the queen when she flew out to mate; absconding a few hours after I had shipped their queen; absconding if I did not take the queen out before she had all the combs full, and refusing to accept virgins—killing twice as many as larger nuclei.

I shall remodel the bodies of those small hives into feeders, melt the combs, and use the frames for kindling the fire.

The next hives I have made will be four-frame Langstroth, and I claim that with them I can rear *more* queens from a certain number of colonies with *less work*; and when fall comes two or three of these nuclei will make a colony, while the small ones will not be worth uniting.

It is a waste of bees and loss of money to use these small hives. A good nucleus will gather ten to fifteen pounds of honey in September here, and seal it up so that it makes good winter stores.

No man can *give* me any more of those small hives, even if he fills them with bees, provided I have to use them one season.

SWEDONA, Ills.

Oct. 14, 1891.

I will know that weak nuclei cause all the troubles that are mentioned by Mr. Trego, but two Langstroth combs as thoroughly covered with bees as they are in a full colony would furnish sufficient bees for two nuclei if the two combs could only be transformed into four combs, the area remaining the same. The introduction of an odd sized frame into an apiary is objectionable for many reasons, and in a locality where there is a probability of a good honey harvest it may be well to use only regular sized frames for nuclei, keeping the nuclei quite strong with bees, and depending upon a crop of extracted honey from the nuclei as a recompense for making them so strong.

Mr. Heddon's Views on Closed End Frames.

Mr. Heddon puts himself on record in regard to closed end frames by means of the following article in *Gleanings*:

"I believe we all entertain a just pride in forming correct conclusions. I am very glad there have been bee journals through which we may not only aid each other, but on whose pages I might place my opinions, which I believe to be advanced opinions, on record. You know, Mr. Editor, that the man who really believes himself a true prophet, really capable of laying down such truths today as, although not accepted now, will surely be in the future, desires to make his prophesies public.

The above thoughts are suggested by the article of brother Stachelhausen, on page 592. You know very well that the mechanical construction and devices of apianian fixtures and implements, especially of the hive,

have been my hobby for twenty years; and probably from the great importance of having a good hive have flowed forth the bitter jealousies between inventors. I desire to make this article short, although devoted to a very long subject.

While for fifteen years a user and admirer of the laterally movable suspended L. frame, never for a moment did I cease to study into and look after the merits of close-fitting frames. I have gone slowly and carefully, and made my experiments on a comprehensive scale; and I desire now to go on record for the following:

1. The Hoffman frame will never come into general use and remain so. It is not as worthy as the L. frame. If I must use a Hoffman frame or a Langstroth frame, I will have the latter.

2. A closed-end frame in a close-fitting case is the only arrangement that will supercede the L. frame with practical honey producers. As you say in your foot-notes on page 562, such an arrangement works more perfectly in shallow cases like those used in my divisible brood-chamber; but, please place me on record, here and now, as affirming that this same arrangement in a case ten inches deep makes a more worthy hive than the L. hive with the suspended frames; and don't fail to record me as saying that no other close-fitting style of frame does.

Some of your readers may say that some of the above are strong statements, and savor of conceit in the writer, to which I take no exception. I meant to make them strong; for, when I go upon record, I desire to go squarely so, and I think I know that every statement above is true; and have I not a right to some conceit? I think that, as long as ten years ago, and perhaps longer, I foresaw that the practical, money-making bee culture of the future must desert the rules laid down in text books and bee journals; that the future bee keeper who would succeed in honey producing must abandon all work except that absolutely necessary, and this he must be able to accomplish in the shortest space of time. This demanded a different system of management, and that, in turn, different implements, especially different hives. Then I began making and advocating lighter hives, recommending the manufacture of the brood chamber and supers of thinner material. Of course, I was met with plenty of opposition. My lumber was 'too thin for winter' and 'too thin for summer.' My recommendation of eight instead of ten L. frames was also heresy. Very few, at least, agreed with me, even if Adam Grimm did use eight frames. 'Handling hives more and frames less' is also a part of the reform above referred to, and was the title of an article of mine published more than ten years ago, and yet I did not get on record in letters large enough and ink black enough.

Let me refer you to many numbers of the *American Bee Journal* and *Gleanings*, away back as above mentioned. Please get me on record strong, this time, Bro. Root, and record me as saying that there is nothing superior to or equal to the L. hive system except the close-fitting frame as arranged in

my late invention; and that is so much better than any apiarist who thoroughly understands it and knows how to use it can handle double the number of colonies with the same labor required with any other style of hive. Are the above statements any too strong, if true? Now let the future decide; and when it comes, don't forget the past, I pray you.

JAMES HEDDON.

DOWAGIAC, Mich., July 22."

The great trouble with Mr. Heddon's prophecies is that they are made so far in advance of their fulfillment that they are forgotten before fulfilled.

Securing Workers for the Harvest.—Hill's Review of This Topic.

Bro. Hill, of the *Guide*, copied my last reply to his criticism upon this chapter from *Advanced Bee Culture*. My first reply he has not noticed. Here is what he has in the *October Guide*:

"It is true that HOMER did talk about reducing the colonies to a pint or quart of young bees but we never got it down to experiments on so fine a scale, and the idea we wished to convey was that any manipulation of bees that tended in this direction was unprofitable and undesirable. Keep the colonies strong at all times is our motto and then they are always ready for business. We never found any profit in wintering a five comb hive well filled with bees. We could seldom build them up sufficiently to store surplus on the basswood bloom, besides the risk was double that of a good, strong colony on nine combs or frames.

We do not care what experience Mr. Hutchinson has had. We have weighed too many colonies of bees fall and spring and too many years in succession to have any respect for the assertion that there are five pounds of honey saved per colony by wintering in a cellar. Neither have we any more respect for the statement that bees are wintered safer in the cellar in northern districts than protected on summer stands, because in the northern States and Canada we have the snow to aid in their protection. What we call a protection is a hive and cap one inch thick, the cap to telescope down over the hive with a dead air space between, and the cap to be so tight that it will hold water when inverted, no upper ventilation or quilts or cushions, this to be surrounded with three inches in thickness of dry clover chaff, the bottom board four inches from the ground with an opening directly under the cluster of bees 7x7 inches, covered with a wire cloth, eight wires to the inch: this arrangement to be covered with snow so deep, as soon as it comes, that potatoes would not freeze in the hive. This is what we call protecting the bees on summer stands, and anything less than that is simply labor wasted, as half protection kills or injures the bees quicker than no protection at all.

We did not expect he would agree with us in regard to protecting the bees with honey

or sugar syrup, because he can't do it in the hives he recommends in his book. It requires a square, deep frame to get good results. The honey or stores do not protect the bees very much on a frame eight inches deep as there can be no honey above the cluster where it is needed most. We are not sure but if colonies in hives with combs twelve inches deep were fed an abundance of stores sealed air tight on top with plenty of ventilation below (raising the hive up from the bottom board $\frac{1}{4}$ of an inch) they would be as safe to winter as in any other manner even with the temperature below zero. We have noted some remarkable cases where bees have wintered safely in this condition, during some very severe cold winters.

We have protected our bees in the fall and usually leave it on until May first, so that we have had a great deal of experience in protecting bees during April as recommended by Mr. Hutchinson, and we know that what he says is simply theory and speculation. It will not pay to protect the bees for the month of April alone with anything else but feed. Plenty of stores will enable an ordinary colony to stand any April weather. We think anyone will get better results if they spend the cost of spring packing in buying sugar and feeding the light colonies. Packing around the outside of the hive is too far from the edges of the circles of brood to do any good. The feed is put right in the spot where it is needed. The sun then warms the hives and brood during the day while the bees are at work, and when they are at home at night and during the cold spells that Mr. Hutchinson tells about, they, with the aid of plenty of stores, can keep all snug and warm. It is plain that we do not agree at all in this matter. We leave it now for the readers to draw their own conclusions as to what is right.—EDITOR."

The above is a pretty fair criticism. The most glaring unfairness that I see in it is where he says: "We do not care what experience Mr. Hutchinson has had." I should not expect to prove that I was right by remarking that I did not care what experience Mr. Hill had had. In keeping with the above is the following: "Neither have we any more respect for the statement that bees are wintered safer in the cellar in Northern districts than protected on summer stands, because in the Northern states and Canada we have the snow to aid in their protection." I am acquainted with and have met most of the prominent bee keepers of the Northern States and Canada, and the majority favor cellar wintering.

I most heartily agree with Bro. Hill that "half protection kills or injures the bees quicker than no protection." Something that shuts off the sun's rays yet has but little effect in confining the heat that radiates from the colony is a damage.

As I said in a previous number, I have no doubt that stores surrounding the cluster are a protection, but not the equal of three or four inches of dry sawdust. I remember distinctly one spring when there were two weeks of *honey* weather the last of April, and one week in May. The bees just boomed, spread out their brood and had it well surrounded by stores, and, by the way, it was when I was using the American frame. Then there came a *snow* storm. Snow and cherry blossoms hung upon the same limb. The snow remained four days. Half of the colonies unprotected died outright, notwithstanding the stores surrounding the cluster. A peep into the protected colonies, showing the bees crawling about actively all over the combs, was so aggravating. If I had only protected all of them was what I thought, and that was what aggravated me. When I think of such experiences as this, and I have had one or two others nearly as bad, it makes me *feel* like saying "I don't care what experience Mr. Hill has had."

Right in line with this subject comes another editorial in the *Guide* upon "Outside Winter Cases." It contains so much that is valuable that I give it entire:

"Mr. E. F. Quigley, editor of the *Missouri Bee Keeper*, makes the following comments: 'Bro. Hill, of the *Bee Keepers' Guide*, sets down on Bro. Root's outside winter case. He says why not put a bushel of potatoes in one of these cases to prevent them freezing. Well, there is considerable difference between a colony of bees and the potatoes. We like a thin winter case if made right, although we believe they are of more value for spring protection.'

We do not think there is much difference notwithstanding the opinion of the editor. It is true that a colony will sometimes live through the winter where a bushel of potatoes would become frosted, but the bees always suffer and are injured more or less, if they are not an entire loss.

Right here is where all novices make the greatest mistake, not thoroughly understanding the principles that permit of healthy bees. A bee cellar with an eight inch brick wall is a death trap to almost three-fourths of the colonies put into it any severe cold weather. Yet it would seem that that would be sufficient protection until tried and found wanting. We lost very heavily in this way in our early experience. We read Quinby's book and thought we followed his instructions, but we now see we did not do it at all, because he recommended frost proof repositories and we could not understand why a little frost in the cellar would do so much harm until we had actual experience. A dry goods box set over a hive containing a colony of bees in such a manner that the edges rest in the grass around the

hive is sure to kill the bees if the winter is cold for a month. Corn fodder set up around the hive is sure to kill the bees in the same way that the box does. We look on a three-eighths of an inch winter protecting case as another similar trap to destroy bees. We are positive that more bees will perish with it on than with it off. We have written before at considerable length to demonstrate why such unexpected results should be obtained. An even temperature of from thirty to forty degrees is very chilling to all animal life, because it is the lowest temperature at which the air can contain moisture in a condition suitable to the rapid conducting of the heat from the cluster of bees, and a slight protection is liable to maintain just the temperature with the air fully saturated with the moisture from the cluster, causing the very best combination to cause the bees to suffer. This is the only true principle or theory that will satisfactorily explain all the queer freaks of wintering that occur every cold winter. In conclusion we will say to the editor of the *Missouri Bee Keeper* that we meant just what we said, 'Why not put a bushel of potatoes in one of those cases to prevent them from freezing?' We consider it just as sensible to put one over a colony of bees.—ED."

There is just one weak point in the above, and that is in comparing a colony of bees to a bushel of potatoes. A colony of bees is heat producing, while a bushel of potatoes is not. The latter might be enclosed in the thickest and best wall of non-conducting material possible to secure, and, if exposed to a freezing temperature, it would only be a question of time when the potatoes would be frozen. The temperature of a cellar remains above freezing only because the heat is constantly replenished from the earth.

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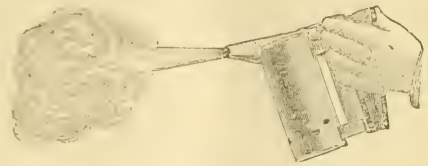
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WHAT OTHERS SAY.

O. H. TOWNSEND, Alamo, Mich., writes: "_____ never waited here for any other paper to be read until the REVIEW commenced coming."

ARTHUR C. MILLER, Providence, R. I., writes that "there is no paper the coming of which I look forward to, or miss so much when over-due, as that of the REVIEW, and I take nearly all the bee papers published in the English language, as well as several other periodicals."

O. S. COMPTON, Goshen, Ind., writes: "The REVIEW has been worth—well, I will not attempt to place a value upon it—but this much I must say, it is looked for days before its time and no matter how many other bee papers or even letters are received at the same time, the REVIEW is opened first."

S. A. RUSSELL, New Market, Canada, says: "I am pleased with the REVIEW, as you have such a happy manner of stating practical facts without so much of this 'what may have been done, or what we might have tried if our patient had not died.'"

C. K. BIXLER, Hoyt, Iowa, writes as follows: "I think the REVIEW away ahead of any bee paper I read, and I read several. It is certainly pure and clean and free from mud-slinging; while, from a literary point of view, it stands above every other bee paper. I was glad when Dr. Miller induced you to give up that 'we.' When the REVIEW started I thought it was to be simply a Heddon hive circular, but I am glad to say I was mistaken. You sometimes give the hive a lift, but such action is all right if the hive is the "ne plus ultra," which I am beginning to believe."

