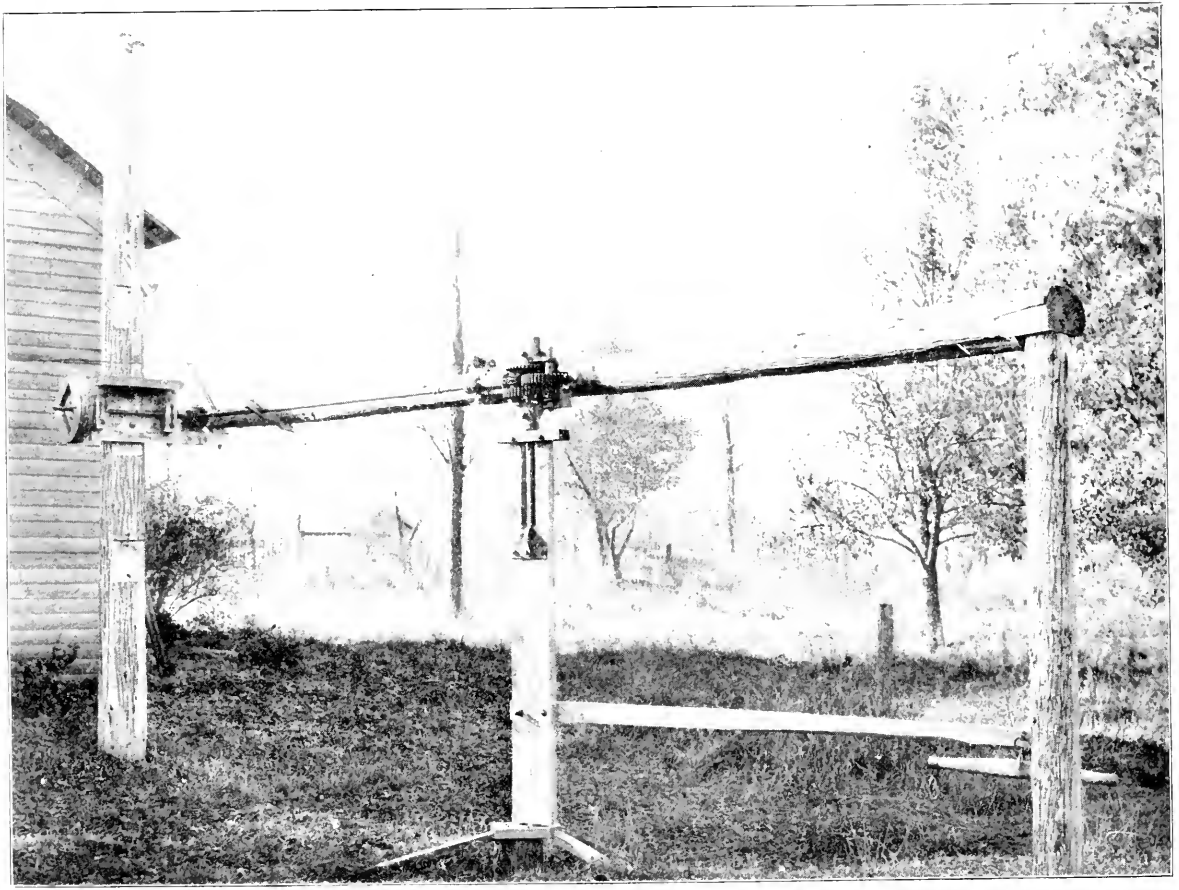
Farm for Sale.

I have three boys man-grown, and, for that reason, I wish to sell my farm and go into Northern Michigan where wild land is cheap, that we may all secure farms near together. The farm that I wish to sell is located eight miles east of Vassar, Tuscola County, Michigan. It consists of 40 acres, 30 of which are cleared. It is well-fenced and well-drained. There is a small orchard, stables for the horses and cows, and a small story and a half house. The soil is a dark sandy loam, and can't be beaten for raising potatoes, corn, hay, buckwheat,, etc. There is rural mail delivery, school ¼ of a mile distant, and railroad station only two miles away. The location is a good one for honey. From twenty colonies, last year, I secured 120 pounds of extracted honey per colony. I offer this farm for only $600; two-thirds down, and bal. on long time if desired. Would accept bees in part payment if they were not too far away. For further particulars address,

ELMER HUTCHINSON,
Vassar, Mich.

Reference, Editor of Review.