"Advanced Bee Culture" (see advertisement on another page) and the REVIEW for one year for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, FLINT, MICH.

DEC. 10, 1891.



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.....	(.75)	1.65.
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Missouri Bee Keeper.....	(.50)	1.40.
Bee Keepers' Guide.....	(.50)	1.40.
Apiculturist.....	(.75)	1.65.

Tilbury Center

Bee Hive, Supply and Mfg. Co.

We wish to say that we have started the largest factory in Canada for the manufacture of hives and all kinds of apiarian supplies. We call especial attention to our **Dovetailed Hive, Comb Honey Crate** and our one and four-piece **Sections**. Don't fail to get our price list for 1892—now out, 12-91-11

Tilbury Center Bee Hive and Supply Mfg. Co.,
Lock Box 114. Tilbury Center, Canada.

Please mention the Review.



For Simplicity and Durability,

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,.....	3½ inch,.....	\$2.00
Conqueror Smoker,....	8 ".....	1.75
Large Smoker,.....	2½ ".....	1.50
Extra Smoker,.....	2 ".....	1.25
Plain Smoker,.....	2 ".....	1.00
Little Wonder Smoker, 1½ "	.....	.65
Bingham & Hetherington Knife,.....		1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,

1-90-tf.

Abronia, Michigan

Italian - Queens.

6 Warranted Queens, \$5.00.

Send - for - Circular.

J. T. WILSON,

4-91-tf

Pink, Kentucky.

THE CANADIAN

Bee Journal,

Poultry Journal,

EDITED BY D. A. JONES.

ED'TD BY W.C.G. PETFR.

75 cts. a Year.

75 cts. a Year.

These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Samples free. Both journals one year to one address, \$1.00

Until June 1st **Either Journal** we will send **6 mths 25 cts.**

THE D. A. JONES CO., L'd, Beeton, Ont.

1892. 1892. 1892. 1892.

In 1892 LEININGER BRO'S are going to devote their entire time to raising

5-BANDED

Golden Red Clover Bees.

For further particulars write for our descriptive Catalogue, which will be ready about January 15th, 1892.

LEININGER BRO'S,

12-91 tf

Fort Jennings, Ohio.

ITALIAN QUEENS AND SUPPLIES FOR 1891.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf.

Augusta, Georgia.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market. Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

G. B. LEWIS CO.,

11-91-tf

Watertown, Wisconsin.

Half Million No. 1 Sections and 350 colonies of bees must be sold. Send for catalogue. E. T. FLANAGAN, Box 783, Belleville, Ill. 12-91-6t

Please mention the Review.

Names of Bee-keepers

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 and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 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. Each list furnished will be copied into a book, and blank spaces left for the writing of additional names.

W. Z. HUTCHINSON, Flint, Mich

BASSWOOD HONEY, Extra Quality.

USUAL LOW PRICES.

Address

JAMES HEDDON,

Dowagiac, Michigan.

Please mention the Review.

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No 10 Spruce St., N. Y.

Our Catalogue of Bee-Supplies. Send for it. Contains all you Need. Prices to suit the times.

Your Success in Bee-Keeping depends very much on the queens, hence you see that only the best queens are really cheap. We have the best and want you to try them. As for prices—well, you'll find them reasonable

R. STRATTON & SON,

4-91-12t

Hazardville, Conn.

Please mention the Review.

DO YOU KEEP BEES

If so, send your name and address for a Free Sample of the **AMERICAN BEE JOURNAL** Weekly—32 pages—One Dollar a year.

THOMAS G. NEWMAN & SON,
PUBLISHERS
CHICAGO, ILL.

Natural Gas

FOR FUEL AND LIGHT.

Other things being equal, the manufacturer who does not use natural gas cannot compete with the one who does. I am just putting the finishing touches upon an apianian supply factory that will be the most complete of any in the State and furnished with the best requirements for turning out first class goods at the lowest possible prices; one of the requirements being the use of natural gas for fuel and light, which will be a big item in keeping down expenses and enabling me to make low prices. If you wish to **SAVE MONEY**, send for my price list. I will also furnish supplies at my old factory in Findlay, Ohio, but all communications should be addressed to

J. J. BRADNER,
Marion, Ind.

Please mention the Review.

BEE SUPPLIES RETAIL — AND — WHOLESALE

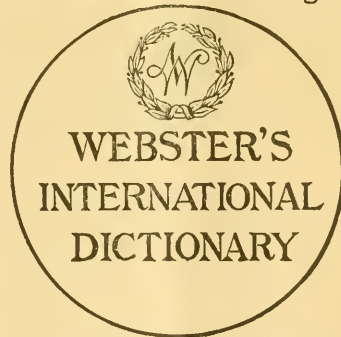
EVERYTHING used in the APIARY. Greatest variety and largest stock in the West. New catalogue, 54 illustrated pages, free to bee-keepers.

E. KRETCHMER, Red Oak, Iowa.

Please mention the Review.

THE NEW WEBSTER

Successor of the Unabridged.



WEBSTER'S
INTERNATIONAL
DICTIONARY

A GRAND INVESTMENT

For the Family, the School or the Library.

The work of revision occupied over ten years, more than a hundred editorial laborers having been employed, and over \$300,000 expended before the first copy was printed.

SOLD BY ALL BOOKSELLERS.

A Pamphlet of specimen pages, illustrations, testimonials, etc., sent free by the publishers.

Caution is needed in purchasing a dictionary, as photographic reprints of a comparatively worthless edition of Webster are being marketed under various names, often by misrepresentation.

GET THE BEST,

The International, which bears the imprint of
G. & C. MERRIAM & CO.,
PUBLISHERS,
SPRINGFIELD, Mass., U. S. A.

J. FORNCROOK & CO.



Will furnish you the best one-piece sections in the world. They are sand papered on both sides, are as cheap as the cheapest and their name is "Boss." Write for prices. 12-91-12t
Watertown, Wis., Dec. 1st, 1891.

—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.

SECTIONS. SECTIONS, SECTIONS,
Foundation, Foundation, Foundation,
SMOKERS, SMOKERS, SMOKERS,

and **ALL** other supplies. Send for catalogue.
J. STAUFFER & SONS, Nappanee, Ind.

12-91-9t Please mention the Review.

Imported

My first importation of queens for 1892 will arrive June 1st, and I will sell them on arrival at \$3.50 each. They will be as fine queens as can be found in Italy. Orders may be sent now and queens paid for next May.
W. C. FRAZIER, Atlantic, Iowa.

12-91-1t Please mention the Review.

Albino or White Banded Italian Bees and Queens for sale by A. L. Kildow, Sheffield, Ill. Send for descriptive price list.

1872 **KEYSTONE APIARY** 1892

Italian Queens and Bees for Business.

Select queen, in June, \$3.50; July to Oct., \$3.00
 Tested " " " 2.50 " " " 2.00
 Fertile " " " 1.50 " " " 1.00
 Punic queens mated to Italian Drones, \$1.00; six in June, \$8.00; in July to Oct. \$5.00. Orders may be booked now and queens paid for when delivered. Safe arrival guaranteed. Send for circulars.
W. J. ROW, Greensburg, Pa.
 12-91-7t Please mention the Review

\$4 or \$5

Will buy ONE HIVE of ITALIAN BEES and QUEEN. Simplicity Hive and Frame or Hoffman Closed-End Frame and Hive.

JOHN A. THORNTON,
 Lima, Illinois.

On Their Own Merits!

Those who have had queens from me say my **5-Banded Golden Italians**

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. *None but the very best Queens sent out*; large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.
CHAS. D. DUVAL,
 Spencerville, Mont. Co., Md. 12-91-1f

Root's D. T. Hive

AT HIS PRICES. Sections 4 $\frac{1}{2}$ x4 $\frac{1}{2}$ x1 $\frac{1}{2}$, sn-w white, per 1,000 \$3.75; cream colored \$3.00 Comb Foundation. Smokers and Apianary Supplies of all kinds. Circular free. Save freight and order early of **GEO. W. COOK, Spring Hill, Johnson County, Kansas.** 12-91-6t

SIX BANNED

These bees are as yellow as any to be found. As yet, however, six banded bees exist only in fancy, but **Jacob T. Timpe**, of Grand Ledge, Mich., U. S. A., has requested, gratis, over 200 colonies of bees around him with queens the mother of which produces bees equal to the so-called six banded bees recently mentioned in the A. B. J.; and he will request 100 more colonies next April and May, and then 95 per cent. of all the bees in a belt of four miles either way will be of this strain; and if any one has six banded bees, he will. Send your name for free catalogue for 1892 ready Feb. 1st. Enclose stamp for reply to questions. One queen free to the first applicant from any State or Province, in any part of the world, where I have not already a customer. I shipped six queens to Australia in 1891. My bees took nineteen first premiums in 18-9, 1890 and 1891, at State, County and District fairs. Gentlest, prettiest and best workers in the world. Write at once English or German.

ITALIAN





SPRAY YOUR FRUIT TREES AND VINES

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries, Grape and Potato Rot, Plum Curculia prevented by using **EXCELSIOR SPRAYING OUTFITS.**
PERFECT FRUIT ALWAYS SELLS AT GOOD PRICES. Catalogue showing all injurious insects to Fruits mailed free. Large stock of Fruit Trees, Vines, and Berry Plants at Bottom Prices. Address W. M. STALL, Quincy, Ills.

JENNIE ATCHLEY HAS MOVED.

In order to get farther out on the prairie I shall change my post office from Farmerville to Floyd. I am preparing to run my entire apiaries for queen rearing. In order to have the use of my four-frame nuclei early in the season I offer fine, tested, Italian queens in March and April at \$1.25 each. A few fine breeding queens at \$5.00 each. I have some of the finest breeders in the United States, both of the five and three-banded varieties; kept and reared in separate yards. Untested queens in March, April and May, either variety \$1.00 each; six for \$5.00; twelve for \$8.00. June and after, 75 c's. each; six for \$8.00; twelve for \$7.50. Orders may be booked now and the pay sent when the queens are ready. Special prices to dealers who take a certain number of queens per week. My new office will be Greenville, Texas. 12-91-1f

JENNIE ATCHLEY, Floyd, Texas.

Please mention the Review.

Dealers in Supplies

—are requested to—

SEND FOR PRICES.

Those who contemplate handling bee-keepers' supplies the coming season can obtain lowest wholesale prices by enclosing their business card or printed letter head and stating the goods wanted. If you are a manufacturer, see if we cannot furnish goods cheaper than you can make them. We make all styles of

Hives, Frames Sections, Etc.

Workmanship and material equal to any and superior to many.

SPECIAL DISCOUNTS from catalogue prices in Dec., 4 per cent; Jan., 3 per cent; Feb. 2.

Ask on a postal for our **LARGE ILLUSTRATED CATALOGUE** and price list, and copy of the **AMERICAN BEE-KEEPER**, a 24-page monthly for beginners.

THE W. T. FALCONER Mfg. CO.,
 Jamestown, N. Y.

A NEW BROOM

sweeps clean, and on the same principle, if you want good work, patronize a new supply dealer, Mr. L. J. Stringham, 92 Barclay St., New York City. His price list has just been printed at the REVIEW office, and its editor can testify that he is offering a full line of excellent goods at reasonable prices. They will be shipped promptly and the location will secure low freight and quick transportation. Send for his price list before buying **ANYTHING** needed in the apiary.

12-91-12f *Please mention the Review.*

DON'T SEND

Across several States after Goods that can be bought just as cheaply near home, but write to

GREGORY BROS & SON,

Ottumwa, Iowa, for their large, 12-page, illustrated catalogue of everything needed in the apiary Hives, Sections, Shipping Cases, Smokers, Foundation, Bees, Queens, Bee Veils, etc., etc.

Please mention the Review

Prevent Swarming

And increase your honey crop the coming season by replacing **OLD QUEENS** with **YOUNG** ones before the season opens. Look to your interest, order now and secure a discount, 10 per cent off on orders booked before February 1st. Queens ready to mail March 1st. Best strain Leather-back Italians, \$12.00 per doz.; \$1.25 each. Purity and safe arrival guaranteed.

12-91-1f. **A. F. BROWN,**
 Agent So. Express Co. Huntington, Fla.

—I REAR AND SELL—

5-BANDED

Italian Queens and Bees, Circular and Price List sent free. T. C. Stanton, Rochester, N. Y., writes: "I have bought several queens of different breeders in various localities, but the one bought of you is the brightest golden color of any."

Address, **J. F. MICHAEL,**
 12-91-3t. German, Ohio.

Please mention the Review.

Cheap Freight and Quick Transportation.

Being located at the most central point of railroad and express companies enables us to furnish bee-keepers with supplies at less cost to themselves than any house in the country. We furnish everything needed in the apiary, as low as the lowest and as good as the best.

COOK'S COMPLETE HIVE combines all the most approved methods of hive making. It is a complete arrangement for out door wintering and is equally well adapted to producing comb or extracted honey. Send for illustrated circular and price list.

J. H. M. COOK, (SUCCESSOR TO KING & ASPINWALL) 78 Barclay St., New York City.

The Value of Neat, Handsome PRINTING.

Many dealers look upon the style of their printed stationery and the "get up" of their circulars and price lists as unimportant matters. In this they are mistaken. Nothing is more certain to prejudice a would-be customer than a slovenly, poorly printed circular or to receive a communication written upon stationery the printing of which is a "botch job." While the sending out of handsomely printed matter does not always bring the desired orders, it is an *aid* in that direction. In other words, we judge of a man and of his business by what we receive from him: hence, the receipt of a neat, well printed circular, or of a communication written upon stationery that awakens our admiration, leads us (unconsciously, perhaps, but none the less truly) to conclude that *everything* from the sender will be of a like artistic nature.

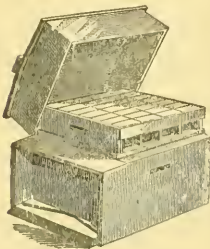
To turn out first class printing, five things are necessary. 1st, good type of neat and artistic styles; 2nd, good paper; 3rd, good ink; 4th, a good press; and, 5th, the skill to use all these things. If one of these factors is wanting, it is like taking a link from a chain. In what degree the above necessities to good printing

may be found in the REVIEW office, the REVIEW best shows.

Since it became known that the REVIEW was "home made" many of its readers have offered it the job of doing their printing. While I have most thoroughly appreciated this kindness, I have been compelled to decline the work, simply from lack of time. Since enlarging the REVIEW I have found it impossible to set all of the type myself, while there is not work enough to keep a compositor all the time. I am obliged to depend upon "picking up" a man for a week or two each month. This is rather unpleasant, as I am obliged to put up with Tom, Dick and Harry and sometimes I have trouble in finding even these. For these reasons I have decided to keep a man all the time and then do job work that he may be kept busy when not at work on the REVIEW.

Now, friends, if you wish for good printing I shall be glad to do it for you. Nothing will induce me to send out a poor job, but if you want nice work and are willing to pay for it (not an exorbitant price but what it is really worth) I shall be glad to hear from you.

W. Z. HUTCHINSON, Flint, Mich.



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa., **One of the Largest Bee-Hive Factories** in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue. 2-91-tf

OLIVER HOOVER & CO., Riverside, Pa.

Please mention the Review.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. IV. FLINT, MICHIGAN, DEC. 10, 1891. NO. 12.

The special topic of this issue is
Remedies for Poor Seasons.

That of the next issue will be
Writing for the Bee Journals

Poor Seasons, Their Lessons and Remedies.

Alfalfa Not a Success in Illinois.

J. A. GREEN.



THE subject for discussion this month is one that deserves the most earnest and careful attention from all whose income is wholly or largely derived from bee keeping. Especially to the former the experience of the past four years

has brought home the hard fact that if this sort of thing is to continue or to be often repeated, he must make a change. Every one of these seasons was a poorer one than I ever knew in the years preceding this period, and no doubt the majority of bee keepers have had the same experience.

Now, if we can learn the causes responsible for this state of affairs, we may be able to find a remedy. Or, if there be no remedy, we may learn how to make the best of it.

In the first place I believe that climatic conditions over which we have no control have been the principal cause of the failure in honey secretion. It begins to look possible that the amount of rainfall may be influenced by man. Even if this be done—and I must confess to considerable skepticism—I think we must go further.

There have been seasons when I thought that too much rain, or a lack of it, was the cause of failure. But in this locality the past season was neither unusually wet nor dry, and our principal honey plants blossomed freely, yet almost totally failed to secrete nectar.

I have laid it to the unusually cool summer, yet I may be mistaken in this. It is worth remarking that during this period of scarcity the winters have been unusually mild and open, and it is possible that this may have a bearing on the case.

Undoubtedly there are many localities where bee keeping has ceased to be profitable, and must continue to grow less so.

In nearly every locality, and especially in the prairie countries, the number of honey producing plants is continually decreasing as the land is brought more and more under the subjection of man, and better methods of farming prevail.

To a very considerable extent the interests of the bee keeper and the farmer are opposed to one another.

Here the basswoods have been cut down and their places occupied by fields of grain. In the stubble fields and among the rows of

corn the heartsease formerly grew and gave us our fall crop. Now the almost universal custom of fall plowing destroys the heartsease in the stubble, and a better cultivation keeps it out of the corn fields. The old rail fences, with their corners filled, often with honey bearing plants, have disappeared. The wire fence which has taken its place readily allows the weeds of the highway to enter the field, hence the highway must be kept free from weeds.

Swamps and low places have been drained and almost the last remnant of the indigenous honey plants swept away.

To offset this increasing tendency we can only try to induce the farmer to raise something that will produce honey. The principal crops that seem adapted to this purpose are alfalfa, alsike and buckwheat. Alfalfa is at present confined to a few of the western states, though some authorities claim that it may be made profitable over at least a third of the U. S. Those who have tried it in this locality have invariably met with complete failure. Alsike and buckwheat are profitable in some localities but not in all. They do not seem to be here. I have never cared to have buckwheat planted in my neighborhood, because whenever buckwheat yields honey, heartsease, belonging to the same family, yields honey in greater abundance and of better quality. The most we can do in regard to such crops is to see that they have a fair trial in the neighborhood. It will not pay to offer inducements for their cultivation, and even the farmer bee keeper will not be justified in raising a crop that is not profitable aside from the honey that may be obtained from it.

Well, what are we going to do about it? I do not believe that bee keeping has ceased to be profitable except in some localities, though I do believe that it must be less profitable than in the past. I think that it is only by specialism that the most may be made of it, and yet I could not advise a poor man to undertake the business of bee keeping as a speciality unless he has a thorough knowledge of the business and is the owner of an apiary in first class shape. Perhaps you will say if he has these he ought not to be called poor, but unless he has something more than these to fall back on it would not be wise for him to start in bee keeping as a speciality.

Much may be done to avoid poor seasons by a careful selection of locality. Every

season impresses on me more strongly the great difference there is in localities. One locality may be unprofitable and another only a few miles away a very good one. This variation is true as to both quantity and quality of honey. In one of my apiaries the average was thirty pounds of extracted honey to the colony, two-thirds of which was light colored honey, mostly from sweet clover. In another nine miles away only five pounds of comb honey per colony was secured, and this nearly all honey dew, of the darkest and rankest description—much worse than the honey dew gathered in the other apiaries. At the home apiary, midway between these the results were a medium between the two. It did not seem to me that a pound of surplus was gathered from white clover in any of these apiaries. Less than fifteen miles from any of them there was a fair yield of white honey, largely from white clover, and with little or no honey dew.

By a system of out-apiaries located as far as may be under varying conditions of environment, much may be done to guard against the effects of the poor seasons, and if these apiaries are capable of being easily transported to other localities where the conditions may be more favorable, the apiarist is prepared to do all that may be done in the way of securing a honey crop. If he gets but a small amount of honey then let him bend all his energies to making the most of it. Let him put his honey into the most salable condition possible and let him develop every home market to the fullest possible extent. He will have time to do this now, and the market so developed will stay by him and will be valuable when the time comes that he has more honey to sell. Let him buy from others so as to hold every bit of this market, at the same time getting fair returns for the time and money so invested.

Although there may not be any immediate returns from it, the apiarist may use a poor season very profitably in getting his apiary in the best possible condition to secure honey when it does come. Let him remodel or throw out all defective appliances or implements, melt up or otherwise dispose of all crooked or drone combs, Italianize his apiary, replace all poor queens, and do many other things which he may not have time or opportunity to do when honey is more abundant.

Queens may be reared almost as well during a time of scarcity as at any other time, but we cannot all become breeders of queens for the market. A glance at the advertising columns of our journals should show that the business of selling queens has very nearly reached its full development, and a beginner would have very little chance.

There are some places no doubt where it will pay to raise bees for sale during poor seasons, but there are many places where poor seasons cause bees to be sold for much less than it would cost to raise them.

The foregoing article is written from the standpoint of a specialist whose living has been made entirely from bee keeping. To those who have some other business to help them out, he can only advise, don't neglect the bees. Get rid of them entirely if you will, but if you are going to keep bees at all take care of them. The next turn of Fortune's wheel may bring up a good sized dish of honey to be emptied right in your apiary. Be ready for it when it comes. Taking good care of bees during poor seasons is like insurance. It may come hard sometimes to pay the premiums, but on the whole it pays.

DAYTON, Ill.,

Nov. 17, 1891.

Specialty Not Always Best.—Keeping Out of Debt.—Planting for Honey.—Going to the Flowers.—Caution Needed.

R. C. AIKIN.



NOW, Mr. Editor, you have touched a burning, living question, one that is not confined to bee keepers alone. The farmer says, "What shall I do?" The same cry comes from the wage laborer; and so it is all along the line, "Our biz

don't pay." No, specialty won't always work. You, Mr. Editor, say you "have always plead for specialty." What is your "specialty?" Producing honey? (except when you fail) or running a bee paper? Or is it "convention work?" Perhaps 'tis in writing books? You seem to have a special liking for going the "rounds of the fairs." You just added the REVIEW to your list of

specialties in time to "keep the babies from starving." You see it doesn't pay to have the "eggs all in one basket."

Who is it that fares the best at all times and in all places? Is it not the "all around sort of man," the one who can "turn his hand to almost any kind of work?" It pays to be an "expert" in at least one or two lines. It also pays to be able to make a reasonable success in several lines.

I have had but one entire failure in getting a crop of honey, in fifteen years of experience. However, I had other interests, so I was not entirely "left." But that very year that I failed of getting a crop, I said, in the spring, "this year I will give all my attention to the bees," so I leased other interests, and by close attention to the apiary had the hives "packed with bees," but they just "camped out" in the shade, and most of them starved to death the following winter while I "rusted" for my own living.

I have never depended entirely on one thing, except for two years, and then I labored for wages; my employer having accumulated abundant means, so that he could pay his bills, crop or no crop: his means being accumulated in various ways, and not all from one line of business.

There is one line in which it will pay, ninety-nine times out of one hundred, to be a specialist, and that is keeping out of debt. *Never! NEVER!! NEVER!!!* go in debt.

But you will say, there are times that we must go in debt: (I have thought so, too, but experience has taught me different). "We depended on a crop of honey and didn't get it; what else can we do?" If bees are worth \$5.00 per colony and you have \$50.00 to invest, buy only ten colonies instead of twenty, and mortgage the whole lot for the other \$50.00. If \$50.00 is your whole capital, then don't buy even ten colonies. Always keep a reserve fund to fall back on in case of failure. Have not less than a year's provision ahead.

Again I want to say, a poor man, or the man of small means, can't afford to "carry his eggs all in one basket." He can't afford to invest his all in bees, (or any other one thing), and live up the income as fast as it does come. Just one crop failure and he is "flat."

I think, as a rule, an apiary carefully managed will pay running expenses, especially if we take Doolittle's advice and don't put any more into the business until something

comes out. When the apiary fails the poultry, dairy, garden, grain, or other pursuits will bridge over the "poor season."

Yes, "study your field most thoroughly;" know just when and from what you get your honey; know just as much as possible of your sources, and the whys and wherefores, and govern yourself accordingly, for therein often lies the secret of the difference between a crop that only pays expenses and one that pays a profit.

Planting for honey alone I have no faith in, neither in a combination crop, *i. e.*, both honey and grain, or otherwise, unless such crop be extensively cultivated and adapted to soil, climate, etc. An acre of buckwheat, clover, alfalfa, or whatever it may be, is as a drop in the bucket, so far as getting a surplus yield is concerned. But it will help just a little in a general way.

Going "to the flowers" may help out, even in the matter of out apiaries—dividing the eggs you see—for when one apiary does poorly, another may do well. But when it comes to pulling up stakes and moving to "the Alfalfa fields of Colorado," or elsewhere, or moving to any entirely new field, *be sure* you know what you are doing, or that you have a "bank account." That "long drawn out" alfalfa bloom may prove "a snare and a delusion." But I will speak of that in another article. "Thorough investigation" is the only safe way when going to new fields, or into a new line of business.

As for "migratory bee keeping," I have great hopes in that line, but, as yet I have not capital to carry out my ideas. He who depends on his small capital and own labor for his bread and butter, can't afford to do too much experimenting, nor to be a specialist to the extent of putting his all into one thing. A man with capital can be a specialist, can make specialism pay, because he can go right along, even with several failures in succession, while the good and extra good seasons make the whole average fair, so that he has made money in the end.

These thoughts I have written especially for the benefit of those who "live by the sweat of their brow" in producing honey. But, brethren, don't "labor" and "sweat" all the time. Do some thinking. Carefully count the cost of everything. Look your field over, and if it won't support many colonies, keep only a few. Have a garden, even if it be but a few square feet of ground. Make everything count and pay its own way.

I know a man of wealth, with over 1,000 acres of land; and yet, with all his wealth and farms, he has, the past two years, raised almost all the vegetables and truck used by a large family, in "truck" season, and did it on only three square rods of ground. He raised onions, beets, cabbage, lettuce, radishes, peas, beans and corn, and the time spent on it was scarcely noticed. Just a few minutes every now and then, but always when it was needed. So, friends, do you likewise; and when the apiary does pay, lay up a bank account, which will always be a source of comfort.

LOVELAND, Col.,

Nov. 20, 1891.

What to Do if the Bad Seasons Keep on Coming Indefinitely.