A Home-Made Horse-Power for Hive-Making.

~~APIOMOLOGY~~

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, JAN. 15, 1906. NO. 1

A Home-Made Horse-Power for Hive-Making.

H. L. HUTCHINSON.

IT was easier for me to make this horse-power than it will be to describe it; and if I had known that "W. Z." would ever have come prowling around here with his camera, I could have made a nicer frame for it.

The posts are 20 feet apart, and set into the ground four feet. The cross-beam is seven feet above the ground, so that the horse can walk under it. The middle, or revolving post, is made of a 2 x 10, second-growth, oak plank. It must be strong and tough to stand the strain. There is a round tenon on the bottom end, with an iron band driven on tight, and it rests on an iron plate, so that the constant turning will not wear down into the block and allow the gearing to sag out of line.

The sweep is 7½ feet from the center to the eye-bolt, and the lead-pole does not show in the picture. Two sweeps and two horses could be used.

The gearing is part of an old mower with the axle in a perpendicular position. A large part of the main frame is cut off as it would be a useless weight. The axle was taken out, and a blacksmith split the right hand end and made it like a big clevis, then it was put back in the gearing box from the *left hand* side so the long end would hang down.

The weight of the gearing and box *must* rest on the top of the plank post. The axle supports nothing but it's own weight, so there will be no friction, or bearing down, on the gear-wheels. I spent hours planning and measuring to get this adjusted *just right* so that it would run free and easy. The *beam* does *not* support the weight of the gearing; it simply *holds it up in place.*

The *tall* post is the mast for a wind mill that *can* be used to run the short shaft and belt-wheel, and the horse-power will be thrown out of gear when the wind mill is used. I intend to use the horse-power for sawing pole-wood, and the wind-mill for pumping water or running small machinery in the shop. The long shaft makes 30 revolutions to one round of the horse, and the

belt-wheel makes 52, or about 240 per minute.

If anyone wishes to make just a horse power alone, I would advise two short posts with no bevel-gear like mine; simply let the long shaft extend out past the post long enough to put on a belt wheel, then use a *larger* wheel to get the speed on the saw, and run the belt under two idler pulleys down near the ground so it would not be above the saw-table in the way for making bee-hives.

If I were making it just to run a buzz-saw, I should make it in this way; but I made mine to saw wood, shell corn, grind feed, pump water or do any such work.

To steady the beam in the middle, there are two guy wires fastened to trees, but a post could be set 10 feet away, opposite the middle and a guy pole run from it to the beam.

A short block is set in the ground, half way between the posts, with a short oak plank spiked on top, firmly braced, with a hole in the plank, but not in the block, and an iron plate is fastened in right under this hole. There is an iron plate on each side of the plank where the clevis joins it.

The materials did not cost very much for they are all parts of old machines, and my time was odd hours when I had no other work; it is amusement or recreation, for me to rig up machinery.

Do not expect or try to do *heavy* work with a small power like this—it is not a ten horse-power engine.

The gearing was taken from a Deering mower, but other mowers have the same kind of gearing and can be used just as well. The bevel gear is out of a Deering binder, so if I ever break any gear wheels I can get duplicate parts in Mayville at the Deering agency.

Now I wish some one would tell me how to fix it so I can use the wind-mill and horse-power both at the same time, and thus get double-power—some sort of a spring-clutch that will slip when the wind blows hard.

MAYVILLE, Mich., Dec. 14, 1905.

Controlling the Increase of 1,000 Colonies.

M. A. GILL.

EDITOR REVIEW:—I have carefully read your article in the November Review, upon the Control of Increase, and I wish to say that it is such articles as that, coming in an editorial way, that make bee journals worth reading; and, if you will continue to write good, long, sensible editorials, upon live subjects, and throw into the waste basket the dry, old reports of year-old-bee-conventions, together with the tweedle twaddle writings of would-be inventors, then you will have the best journal published—if you haven't got it now.

THE LANGSTROTH HIVE STILL AT THE HEAD.

Really, there has been no hive invented, that interests the practical bee-keeper who is putting large quantities of honey upon the market, since the invention of Langstroth; nothing in foundation and sections since Root first put them out. And in the control of increase we are just beginning to

carry out the plans and rules, laid down by Langstroth and Quinby, in their masterful works, written fifty years ago!

In the matter of controlling increase, no plan that requires any subsequent manipulation, or fussing, is practical, and that is why I prefer to practice shook-swarming.