E. E. HASTY.

IF the flowers do not resume business we may have to feed syrup of white sugar as the basis of our nice white comb honey. Shockingly heretical as this proposition will be considered by many, let us take a candid look at it. It has long been taught us by high authority that bees do not "make" honey, but only store what they find. Bluntly, this doctrine is not true. If bees do not make honey no mortal creature makes anything. God alone can make things creating the *material* in the operation. All other makers take material that comes to hand, and by manipulation form a product of a distinctly different character from the raw material. E. g., Material, iron; the maker makes nails. Material, clay; the maker makes brick. Material, cider; the maker makes vinegar. Material, granulated sugar; the makers make comb honey. Whether the thing made be beneficent or pestilent in character does not affect the fact of the making. Bees take the nectar of flowers, or they take other sweets their keeper furnishes them, and make honey therewith. Nectar has lots of cane sugar in it, honey none, or next to none. Honey is understood to be in part secreted matter from animal glands of the bee anatomy; and of animal secretion nectar has none. Nectar often has a very "silly" and unattractive taste. Honey has a ripe and desirable taste. There are plainly material, makers and product; and the product decidedly different from the material. In fact, so far as the term "making" goes, there is

no show at all for the dictum, "Bees do not make honey."

I am not, however, engaged in a mere strife about words and terms. I wish to carry the war much farther into benighted Africa of book-beedom and re-open practical questions as to what is desirable, and what is honest. It is not honest to sell your neighbor honey from the sugar barrel while you cause him to think he is buying honey from the flowers. But it is honest if you say to him, "Here is golden-rod honey for ten cents a pound; and here, at eleven cents a pound, is honey I got by feeding syrup last July." If he likes the looks of the fed honey best, likes the taste of it best, and takes it deliberately at a higher price, there is in such a transaction no dishonesty. I am not talking from practice, for I never fed sugar except to supply the wants of the bees. (and all I ever fed for that purpose would not aggregate fifty pounds), but I think I know how some things would work. I feel sure that the article in question is essentially honey, and that customers who have confidence in a bee keeper, upon having the matter fully explained to them, would readily buy it.

Now, as to the cause of the established errors. Writers do not set forth absurd fallacies just from the love of falsehood. Excepting by queen breeders, little sugar has ever been fed other than to furnish poverty stricken bees with food for winter. This work is done in September, sometimes later. The business is rushed by feeding the syrup warm, and putting it inside the hive: making them take, say twenty-four pounds in forty-eight hours. The bees, having been mainly idle for weeks, are not in condition to furnish any considerable amount of secretions. As they never fly with it at all their bodies are not fully inflated with air; and consequently they are not in normal honey-making trim. The semi-dormant state comes on soon after the job of moving it is finished. Small wonder, then, that any time during the fall or winter the syrup may be found in the combs only slightly changed from its condition before feeding. Now what does this prove? What should any reflective man say that it proves? Only that bees *can*, when pressed to it by abnormal conditions, move syrup from feeder to comb without transforming it. Feed it to them in July when they are "up and shaved:" feed four pounds a day instead of twelve pounds a day; make them

fly at least half a mile with it, and they will make it into honey.

From what I have seen, and what I have read, and what I have "smelt," I think I can say with tolerable certainty this much more. Your twenty-four pounds of syrup is practically all cane sugar and water. After being fed in the natural way indicated, and sealed up, there will not be a quarter of a pound of cane sugar in the whole of it—all transformed into some other of the sugar series. In what essential respect does this differ from the making of cider into vinegar? When practically all the spirit in cider is transformed into acid, what sense in saying, "The man did not make vinegar—he only poured cider into your jug, and it is cider still?" Fed honey will differ from clover honey as clover honey differs from golden-rod, and both differ from aphide honey: but all the same each is an actual member of the honey family. Whether we want the article or not must be determined, not by telling fibs about it, but by the circumstances, the condition of the honey market, and by a fair consideration of the probable results of such a new departure. Some unjust suspicions will be caused; and the extracted honey market may be unsettled to some extent: nevertheless it may yet be the best road out of our difficulties.

People want comb honey to ornament the tea table. That obtained by feeding is not likely to be any less an ornament. The healing and health giving quality of honey (and quite possibly this is very great, far beyond the ordinary estimate) seems to result mainly from the secretions the bees mingle with it. The battle of life and death with them, as with us, is a battle against microscopic germs, and they seem to conduct it by fortifying their food with antiseptic secretions. It is reasonable to suppose that they will put about the same amount of their peculiar secretion in fed honey as in floral honey, if the feeding is not hurried, and the conditions are natural. Then if we get the beauty, and the goodness and the healthfulness of honey, what more do we want? There is this much of doubt that may be thrown in. Much of the natural material they have to make up is of poor quality, and would soon spoil, we may surmise, if not largely fortified by secretions. Bees may have both the taste and disposition to use much or little of their saving elixirs, according to what *must* be used to preserve the

honey. On the whole, however, it is rather more probable that the secretion would go on rapidly while they were actively engaged in honey work, and that they would use the secretion, and not withhold or waste it.

This question, whether we may or may not try feeding to produce comb honey, is a large one, too large for the compass of one article; but it seems to me that the time has about come to agitate it a little. After agitation will come experimentation. Perhaps we shall go all to pieces at that point. We remember the gentleman who on due agitation established his right to shear his Berkshires. Proceeding to experimentation he found the exercise of his rights laborious and decidedly unpleasant; and the wool crop didn't pay. Possibly our fed honey may not pay after all—except in stings, vexation, hard work, and chaff from our fellow men.

There is one corner of our topic this month that your leader overlooked. Comb honey in a poor season is closely bound up in the swarming question. The present season was a poor one at my apiary. Most colonies that swarmed filled no sections at all. New swarms the same, except a little from early and great swarms, such as where more than one hive contributes the bees. *Yet really first rate colonies which refrained from swarming gave me an average of about twenty pounds each.* If I could have kept all my colonies from swarming the result would have been almost a cheerful one. If all of them had swarmed my crop would have been just about a flat failure, so far as comb honey was concerned. (My total crop was 808 pounds, nearly half extracted, from sixty-seven spring colonies.) Now we've got to do some more digging and scratching and gnawing around this stubborn problem of non-swarming. And we must keep on digging and scratching and gnawing—and barking—until the game develops himself. My present impression is that a bran new frame and hive has got to be invented to control swarming. (Just hear once!) It is not probable that the swarming impulse is absolutely and entirely beyond control. When we understand the whole thing thoroughly and know *just* what to do, and just when, we shall, without much doubt, be able to reduce swarming to a very low minimum, and direct the energies heretofore wasted to storing honey in the sections. But the happy day is a long time coming, that's a fact.

RICHARDS, Ohio,

Nov. 18th, 1891.

"Go West, Young Man, Go West!" and
"Seek Pastures New."

RAMBLER.



THE very title of your leader, and the the fact that such a subject should be discussed, is evidence that there is a restlessness in the ranks of the bee keeping fraternity, and though this unrest is more pronounced in the

East, it more or less pervades the whole country. One great cause for this unrest is from the fact that bee culture as a special pursuit calls for special and unremitting labor for only a small portion of the year. The balance of the time is spent in drifting from one pursuit to another, and no business in particular, and as a result a better and a longer season is sought after.

This article is written under the balmy skies of California, and I find that same unrest here. Every season is not a good one here, and though the yields are most bountiful when they do come, still, the actual labor with the bees, even with the largest yields, is less than in other portions of our country. About four months cover the busy season, after which no wintering troubles vex the apiarist, and the bees are left upon a lone mountain ranch for months with no supervision, and the only eyes that look upon the city of hives is that of the coyote or some other wild animal. Meantime, for the seven or eight months, the bee keeper is a carpenter, a fruit packer, or clerking here and there for some tradesman. An unceasing flow of honey or some favorable land where the apiary work will cover a greater portion of the year, would put to rest much of this discontent, especially in the far West.

There is, however, good reason for unrest in our Eastern States in recent years because the area of honey pasturage is suffering from gradual contraction. Hillsides that were formerly covered with basswood and other honey producing flora are now cultivated fields. A cleaner system of farming is cleaning out the hedgerows and fitting waste places for the growing of grain or for pasture land.

Then when our yield is dependent upon any one plant, see how a few hours of adverse weather will put the producer into the blasted hopes condition. If there are any mysteries in nature there is not a greater one than the atmospheric conditions necessary for the secretion of nectar. There is no sure method of forecasting the output of our honey crop for the coming season, as there is for grain or even dairy products. The right conditions one season will result in failure the next, and there is no product so dependant upon atmospheric conditions, and these conditions cannot be changed until some genius learns how to bombard the skies for nectar, as we now do for rain. Add to the foregoing train of evils that of uncertainty in wintering, and the causes are enough to produce the effect we often witness, of removal to a more genial clime.

To increase a waning pasturage would seem to be the first duty of the apiarist, and of all questions before the bee keeper to-day this is the most vital one. Many have realized this, and have striven for a remedy. A good housewife called attention to a large bed of blue harebells in her front yard, and said they were planted for the bees, they seemed to get so much honey from them. If the remedy could thus easily be found, our troubles had ceased long ago. The remedy is, however, herculean in its nature and requires the agreement of hundreds of people. To materially increase a pasturage nearly every farmer in a radius of three miles of the apiarist must be induced to sow some honey producing crop to the amount of several acres. It was thought that Alsike clover was the plant with which to work the revolution, but while some farmers can be induced to sow it others prefer the good old red clover, and bar it out. Japanese buckwheat is now helping out in many localities, but the honey is unsatisfactory in quality and price.

My advice, then, to the young Eastern bee keeper whose good honey harvests have diminished to one in five, and who cannot work up a good pasturage, is to "seek pastures new."

I firmly believe that the great honey producing region of the future is west of Denver. From Denver to the Sierras irrigation is reduced to such a system that there is no question about good crops, the invigorating water makes it a sure thing. In all this region Alfalfa is grown extensively, and four,

and sometimes five crops are cut. Add to this in many localities sage and other plants, and something of a honey crop is assured every year.

Here in California Alfalfa is not so much thought of for honey, climatic influences give the honey a dark or amber color. The sage, however, revels here in all its glory. An eastern man has no idea of the acreage of honey producing flora on these mountains and in these wonderful canyons. To be a week, as the Rambler has been, where scarcely anything *else* could be seen, smelled or tasted, will gradually produce the idea. There may be other fertile valleys and less unoccupied fields in the great basins east of us, but for a balmy climate, and the capabilities for beautiful homes, and where ten acres of land in fruit is enough, then California stands at the head, as she does in all things great. The great and only remedy then for the discouraged Eastern bee keeper is found in the immortal words of Horace Greely, "Go West, young man, go West."

SACRAMENTO, California, Nov. 11, 1891.

"Condition Powders" (?) for the Weather.—
Select the Best Location, Stay by It and
Tide Over Poor Seasons by Some-
thing Aside From Bees.

R. L. TAYLOR.



THIS is the problem and it is a problem. If we knew the cause of poor seasons it would no doubt be easier to solve it, but who can tell? If it were a want of honey plants, that might be remedied to some extent by securing the production of alsike clover, buckwheat, etc. But that seems to me not to be the chief source of the difficulty. If it could be settled otherwise the solution would be at hand—simply move the bees to the place where the honey plants are flourishing and success would be secure.

But more likely it is a lack of a flow of nectar in the bloom we have. Who could move bees to overtake that? It is as facile in its movements almost as the winds or the

storms. You locate it fifty miles away and hasten to move your apiary thither. It skips, meets you on the way and strikes the earth again at the very place whence you have moved your bees. This must remain the despair of honey producers unless—a great idea has struck me—where is Prof. Dyenforth? If with balloons and dynamite he can produce such a condition of the atmosphere as to compel it to deposit dew and rain, why of course one would think by smaller or larger or more widely distributed doses of his explosives there could be no difficulty in his producing such a condition of the atmosphere as would compel the flowers to yield a bountiful flow of nectar. So a final solution of the matter may not be so far off. I shall take out no patent on the discovery and hereby freely give it to my brother bee keepers in return for the many benefits received. Now whom do I hear claiming a prior right to this discovery? The Professor is already dubbed the Cloud Compeller, and I take it that if he can compel the clouds to gather, he must be just as potent to compel them to retire or to stay in the background; of course all done thro' his power to control the condition of the atmosphere; and his more comprehensive title would be the Atmospheric Conditioner. So having control of the *condition* of the atmosphere we may have it charged with moisture or electricity or with the warmth and serenity of the perfect day. We can compel the honey plants to grow, the nectar to flow, and the bees, by superlative weather, to gather the nectar in. The *modus operandi* will no doubt be greatly simplified, and we may reasonably expect that the Professor within a few weeks will have on sale in convenient packages condition powders for the weather, warranted effective or money refunded.

In this connection it will be instructive to relate a bit of my own experience during the past season. In May I had more than 100 colonies moved twenty-five miles and more to a place where good honey seasons have been the rule for so long a time that the memory of man runneth not to the contrary. Did I get a good crop? No, not a pound. I could not thus escape the decrees of fate. The place lay a little beyond the line of the early rain fall, and in June and July there was a great drought. There was afterwards a good prospect for a fall crop, but during the last half of August and the

first part of September there was almost continual rain, so I was very thankful to find the bees had about enough for winter. If I had had my discovery in working order I should have had a surplus of about two hundred pounds of comb honey per colony or twelve tons in the aggregate. But that is only one of the might have beens.

I might close here, trusting to the redemption to be wrought by my discovery, but my wife says: "You had better go on. You know the remark you made the other day about Mr. Root in connection with inventions, and somebody will be sure to get a patent on it and Mr. Root will fight it, and you remember you said when Mr. Root takes sn—, red pepper, they 'most all sneeze, so they'll all laugh at you; and then think of Mr. Root, who is so opposed to the use of drugs, countenancing the giving of condition powders to the weather."

On reconsidering the matter I think my wife is right. Dr. Miller or Dr. Tinker will claim prior discovery, for how could a layman invent a new medicine? Then someone will get a patent on it and the pulling and hauling will begin, and no good will come of it for many years. In about twenty years, when I am too old to enjoy it, Mr. Root will send me seven and a half or eight dollars for the privilege of making and vending the powders; but in the meantime bee keepers can be saved only partially from loss by getting what aid they can in the old way, so I will proceed.

From the item from my own experience given above it appears how futile it would be to expect certain success by moving either to the flowers or to the place where nectar is supposed to flow. One might calculate that I had almost a sure thing in moving my bees, but an enumeration of the chickens hatched shows the calculation false. If I had kept the bees at home they would have secured surplus honey enough to have paid expenses. As it is I have to charge the expenses, greatly swollen, to profit and loss.

In looking for a remedy it is to be remembered that there is a wide latitude for the exercise of choice in the matter of locations. There are many places in northern Michigan where bees from a single apiary could reach clover, basswood, epilobium and fall flowers in abundance. To one who is free to change the place of his apiary what better advice can be given than this: Select the best point possible, settle down and keep your cup

right side up there all the time. I know of nothing better. In such a place failures will not be frequent. To migratory bee keeping there are to my mind serious objections. It is the source of much additional labor and expense without securing correspondingly greater certainty in results, and besides, it largely prevents the adoption of any of the usual avocations chosen to preclude the total loss of income in case of the failure of the honey crop.

If one is not free to change his location and has no income except from his labor and plant, he must almost from necessity have something to turn his hand to for living expenses when there is no honey to sell. What this shall be everyone can best determine for himself. I wouldn't rely on deriving a living profit from the invention of hives and apicultural devices. Inventors are a hungry lot on the average. Perhaps running an apicultural journal might do. They say there is plenty of room at the top. There is at least one advantage belonging to that business, judging from the past, and that is, it seems easy to get out of it when one finds it doesn't pay or takes a dislike to it. The Editor, no doubt, can inform us about it. Secor does well writing poetry and Dr. Miller grows fat singing it, or, will the Doctor tell us, has the publishing of the Bee-Book something to do with that? The publishing of a political newspaper as a side issue seems to keep life in Heddon, 'tho' it has no fattening effect. A knowledge of the carpenter's trade would furnish a very good "remedy" for many. For myself I like a few acres of ground for a potato patch, a cow pasture, a clover and a corn field, with an acre for vegetables and all kinds of fruit. With this and willing hands two or three years of scarcity may be bridged very comfortably.

I will close with the suggestion of one other possible remedy. In my home apiary the past season I had one swarm for about every twenty-five colonies and an average of about five pounds of comb honey to the colony. But there was one colony that cast a swarm and gave a surplus of seventy-five pounds of comb honey over and above sufficient winter stores for the two colonies. From all appearances during the spring it was no better than fifty others in the same yard, and at no time would I have chosen it as the best colony except as judged by the results. There was no accession of bees from other colonies nor any robbing.

Wherein was the power of this colony? Was it in the fortuitous conjunction of conditions at the most favorable times so as to produce extraordinary exertion at the nick of time? Did it possess a secret knowledge of some rich acre of clover in a sunny nook? or was it possessed of in-bred characteristics which gave it the power to excel? If the first, or the last, as seems most likely, we have in them a rich field for exploration. He who finds out how to time the conjunction of conditions and to perpetuate the most desirable characteristics, will abolish poor seasons, not simply find a doubtful remedy therefor.

LAPEER, Mich.,

Dec. 1, 1891.

The Law Governing Honey Secretion is a
Puzzle.—Poor Seasons Bear the Most
Heavily on the Specialist.

C. C. MILLER.



VERY wisely, you inquire as to the cause in order to know how to apply the remedy. So you want me to tell why we have had several years of failure. Now, there are some men who are inclined to keep to themselves the results of their investigations, but I am not one of that sort. Moreover, if I were inclined to be secretive, I should hardly want to keep a secret from one who, like you, has always shown to me such a very friendly spirit. Therefore I could not be asked to tell you anything that would give me more pleasure to tell than the cause of so many poor seasons, and I would tell you in a minute, but the fact is, I don't know.

But if you had continuously good crops up to the time of commencing the publication of the REVIEW, and have had nothing but failures since, isn't it pretty clear that the REVIEW is at the bottom of all the trouble, and that if said REVIEW is squelched we shall again have good crops?

After all, it's too serious a matter to laugh about, and I, for one, am glad you have selected it for your special topic. Perhaps we may get some light on it, from some one,

even if it's only a little. So far as my own experience goes, I must confess that I am utterly in the dark as to the cause of the failures here. The season of 1891 was better than the average of the last few years, giving something more than thirty pounds of surplus per colony.

And yet a great part of the season was a dead failure. Everything looked promising at the start. At the opening of the clover harvest the hives were full of bees, and I never saw clover in greater plenty. I had a good supply of sections all ready to put on the hive, but there was such a remarkably abundant prospect that I ordered an additional stock. The bees did not commence storing with such a rush as I thought I had reason to look for, but I expected to see them commence doing so, day by day. But day by day the flood of honey seemed to be put off. Linden came, and I think they did a little better, although I never thought there was enough linden to amount to much. Then about the first week in July robbers began to trouble. But I didn't despair, for I had known the same thing to occur in previous years, and then a fresh harvest to come. Besides, there were more than 400 acres of cucumbers coming nicely in bloom, and surely they ought to yield quite a harvest. But they didn't. Clover remained abundantly in bloom, but the sections didn't fill up, and the harvest was over. I have no kind of an idea why. It didn't seem too dry. It didn't seem too wet. The honey just didn't come.

Years ago I held the ground that no one should make honey raising his exclusive business till he had enough ahead to support him in idleness one full year. Then I changed it to two years, and at present I don't know just how many years. Possibly, to make it entirely safe, he ought to have a life annuity sufficient to meet all his reasonable wants.

But we are not sure about the future. It is entirely in the range of possibilities that we may now have a succession of years of abundance. Why not?

In the meantime, what is the remedy for bad seasons? Is there any? There may be a remedy in some cases, providing enough can be done to bring in other plants, but what good will that do if no plants yield? You mention the difficulty of giving up the business where a man has invested in it, and is making it his exclusive business. Very

true, but that's the very man that will be first frozen out. The man who makes bee keeping a side issue can keep on at it indefinitely, no matter how unprofitable, but the one who has no other business must succumb to the years of failure or starve.

One discouraging feature in the case is that the scarcity of the product doesn't seem to have the effect on the price that it seems it ought. Still there is some improvement. I think I'll stick it out a little longer, and if the bees don't yield me a living, my remedy for poor seasons will be—now, really, I don't know what it will be.

MARENGO, Ill.,

Nov. 11, 1891.

The Apiarist in a Poor Location Must Engage in Something Else, or Seek New Pastures.

J. H. LARRABEE.



THE bee keeper who is satisfied that his locality is no longer profitable for honey production, and who, laying aside all sentimentalism, is in the business for the bread and butter for wife and "kids," has before

him but two alternatives, he must engage in something that does pay, or move to a better honey location.

I have very little faith in the bee man's ability to change a poor to a good locality. To be sure man's aid has often done this very thing, but has the apiarist a finger in the pie? Very seldom: he is too poor to build pickle factories or stills for flavoring extracts. He may sow buckwheat or alsike or other less valuable honey plants, or he may scatter the seeds of sweet clover or epilobium in waste places, but he won't make a naturally poor honey locality into a good one. R. L. Taylor well expresses the true state of affairs in the REVIEW for March, 1888.

Which of the alternatives spoken of above, the unfortunate apiarist shall adopt, each must decide for himself according to his circumstances and opportunities. I will only attempt to give a few hints that I hope may aid him in making his choice. In the

past, anyone and everyone has been advised to take up bee culture without regard to locality or adaptability. As a result there are many bee men who, while waiting with commendable tenacity for a "good year," are turning their hands to other branches of business. As a rule this other branch of business is not taken up with the energy and interest it would be were it the only issue, and as a result neither brings very profitable returns, and the poor hopeful lives from "hand to mouth."

Therefore, to those who have good opportunities outside of bee culture, I say, don't hesitate to improve them, for the energy necessary to success with the bees will generally bring fair success in other callings. If the ties of home and loved ones are strong, another incentive is added to keep the bee keeper from migrating.

Bee culture has sprung up with a mushroom like growth, and as a paying industry it has not yet attained its balance. Poor localities are often overstocked with bees while tons of honey go to waste in places where bees are not kept, but would pay well.

If you are bound to keep bees, are satisfied that your own locality is not profitable, and are quite sure you know of a place where they would pay, load up your bees and move there. But if you mean to be honorable and fair, don't move into other people's territory already occupied, and, laying aside the moral aspect, it would not be policy to be obliged to *enjoy* (?) half of some other fellow's field.

What constitutes a good locality for honey? Well, judging by my observation and experience I should say that in the Eastern and Central States, a locality where seventy-five colonies will average forty lbs. per year for ten years would be *very good*. But if, on the other hand, half of the ten seasons should be practical failures, and the other half indifferent successes, I should say it was not a proper place for bee culture to flourish.

Mr. Hutchinson has brought up the point that localities once profitable are so no more. This is true, and it is equally true that no reasonable cause for this state of affairs has been assigned, in all cases. Whatever the cause, the fact remains, and the more we talk this the sooner will we become satisfied that such is the case and act accordingly.

In some localities, transient causes produce, for a year or more, oceans of bloom.

Fires or floods or the clearing of land or cultivation of special crops, and even drouths cause certain locations to be for a time very profitable, and it is one of the rising ideas to hold one's apiary in readiness to migrate to these favored fields. It is becoming more and more evident that such opportunities often occur, and that we should know and watch the pasturage for miles about our apiaries.

As our country grows, and its industries develop and its character is changed by the hand of man, new conditions are present that often present golden opportunities to the bees. Chief among these is the growing of alfalfa in the West under irrigation. Then there are the basswood forests of Wisconsin, the sage and filaree of California, the mesquite and cactus of the Southwest, the orange and mangrove of Florida, furnishing honey to large and paying apiaries, and with which the apiarists of the poorer fields of the Northern and Eastern States have largely to compete.

After all, this question of remedies for poor seasons is one that each man must settle for himself, according to his ambitions and abilities.

AG'L COL., Mich.,

Nov. 15, '91.

Atmospheric Conditions Affect Nectar Secretion.—Scattering Honey Plant Seeds.—
Overstocking.—Plant Your Guns
and Stay by Them.

JAMES HEDDON.



NO, Bro. Hutchinson, you can't rightfully credit our late poor seasons to any changes in the surface of the earth, whether natural or artificial. You have given one reason, when you said that six seasons were all good, and then down goes the ax and chops squarely off four very poor seasons, right in succession. Another fact which presents itself on our side of the argument, is that after you have carefully considered the changes in the cultivation and clearing of your location, from the good to the poor

seasons, you will find a big crop *somewhere* in just such a location as your latterly poor seasons have had. No, sir, I say it is owing to conditions of the atmosphere, which may change from year to year, or may continue a term of years, as has been exceptionally the case during the past years; what others say I shall look for anxiously.

Now I want to know, Mr. Editor, if you are going to get scared out of the most profitable part of bee keeping—honey production—just as the tables are ready to turn?

What you mention regarding planting to aid the honey flow, I agree to, provided said planting is judiciously done. I have no faith in buying or renting ground to use exclusively for honey. I have materially aided my honey flow by year after year scattering in waste places the seeds of pleurisy, and am now adding epilobium or great willow herb.

But, see here, Mr. Editor, aren't you raising most too many "bees and queens for sale" in your leader? Who will be left to buy? If there were nothing to be done except to exchange cash for these bees, that might do, but there is cost of packing and delivery, risk and express charges to be whittled off from the deal, and, at present prices, that cost is sufficient to make your proposed exchange of bees impracticable, I think.

Again, by what right do you decide that poor honey seasons may be made good ones, or even better ones, by reducing the number of colonies in a given field? That is not in keeping with my experience, observation or reading. As James M. Martin said at one of our N. W. conventions in Chicago some years ago, "When the season is poor for 200 colonies, it is poor for four, and when good for 200, it is good for 600, all in one yard, is my experience."

I am very glad to get a chance to quarrel with you once over *your* errors. But you redeem yourself in your advice to bee keepers not to fuss around among farmers about planting honey producing crops until every farmer within five miles gets the bee fever.

Again, I kick on your theory of "bunching" your bees to the apiary which is doing good work, if you have several. That looks all right after a season has passed, but do you forget that it often happens that a good yield lasts just long enough to get your migratory colonies set down in the new location, when up goes the sponge, and the good flow ceases. I believe it pays best to plant your guns and then stay by them, not

only for the year, but for a term of years. But if anyone thinks differently, I have a good apiary and choice location for sale, either with or without bees and implements.

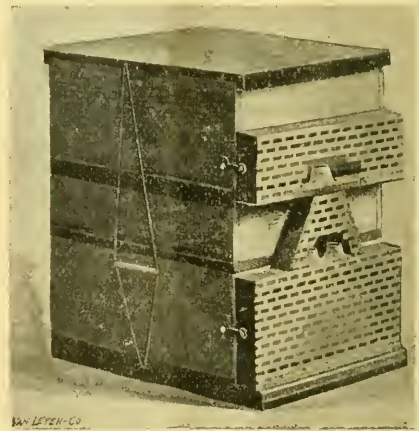
DOWAGIAC, Mich.,

Nov. 10, 1891.

More About the Self Hiver—How It may Help in a Poor Season.

C. H. DIBBERN.

IN the November number of the REVIEW I gave my experience with the self-hiver as I have improved it, but so much was left unwritten that I think some further explanations will prove of interest to your readers. I do not claim that the hiver is yet entirely perfect, as I have already adopted some improvements for the next year, and have others under consideration, but that it is entirely practicable, and that it will prove of great benefit to bee keepers, there is not a shadow of a doubt.



THE DIBBERN - ALLEN SELF - HIVER.

The cut shows the hiver attached to a hive, ready to cast a swarm, with one super between the wood zinc honey board, and the bee escape board, used as a bottom for the empty hive, that is to receive the swarm. You will notice that my hives are made with a bee space in the bottom board, and to get the bees into the empty hive, I remove the front strip on the upper side of the bee escape board. In fact this strip is cut into three pieces, for the different uses I have for it. Should it happen that the bees do not swarm, and they need additional room, I add

another super under the one already on, and simply exchange the leader for the queen for a longer one, reaching past two or even three supers. If the hives, supers and honey boards are all of an even width, there is no trouble in making the leaders fit, but to guard against their getting out of place, I usually tack them on the supers with little bits of tin. The tubes of wire cloth for the queen and drones to pass through, seem out of proportion, but it is very important that they be not less than $\frac{3}{4}$ inch, or they will become clogged with dead drones.

At first it was a mystery to me why they became stopped up with drones when there was plenty of room for them to get through, but I soon discovered that the bees in trying to expel the dead drones from the hive would try to drag them up through these tubes, and just as they came to the top, the stiff, outstretched wings would catch in the wire cloth and stick there. This was the most serious difficulty I have had with the hiver. I now have a plan of boring, say two $1\frac{1}{4}$ inch holes through the bottom board in front of entrance, and inserting a tin tube extending two or three inches below for the bees to drop all dead bees, drones and rubbish through. I will arrange this so it will be dark, and I believe there will no danger of the queen escaping through these tubes. I have closely watched the actions of queens in the swarmers, and find they persistently go to the *light*, and run upwards.

In my former article I said that the part of the hiver on the empty hive was like the one on the swarming hive, except as to the tubes, That was the way I used them last year, but, for several reasons, I will next season make them only the width of the super.

One serious objection urged against the hiver is that where perhaps twenty-five per cent of the bees swarm, we must have one hundred per cent of empty hives. Now you see this upper part will fit on an empty super just as well, and the bees can be put into hives afterwards, and fixed up to suit. On one occasion I found the entire swarm in the upper part of the hiver, and they had filled it more than half full of comb. From this experience, and the fact that it is cheaper, I conclude the smaller size is best. Then, too, the swarming bees, on their return, finding the queen in this smaller space, will be more apt to go into the hive, and stay there. It often happens that we have a lot of hives with good empty combs, or per-

haps with some honey in, that we wish to use for some of our very first swarms, but of course we can not use them to receive swarms like empty hives, with the hiver, without exposing them to robbers, and moths. Now, by living the bees in an empty super we can afterwards hive them just when and where we want them.

Great care must be taken not to liberate the queen *too soon* after swarming, as she will surely take wing, and the swarm will immediately follow. To guard against that, I usually remove the escape board, (now doing duty as a bottom with the empty hive), when I place the hived swarm on the old stand to receive the returning swarm.

Should I wish to hive them (when I am present) in a hive containing comb, I place this hive on the old stand, removing the old hive some distance, so the swarming bees will not find it. Now, when I see the queen in the upper hiver, I unhook it and slip a piece of sheet iron between it and the hive so that no bees can escape, and carry it to and hook it upon the hive to receive the swarm. Now, when the bees have been thus nicely hived, I put the old colony on *top*, over a *bee escape*, as described last month. Don't be in any hurry to remove the swarmer from the new hive, as bees will often take a notion to abscond even when hived in the old way, and I have saved several swarms by keeping the swarmer on. When I remember how I lost twenty swarms one season by their absconding for some unaccountable reason, I know that the hiver is worth something for that purpose alone.

Some may object to lifting off an empty hive whenever they wish to see how the bees are getting along in the supers, but an empty super with the hiver part attached is about as easily handled as a cover. The cut shows how I fasten hive, supers and cover together by wires to keep all tightly together and prevent the wind from blowing them off.

The special topic in the December number of the REVIEW is to be, "How to tide over the poor seasons." This is indeed a vital question with most bee keepers. I believe that the hiver will play as important a part in solving this problem as any one thing. This question has been a disturbing element with me for many years. In the '60's and even in the '70's we used to be reasonably safe in counting on a good honey year: at any rate the poor seasons were the exceptions; but since 1880 they have rather been

the rule. This, too, without any apparent cause! There are no more bees in my vicinity now than there were then. No great amount of ground has been broken up, and the basswood trees and fruit have certainly greatly increased. During the last ten years I have cultivated from three to five acres of sweet clover, which has now become scattered far and near, and yet my average yield is getting less all the time. My bees are certainly a great improvement over what they were ten years ago. And my hives and fixtures are not to be compared to what I then had. Then where is the trouble? I hope some of our heavy bee men can tell me. To be sure the bee business is not my only bread and butter, as I can live without it; but I like the business as it affords a great scope for new thoughts and devices. But then, all these things become very tiresome if the business does not pay.

But how is the self hiver going to help us out of this difficulty? I believe that in our section where there are more than 100 hives in a radius of three miles, the locality is overstocked, especially in poor seasons. This fact was forcibly presented to me some four years ago. I then had about 175 colonies at my home place, and not over ten lbs. surplus to a hive, and I thought that the same condition was general. About this time a friend invited me to his place some six miles away to help him remove the surplus honey from four hives that had received no attention except putting on the sections. What was my surprise when I found these neglected, weed grown hives, each containing over fifty pounds of fine sections of clover honey. The country was as dry as in my vicinity, but upon inquiring I found there were less than fifty colonies of bees in that neighborhood. With the self hiver I had no difficulty in running my apiary of about 100 hives at home and another of about the same number seven miles away without help. Now, I could just about as well have taken care of them had I put them in four places of fifty each. But I do not think 100 is too many if the locations are judiciously selected. I am sure had I kept my 225 colonies all at home I would not have had a single pound of surplus. I got but a few thousand pounds as it was, but I did not have to buy sugar to feed for winter. Of course this is only a pointer, and I hope others will give us something better.

MILAN, Ill.,

Nov. 23, 1891.

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. The REVIEW is stopped at the expiration of the time paid for.

 FLINT, MICHIGAN, DEC. 10, 1891.

EIGHT extra pages this month.

GIVE THE MO. BEE KEEPER credit for having been the first to show up the fallacy of "Golden Carniolans."

A REPORT OF THE ALBANY convention is what I expected to give in this issue, but when I reached home I found more matter in type than the REVIEW would hold. How I *did* hate to throw out a page or more of little interesting items, but they had to go. In the Jan. No. I will tell about the Albany trip.

THE ALFALFA FIELDS of the West are now attracting much attention. What is now needed is *reliable* information in regard to the true state of affairs in this much-lauded region. This is to be given the readers of the REVIEW in a series of articles written by R. C. Aikin, of Loveland, Colorado.

PORTRAITS OF WRITERS.

With this issue of the REVIEW a new feature is added, that of accompanying each article with a portrait of its author. Of course, it will not *always* be possible to do this, but when it is, the reader will be allowed to enjoy a picture of each writer's face while reading the words he has written.

HOW THE REVIEW IS PROSPERING.

During the first year of its existence the REVIEW brought in \$50 more than expenses. The second year the profits were \$650. The third year they reached \$813. I have not yet "figured up" for this year, but I know the profits will not be far from \$1000. A large share of this money has been used in reducing the indebtedness on my home

from \$1750 to \$850, and this balance is now in such shape that I will have only the interest to pay until I am prepared to pay on the principal, which arrangement will allow me to put more money into the REVIEW than I have heretofore.

HIVING SWARMS ON STARTERS ONLY.

At the Chicago convention B. Taylor told me that he never secured better results in comb honey production than when he followed the plan given in my little book on the "Production of Comb Honey." I called his attention to the fact that the combs were not always perfect. He admitted that some of them were sometimes imperfect, but asserted, in a sort of jocular manner, that the profit was so great that we could afford to throw away the combs. But, of course, he added, this isn't necessary. They can be sorted over and the imperfect ones melted into wax.

HOW SUBSCRIBERS MIGHT HELP THE REVIEW

I have sometimes seen in other journals very earnest, I might say in some instances, almost frantic appeals to subscribers to help extend the circulation of the journal, to "get up a club," to "secure one subscriber," etc., etc. While the REVIEW has never asked for such favors, it has received many subscribers through the personal influence of its friends, and is truly thankful for the same. To Mr. R. B. Leahy it is probably indebted for nearly half its subscribers in Missouri. At conventions and upon every possible opportunity he urged the merits of the REVIEW, and secured a subscriber whenever he could. One or two such men in every State would double the REVIEW's subscription list within a year or two. For once I am going to ask the friends of the REVIEW to do all they can in the way of getting subscribers. Anyone already a subscriber may retain thirty cents on each new subscription sent in. Remember that each additional subscriber enables me to make the REVIEW just a *little* better—gives me just so much more money with which to improve it.

TEMPERATURE AND MOISTURE.

Now that the bees are in the cellar the matter of temperature is all-important. Don't forget that moisture has a great bearing on this point. The drier the air the

lower may be the temperature without injurious results. Have a wet and dry bulb thermometer in the cellar, as was explained in the REVIEW for Oct., 1888. The greater the difference in the markings of the two instruments the drier the air. Next month I expect to publish a table, furnished by Mr. S. Corneil, which will enable bee keepers to determine the percentage of saturation in their bee cellars from observing the markings of a wet and dry bulb thermometer. If the atmosphere of a cellar is too moist, unslacked lime will absorb the moisture. The probabilities are that more cellars are too moist than there are that are too dry, for the welfare of the bees.

MICHIGAN BEE KEEPERS' ASSOCIATION.

The Michigan State Bee Keepers will hold their annual convention at the Eagle Hotel, in Grand Rapids, Dec. 31, 1891, and Jan. 1, 1892. Hotel rates will be only \$1.25 per day, and there will be reduced rates on all roads. The following is a list of the topics that are to be found in the program:

The Best All-Purpose Brood Frame,

J. H. Larrabee, Agr'l College, Mich.

The Bicycle vs. The Horse for Out-Apiary Trips,

E. R. Root, Medina, Ohio.

Bees, Poultry and Fruit,

J. A. Pearce, Grand Rapids, Mich.

"Trying New Things,"

W. Z. Hutchinson, Flint, Mich.

Cellar vs. Out-of-Door Wintering.

A. J. Acker, Martiney, Mich.

What Business can be Profitably Combined with

Bee Keeping?

Wm. E. Gould, Fremont, Mich.

Cause and Cure for Foul Brood,

Dr. A. B. Mason, Auburndale, Ohio.

The Uses and Abuses of Foundation,

M. H. Hunt, Bell Branch, Mich.

Carniolan Bees. H. D. Cutting, Clinton, Mich.

Ernest Root has promised to come via. of Flint, when going to this convention, and give the REVIEW a call.

SMALLER SECTIONS.

Those who have read the contributions of J. A. Green may remember that he sells most of his honey direct to grocerymen. These dealers sell the sections by the piece. When sections are built between separators, as they are in Mr. Green's apiary, and are as carefully graded as he grades them, there is no injustice in selling them by the section, instead of by weight, and it is handier to

sell them by the piece. Mr. Green is going to try having sections of such a size that they may be retailed at ten cents each. I think he told me that he had already done something in this direction, but did not get the sections quite small enough to allow their sale at ten cents. He will, the coming year, reduce the sections in breadth until six will occupy the space of four $4\frac{1}{4} \times 4\frac{1}{4}$ sections. Mr. Green is satisfied that no honey is lost by using smaller sections, while sales will be helped by a ten cent package.

E. E. HASTY WILL WRITE A SERIES OF ARTICLES
FOR THE REVIEW.

Knowing that, of late years, our friend Hasty has not been given to much writing for the bee journals, it was with a feeling that I might "get the mitten" when I "proposed" that he write a series of articles for the REVIEW for 1892, but I was overjoyed to receive the following "yes:"

"Now about the serial. I was a bee keeper for my father and his estate since my childhood; but in the old, unenlightened way. Along in the seventies I brightened and read the papers, and in 1879 bought the apiary. At that point I began a day book in which I recorded pretty faithfully each day's doings in the apiary. I have long thought I should like to write a serial entitled, 'Comments on a Beginner's Day Book,' quoting an entry here and there and giving my present opinions about such 'doim's.' I think it would convey some instruction and possibly occasional merriment. What does W. Z. think of it?"

W. Z. thinks had he known of that gold mine (that old diary) he would have been after it long ago. By *all means*, friend Hasty, write us the serial. Those who are acquainted with friend Hasty's past writings need not be told there is a treat in store for them.

PROTECTING THE GLASS IN SHIPPING CASES.

Bee keepers west of Chicago have suffered loss and annoyance because of a freight ruling compelling them to cover the glass in the shipping cases, thus defeating the very object for which the glass is used—that of showing railroad men the fragile nature of the merchandise they are handling. Evidently the railroad men did not understand the purpose for which the glass was used. It would seem that they thought its chief use was to show off the honey to the best advantage to prospective buyers. This is, of course, *one* reason why glass is used, but not

the only one. The transportation companies feared that the exposed glass would be broken, hence the ruling which resulted in a large increase in the breaking of comb. This ruling has now been so modified that crates protecting but *not concealing* the glass may be used. Narrow strips of wood are fastened to the sides of the crates in such a position that they are opposite, or over the glass, yet they stand out an inch or such a matter from the glass, thus protecting it yet allowing a view of the glass and the honey behind it.

HANDLING HIVES INSTEAD OF COMBS.

Bro. Hill, of the *Guide*, says "There can be nothing new under this heading because before movable hives were invented all bee keepers handled hives instead of frames." It is true that frames were not handled before they were invented, and, at that period, neither were *hives* handled in the sense in which the matter is now under discussion. The bees were simply hived and left "sitting so." As has been before mentioned, movable combs were needed to enable us to learn the mysteries of the hives; having in a large degree mastered these, there is little need in practical bee keeping to handle combs.

Evidently, bee keeping is on the eve of a change. One man will own and manage more bees. They will be scattered about in different apiaries, and self-hivers or something that will eliminate the swarming difficulty, will enable one man to care for them all. When a hive and system pre-eminently adapted to handling hives instead of frames is offered to bee keepers, most of the criticisms offered come about as the result of viewing said hive and system from the old-style, frame-handling point of view.

WINTER REPOSITORIES ABOVE GROUND.—VEN-
TILATION NOT NEEDED.

Some man with a small bee house, or winter repository above ground for bees, has been having trouble in wintering his bees in the house. The house was only 7x10 feet inside, and $7\frac{1}{2}$ high. The walls were of earth ten inches thick. He says the frost got in badly and he was obliged to use an oil-stove in the latter part of the winter. He had tubes, with slides in, for ventilation, and he watched closely, opening and closing the tubes when necessary, trying to keep the

house warm, but failed, and lost nearly half of his bees. He has added a sub-earth ventilator hoping that the air will be warmed by passing through the underground tube. He has finally written to Mr. G. M. Doolittle for his advice, and Mr. Doolittle has given his views of the matter in the *A. B. J.*

In the first place, Mr. Doolittle says the house is too small, that a larger number of bees is required to keep up the necessary heat in a building above ground. He calls attention to the fact, as I did last month in reviewing Mr. Hill's article, that there is no warming principle in a bee house above ground: that all the heat must come from the bees or from an oil-stove or something of that description. All that the walls do is to confine the heat; they do not *originate* any heat. The only thing that can be done with such a repository is to resort to artificial heat. For this purpose Mr. Doolittle thinks an oil-stove as good as anything, but he would have a pipe arranged to carry off the gases of combustion.

If the house cannot be arranged to keep the temperature between 40° and 45°, Mr. Doolittle would advise the wintering of the bees in the open air.

In regard to the underground tube, he says that it will modify the temperature of the air to a certain extent, but not sufficiently. He says the cold air so chills the earth surrounding the tube that even with a tube 100 feet long and buried three feet deep, air will sometimes be below the freezing point when it enters the repository.

Mr. Doolittle has had experience with sub-earth ventilators and upper ventilators. He began closing them little by little until he learned they were of *no value*, and, after two winters with no ventilation except such as comes through walls of masonry and earth, he can say his bees need no other ventilation.

A VISIT TO MEDINA.

This is written sitting at Ernest's desk at the "Home of the Honey Bee," in Medina, Ohio. Around me is the click of type setting and type writers, while from below comes the whirring sound of machinery in motion. For a long time I have desired to visit this establishment. I have often tried to imagine how I should feel when walking over from the station and looking up at that stone bee hive over the inscription, "In God we trust."

Yesterday morning I experienced that sensation and found it fully as pleasurable as I had expected it would be.

The first man to discover and welcome me was W. P. Root, the proof reader and stenographer. We had often corresponded in short hand. In fact, I once wrote an article in short hand for *Gleanings* and W. P. put it in type directly from the short hand manuscript. He grasped my hand and said: "You are the man I have long been wanting to see," and led the way up to the office.

I had heard that nearly every visitor to the Root establishment had been surprised at its magnitude, consequently I had made up my mind that *I was not going to be surprised*, but *I was*. I was not surprised at the *outside* of the buildings—the illustrations in *Gleanings* have shown these quite fairly—but it seemed to me as though they were about three times as large inside as they were outside. Medina is not a large city—about 2,000 inhabitants—and almost from necessity many trades must be represented at this one institution. The sending away for repairs, and the delays from getting out of many things, would be too expensive. There are many things that Ernest said he would gladly drop, and rid himself of so much worry, but it seemed well-nigh impossible to do so.

Ernest showed me over the establishment, then by a sort of tacit agreement he went about his work and allowed me to roam about at my own sweet will. You see, we were to go on together to Albany and we both knew that we would have plenty of opportunity for visiting while on the road. The beauty of my visit was that everybody seemed to know me *at once*. This may be accounted for by the fact that every employe receives a copy of *Gleanings*. In five minutes the pressman and I were deep in a discussion of hard and soft "packing" for cylinder presses, of the kind of paper needed for the various kinds of work, the best inks, etc., etc. Then he fished out his printers' magazines and we looked them over. This is a fair sample of how I put in my time.

I don't remember ever going through such a large establishment where everything was *quite so neat and clean*. Ernest remarked, in a joking way, in a recent issue of *Gleanings*, that if folks would only let them *know* when they were coming, they would have a "clarin' up" spell before their arrival. Of course, my visit was known in advance, but somehow I feel just as though there was no

"clarin' up" spell on that account. Most of the rooms were just as clean as a dwelling house; yes, far more so than some I have seen. Then everything was so handy and convenient—so systematized. Each had a particular duty to perform, and the manner in which these duties were performed pleased me exceedingly. It was with a sort of *pride* in the work.

Yes, I went out with Ernest and looked at the bees. The apiary is very pleasantly located. The view lately given in *Gleanings* of the Shane apiary, after it had been brought home, is the only one that does justice to the beauty of the yard. This view, however, does not show the whole yard. The evergreens on the north and west sides stand in as neat and symmetrical rows as I ever saw. As an ornament and wind-break they are a success. Ernest is experimenting quite a little now in regard to the use, or non-use, of absorbents. It looks now as though absorbents might be an actual detriment. Let the bees seal the covers down tightly, so no moisture will escape, then use protection of some kind outside the hives, where the moisture cannot reach it. The management of the apiary and of *Gleanings* is left largely to Ernest, while the business management is in the hands of Mr. Calvert. Gardening is Mr. A. I. Root's hobby now; the "boys," as A. I. calls them, being allowed a wide latitude in their departments. They are more given to the "trying of new things" than is the case with A. I., although no momentous step is taken without his advice or consent.

One of the new things that are about to be brought out is a reversible honey extractor. It is not automatic, but the baskets can be reversed so quickly that but little time is lost, while much is gained in the way of making the can smaller and in lessening the expense.

Yes, I saw that bright youngster of eight months, Leland Ives, who is now able to sit up in a high chair and make a noise in the world. I did feel a little guilty for coming away without calling on his new cousin, Howard Root Calvert, but he is so young that I feared he wouldn't take much notice of me.

As some of you may know, Ernest's hobby, or *one* of his hobbies, is that of photography, and when I tell you that he brought home his fourth or *fifth* camera on the day of my arrival, it is not to be wondered that his wife

said, "What! *another* one?" using the same tone and expression that my wife sometimes uses when I bring home a new font of display type.

When I woke up in the night it took me some little time to decide that it was A. I.'s windmill that was going "squeak, squeak, s-q-u-e-a-k." "Yes," I thought to myself, "it's master's hand is away in the West. If it were here that windmill would be—greased."

But enough of incidents. I could fill the *REVIEW* with them, but there are so many things that *must* go in this issue that I must close by saying, success to the "Home of the Honey Bees," and those who work therein.

WRITING FOR THE BEE JOURNALS.

Only the *editor* of a bee journal realizes to the fullest extent how dependent he is upon his subscribers for interesting and instructive matter with which to please and instruct his readers. Some people can tell more than they know; others know more than they can tell. Editors belong to the former class. Perhaps this is putting it a little too strong, but an editor ought to be able, at least, to tell *all* he knows. If he can't do this he has missed his calling. As a rule, an editor could easily fill every issue of his journal with his own pen. But that wouldn't do. People tire of the same style, and the same way of looking at things. Variety is the spice of life. We crave variety in our victuals and it is the same with our mental food. Even though an editor possessed the knowledge which would enable him to creditably fill the paper, there would be much greater satisfaction if this knowledge came from different sources and was served up in a variety of styles. It is evident that bee keepers are a little "tired" of some of the old writers. They have "told their story" so to speak, and the clamor is, "give us something new." There seems to be a desire to hear from those who "know more than they can tell." In my opinion there is little fault to be found with those who *do* write. The only trouble is to get *all* to write. It's something the same as it is at a bee convention. In a meeting of 100 members a dozen will do all of the talking. I know from actual experience how hard it was once for *one* man I know of to get up and "speak in meeting." When he got up everybody was "looking at him," and he could only say a

few words in a confused way and then sit down. If that is the way some folks feel when they pick up a pen, I know how to sympathize with them. The cure in both cases is simply to persevere; to continue to write and speak until the embarrassment wears away.

One excuse given for not writing, is lack of education. So far as penmanship goes, this is not the shadow of an excuse, because one would have to travel far and wide to find worse copy than that furnished by some editors, so far as chirography is concerned. Thousands and *thousands* of letters have passed through my hands, and I have yet to find one I could not read. So far as the REVIEW is concerned there need be no hesitancy in sending articles for fear they can't be read, and I think the same is true of other offices. In fact, the men who write the most, often, I had almost said usually, write in a manner that makes their writing more difficult to read than that from a non-professional. The man who writes seldom, writes slowly and forms his letters with care, and his manuscript is easily read. Friends, you need *never* hesitate to write fearing that your writing will be illegible.

Some urge as an excuse for not writing that, although fair penmen, they are poor spellers or poor grammarians, or not used to writing, etc., etc. Let me say to such that of all the correspondents to the REVIEW only two or three send such perfect manuscript that it can be turned over to the compositor without revision, and occasionally I am obliged to *re-write* an article to make it presentable, but I am thankful for the privilege of doing this if it only contains *information of value*. If it does not, it goes in the waste basket, no matter how well it is written. This trying to "write like a book" is the great stumbling block to those who first attempt to write. Write just as you would talk. Don't attempt to write like someone else whose style you admire. At a railroad station I once saw a man's whiskers trimmed in a style I greatly admired. I went home and had mine trimmed in a similar style. I never trimmed them that way again. It spoiled their appearance. This illustration may be far fetched, but it is quite illustrative.

Someone, I think it was Horace Greely, said that most articles needed to have the head and tail cut off before they were "any good." Don't waste words on an introduc-

tion. Plunge in boldly, and begin on your subject at once. Keep right at it until you have told all that is necessary and then *stop*; that is all there is to it. Some can write better by making a sort of skeleton of the article before beginning to write. That is, write down the different headings, or points to be remembered, then take them up in their regular order and enlarge upon them.

The one great point is, have something of value to write about. You may *think* you have not when you have. You are so accustomed to your implements, methods, etc., that it seems to *you* that *everybody* knows of them. It isn't so. Occasionally an editor takes a trip among bee keepers and then prints an account of what he has seen. Sometimes he describes something that is important but has not been generally known. Upon reading of it I sometimes think to myself, "Why, I have been doing so and so, or using such and such an implement for years, and supposed everybody knew about it." They had not. This is the case with many bee keepers.

Many plead lack of time. I think I know something about this. When our little twins came, wife and I took care of them and did the house work, without a girl, the first winter. We did nothing else, and that was enough. It seemed one while as though I should be obliged to give up writing for *Gleanings*, but I kept a pencil and paper lying on top of the organ, and whenever I could snatch even a minute I stepped up and wrote. Most of the sentences were *composed* and committed to memory, while I was rocking a baby to sleep. It was hard work writing an article by piece meal in this manner, and it was usually several days before one was completed.

There are one or two minor points that might be mentioned, and one is, don't write with a pencil if it can be avoided. Use white paper and black ink if you would save an editor's tired eyes. Some use a tinted paper and pale ink, and it is almost impossible to read the writing. When a pencil is used, the rubbing together of the sheets of paper while being handled in the mails, often blurs the writing to such an extent that it is deciphered with difficulty.

As I have said before, a journal is largely what its readers make it. It is *their* journal as well as the editor's. If you have an interest in the REVIEW, if you wish to see it boom as it has never boomed before, just take it

into your head to write for it, and you will be surprised to see how it will improve. Don't think your communication will be unnoticed. Everything that comes to this office is read by the editor, and if you can send any information, hint or suggestion, be it ever so small, it will be welcomed and put in proper shape if any changes are necessary. Don't think an editor does not appreciate carefully and correctly prepared manuscript; he *does*, but if he can only secure *valuable information* (that is what he is after) he is *more* than willing to prepare it for the press.

I have taken considerable advice from my readers in regard to how the REVIEW should be conducted; I have been thankful to get it and I think the REVIEW has been improved thereby; now turn about is fair play, let my readers take *my* advice and write for the REVIEW and see if it will not be still further improved.

Bro. Editors, I wish every one of you would write an article on this subject for the January REVIEW. If we can help our readers to furnish us better written and more valuable articles, *all* will be benefitted thereby. *Anyone* who can say a helpful word on this subject will be just as welcome even if he *isn't* an editor.

EXTRACTED.

Notes from the Northwestern Convention.

I expected to write a condensed report of the Chicago convention for the REVIEW, but I have found one already written, in such a happy vein, by Dr. Miller, that I copy it from *Gleanings*. Scattered through this issue will be found several items that are the result of my attendance at the Northwestern, and you may expect to find items of a similar nature scattered through several issues as space allows and occasion demands.

"The Chicago convention was good. It always is. Nine states were represented, and a crowd of good workers were there. I think a little more solid work than usual was done. A business trip to the North by O. O. Poppleton gave us a representative from as far away as Florida. A. I. Root, who formerly did not favor conventions, has been converted from his errors; and as he never does things by halves, he is now a convention man all over, and was a faithful worker through every session.

I saw there for the first time J. H. Larabee, the representative of the United States government. I like him. He is modest enough not to think he knows everything, and I don't see any reason why he should not

be a real help to the fraternity. He was urged to communicate more frequently and more directly with bee keepers, and he expressed himself as desirous to hear from them, and especially to know upon what subjects they wanted experiments made. I think he has done this before, but, strange to say, I believe he reported that only one man had sent in any request as to experiments. This should not continue.

The convention tackled the very important item of grading honey. I think no convention has ever had the hardihood to undertake it before. A committee of seven, with Dr. Mason as chairman, were instructed to report a scheme for grading. Several times the report of the committee was called for, but each time the report was, "Not ready." At last the report was that they couldn't agree. Then the convention resolved itself into a committee of the whole, and "rassled" with the problem in dead earnest. But the problem "downed" the convention, and dinner time found them without an agreement. "Too bad that we couldn't agree upon something, and at least make some kind of a start," was the comment of more than one during the noon hour.

After dinner, with perhaps a little feeling of desperation, the subject was renewed, in the attempt to see how far there could be any agreement. Then the good sense and the good spirit of the convention showed itself, and each one seemed willing to make any reasonable concession to the views of others. So a system of grading was agreed upon, subject to the revisional judgment of the assembled Albany wisdom. I think it is far from a perfect system; but it is a *start*, and that is at least something.

Among other things, the ubiquitous question as to Sunday closing of the World's Fair came up. Two to one were in favor of Sunday closing, but in the interest of harmony the majority yielded. It is not entirely clear to me why it would not have been just as graceful and proper for the minority to yield to the majority.

Although no action was taken, there was considerable discussion as to honey being entitled to the same bounty from the government as maple sugar. It was argued that the McKinley bill had so lowered the price of sugar imported that the home product could not compete. To this it was replied that the same action had brought down the price of honey to meet sauces made with cheap sugar.

The convention, backed by two commission men, recommended the shipping of comb honey in single-tier cases holding twelve or twenty-four sections each. The weight of opinion seemed to favor, for extracted honey, square 60-lb. tin cans packed in wooden cases, two in a case, but some were quite earnest for cheap barrels.

Publication of honey quotations had some attention. The practice of publishing above or below what could be actually obtained was deprecated, and it was urged that those publishing quotations should give them somewhat as they were given of staples such as butter and wheat. That is, a man who sells on commission should say at what price

honey is actually selling; and if he is a cash buyer he should say what price he is paying.

Action was taken toward allowing the society in future to be part and parcel of the State society organized last winter. It was the general opinion that this would be a good thing for both sides, with no disadvantage to either. In any case, the same members will attend at Chicago, and, with low rates so frequently available, and such a central location, surrounded on all sides by live bee keepers, there seems no good reason to suppose that there will be any failure in always having a good convention in Chicago.

That prince of secretaries and bee reporters, W. Z. Hutchinson, was busily engaged throughout the session in pushing his pencil, and we shall undoubtedly have a full report in the proper time and place.

MARENGO, Ill., Nov. 24. C. C. MILLER."

Why the Review is Crisp.

"We were just glancing over a bundle of letters when our eye took in the last number of the BEE KEEPERS' REVIEW which the clerk had just laid on our desk. The letters were immediately put down and the REVIEW taken up. After we had glanced through it pretty thoroughly the question came to us, 'What makes the REVIEW so crisp? and why is it we take it up so quick when it comes?' Is it because the editor quotes very largely from *Gleanings* in his 'Extracted' department?' No, not exactly, although that is a delicate compliment to this journal; it is because the editor throws his whole being into his paper. He loves it and his readers."—*Gleanings*.

Giving Stores of Comb Honey in Winter.

It is not often that a bee keeper is caught with bees lacking stores, and honey in combs of a different size. I have been in just that predicament, and solved the trouble exactly as D. A. Jones tells, in the *C. B. J.*, how he has managed in such a case. He says:—

"A friend inquired a short time ago what he would do with a few of his colonies that had not sufficient stores for winter, and yet it was so cold they had refused to take up more. He said he had plenty of sealed combs of honey, but unfortunately they being of a different size did not fit the hives. We know how to sympathize with him, because we have been there ourselves, but got over the difficulty in this way: When the hives were short of stores we took some of the heaviest sealed combs, cut two or three holes through the center, and placed one over the top of the frames, first placing a stick about half an inch thick around the edge to raise the comb up, and leave a bee space between it on top of frames. We then put a few strips here and there over the frames to prevent the center from sagging. The bees consume all the honey in the hive and then ascend to this comb and commence eating it out. They will work up through the holes cut in the comb, when they have all the honey eaten from the under side and

commence from the top side. If we find that they have scarcely enough we put a second comb on top of it, with three-fourth or inch strips run so that when it sags it will not touch the other comb. This does not disturb the bees, and in this way we have wintered some colonies short of stores, and brought them through in very fine condition."

I have never fed bees in this way out of doors in cold weather, but presume it might be done if the top of the hives were well covered with carpeting, paper, etc., placed over the added combs of honey. When feeding bees in this manner in the cellar I have always placed several thicknesses of old carpet over the top of the hives to confine the heat. When the extra combs of honey are the same size as those in the hives where the bees need feeding, they can be placed in the hives, but this may not always be so easily and pleasantly done as by laying the honey on top of the frames as just described.

Keeping Everlastingly at It.

Mr. W. C. Frazier, of Atlantic, Iowa, is to conduct an apiarian department in the *Homestead*, a paper published at Des Moines, Iowa. This I learn from the *A. B. J.*, which copies a few paragraphs from Mr. Frazier's first number. One of these paragraphs reads as follows:—

"The man who disposed of his cattle two or three years ago because there was no money in them, wishes now he had them again. He that disposes of his bees will next year be in the same predicament. Keeping continually at it is what pays in the long run. We have a report of an apiary of ten colonies, nine of which gave no surplus, but the tenth (an early swarm) filled its hive, and also two supers—about forty-eight pounds."

The above is quite appropriate for this issue of the REVIEW. I certainly would not advise one to drop any business because of one failure, but if they continue to come year after year, *something* must be done.

How to Keep Honey.

Honey is frequently greatly injured, if not spoiled, in the fall and winter by keeping it in a cool, damp place. When in Chicago I visited a honey dealer whose honey was stored in an upper room, but there was no fire in or near the room. The man in charge, however, several times mentioned that a fire was needed and would soon be used. It does not seem as though practical honey producers need any more instructions upon

keeping honey in cool or cold weather, but this seems to be one of the cases requiring "line upon line and precept upon precept," so I quote some excellent advice upon this point as given by G. M. Doolittle in *Gleanings*. He says:—

"Some seem to think that the cause of honey becoming watery is because the bees do not thoroughly ripen it before sealing it; but if they used a little more thought on the subject it would seem that they must see the fallacy of such an idea: for, whether ripened or not, the honey can only ooze from the cells after being capped, on account of a larger bulk of liquid being in the cell afterward than there was at the time the bees sealed the cell. This can come from only one source, which is always brought about by either cold, damp weather or a non-circulation of air, or both. Honey swells only as it becomes damp; and the first that will be seen of that dampness will be in the unsealed cells where the honey will have become so thin that it will stand out beyond the cells, or, in other words, the cells will be heaping full. If the dampness remains, the sealed honey will soon become transparent, while the honey from the unsealed cells will commence to run out, daubing everything below it; and eventually, if the cause is not removed, the capping of the cells will burst, and the whole will become a souring mass. In one or two instances I have seen honey left in such cold rooms, where the moisture was also very apparent, that it became so very thin that it ran down from the combs and stood in puddles on the floor all around the bottom of the nice white cases in which it was stored. It was evident that this honey had once been of the very best quality, from the nice appearance of the cases; but the grocer had put it in the cellar when it arrived at his store, and there it had been left till it had thus become very nearly good for nothing.

When I first commenced to keep bees I stored my honey in a tight room on the north side of the house, where it usually remained from four to six weeks before crating for market. In crating this honey I always found the center and back side of the pile watery and transparent in appearance. As that which was stored first was always the worst, I thought it must be owing to that being the poorest or least ripened, until one year I chanced to place this early honey by itself in a warm, dry, airy room, when, to my surprise, I found, upon crating it, that this first honey had kept perfectly, while the later honey stored in the old room was as watery as ever. This gave me the clew to the whole matter; so, when I built my present honey room I located it in the southwest corner of the building I call "my shop," and painted the south and west sides a dark color to absorb the heat of the midday and afternoon sun. On two sides of this room I fixed platforms for the honey, as has been illustrated in one of the back volumes of *Gleanings*. The sections were so piled on these platforms that the air could circulate all through the whole pile, even if it reached

the top of the room. During the afternoons of August and September the temperature of the room would often be raised to nearly or quite 100 degrees, which would warm the pile of honey to nearly that degree of heat; and as this large body of honey once heated retained the heat for some length of time, the temperature of the room would often be from eighty to ninety degrees in the morning after a warm day, when it was as low as from forty to sixty degrees outside at six o'clock a. m. By this means the honey was being ripened each day, and that in the unsealed cells became thicker and thicker, when, by September 15 or 20, or after being in the room from four to seven weeks, the sections could be tipped over, or handled in any way desired, without any honey running from even the unsealed cells that might happen to be around the outside of the section. By having the door and window open on hot, windy days, the air was caused to circulate freely through the pile, when I found it took less time to thoroughly ripen the honey than it did where all was kept closed. In doing this, of course it is necessary to provide screens, so as to keep flies and bees out of the honey room. If I wish to keep honey so late in the fall that the rays of the sun fail to keep the room sufficiently hot, or should I desire to keep it into the winter, or at any time when the temperature of the room falls below seventy degrees while the honey is in the room, I build a fire in the room, or use an oil stove to heat it up to the proper temperature of from ninety to one hundred degrees. In this way honey can be kept perfectly for an indefinite period, and can always be put upon the market in the very best condition.

Having once obtained our honey, it seems very foolish to me to neglect it so that it deteriorates to the condition of a second or third class article. We should all strive, not only to see how large a quantity we can produce, but also to have it of good quality, keep it looking well at all times, and put it upon the market in enticing shape.

G. M. DOOLITTLE.

BORODINO, N. Y., NOV. 4.

[Doolittle's advice is sound, and we especially commend the point he makes, that, after having secured a good crop, we do not want to spoil it all by a piece of ignorance or foolishness.]

Cardinal Points in Bee Keeping.

Some one sent a query to the *A. B. J.* asking "What are the five cardinal points in bee keeping?" Some of the replies are excellent. For instance, Mr. Heddon says:

"1. Select a good field, and keep it all to yourself. 2. Get bees enough to stock it. 3. Keep them in hives that can be handled rapidly. 4. Ripen honey, put up in attractive form. 5. Watch the market, and hustle around and sell honey at the right time, and at the right place. Some will give us the old chestnut, keep your colonies strong. Any one knows enough for that."

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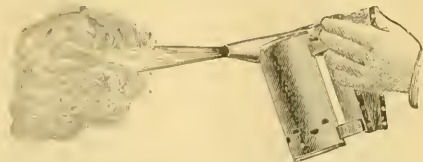
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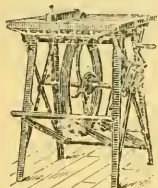
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Mar.,	Which are the Best Bees.
Apr.,	Contraction of the Brood Nest.
May,	Increase, its Management and Control.
June,	Shade for Bees.
July,	The Influence of Queens upon Success.
Aug.,	Migratory Bee-Keeping.
Sep.,	Out-Door Wintering of Bees.
Oct.,	Bee Conventions and Associations.
Nov.,	Specialty Versus Mixed Bee-Keeping.
Dec.,	What best combines with Bee-Keeping.

VOLUME III.—1890.

Jan.,	Brace Combs and their Prevention.
Feb.,	Foul Brood.
Mar.,	Queen Rearing and Shipping.
Apr.,	The Production of Comb Honey.
May,	Raising Good Extracted Honey.
June,	Apian Comforts and Conveniences.
July,	From the Hive to the Honey Market.
Aug.,	Marketing.
Sep.,	Management after a poor Season.
Oct.,	Out-Apiaries.
Nov.,	Apicultural Journalism.
Dec.,	Use and Abuse of Comb Foundation.

VOLUME IV.—1891.

Jan.,	Buildings for the Apiary.
Feb.,	Separators.
Mar.,	Protection for Single-Wall Hives.
Apr.,	Introducing Queens.
May,	Adulteration of Honey.
June,	" " " "
July,	Bee Escapes.
Aug.,	House Apiaries.
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