I have eleven apiaries, averaging a little over 100 colonies each, and it requires a little over one hundred miles of travel, each week, to visit them all; hence, it is possible to see them only once every six days, and the Stachelhausen plan of giving brood for a day or so, and then taking it away, is not possible; and, in my locality, it would not be *best*.

I will not attempt in this article to give my plans through the whole swarming season, with the whole string of apiaries, for, in some apiaries, where there is a prospect for a good late flow, I prefer to shake a *whole yard at once*, making, perhaps, from 75 to 100 per cent. of increase, thus bringing swarming to an end early in the season.

To illustrate the plans we follow, I will first say that I aim to see how *little* work I can do in early spring instead of how *much*.

THE INFLUENCE OF FALL AND SPRING MANAGEMENT.

The previous autumn, I see to it that each colony has a vigorous queen, plenty of bees and honey; and, if not full of honey, I feed sugar syrup until it is *full*; then, when March comes, I let them alone, and when April comes, I let them alone; and when May comes I let them alone; until at least the 20th of the month. Any eight-frame hive well provisioned the fall before will have ample stores until this time. Now, if Nature is not meeting the needs of the bees begin to feed, and keep it up until the flow commences; many bee-keepers *commence* feeding too soon, and *quit* too soon.

Don't practice spreading brood before June 1st. It don't pay.

Now, June 1st, or earlier in the season, if conditions require, go over every colony in the apiary, and note the condition, and draw from the strongest and give to the weakest. You have now established a date.

The season is now on when we may expect swarming; and, as I intend to hold the swarming down to the minimum, I examine every colony every six days. I say six days, because that is just the right time; four or five days is too soon for conditions to sufficiently develop, and seven or eight days is too long, and some colonies will have started cell cups and developed their young queens sufficiently to have swarmed by the eighth day.

HOW TO DISCOURAGE AND DIMINISH SWARMING.

The second examination is a very important time; some colonies are preparing to swarm, but none are shaken as long as there are weak colonies that will take one or more frames of brood; and, besides, a large per cent. of the colonies from which brood is drawn will not again offer to swarm if work now begins in the super. All colonies that have queen cells or queen cups should be deprived of such cells.

Now comes the third visit, and a large per cent. of the colonies from which cells were removed on the last visit will be found to have given up swarming, if work has begun in the supers; and it is wise to anticipate their needs and give too much room, rather than not enough, at this season of the year.

WHEN THE TIME COMES TO "SHAKE."

After having discouraged many colonies from swarming, on the two previous visits, by drawing brood and cutting out cells, we will find quite a per cent. that are still determined to swarm; and now is the time to use thoroughness and judgment—and don't

mistake supeseding for swarming, [tell us how to avoid this mistake—ED. REVIEW] because if you shake such a colony, it is sure to swarm again, and you will condemn the plan and say it does not prevent swarming.

Don't shake *any* colonies where the per cent. of hatching brood is not in the right proportion to the eggs and larvae; remember that many colonies swarm *naturally* when they *ought not to*, and this is where many lose so much brood that they condemn the system. It is possible to have a hive full of brood in which there will be very few *hatching bees* for the next 12 to 24 hours. Better cut out all cells and cups in such colonies, and defer shaking until the next visit.

All colonies that are *determined* to swarm, and in *condition*, are now shaken into a new hive provided with starters (which I much prefer to full combs when working for comb honey) and placed on the old stand. I hang in one comb, taking care to remove any queen cells that might be on it, and choosing one with brood in all stages, and with all its honey sealed, so there will be no bulging of combs during comb building. I give this one comb, not that I prefer to, but to establish a brood nest below, as comb building is well under way in the super, and the queen might commence laying above.

Now this young swarm is in perfect condition for comb honey, and for comb building, as it has *all* the wax workers and honey gatherers of the old colony; and it won't swarm, in fact, it cannot leave the yard, as the queen is clipped, and we need not remove the brood at any other time, simply forget it, but just notice what splendid work it has done by the next visit!

WHAT TO DO WITH THE BROOD.

Now carry the brood to a new stand, and shake another swarm the same as before, and carry the brood and place it on top of the other brood, not as one colony, but as two, and allow no queen to develop in the top hive, and in 20 days shake the bees from the top hive in with the lower one. These twelve to fifteen combs of brood will also make a colony that will give a good account of itself through July and August.

FIVE VISITS SUFFICIENT DURING SWARMING-TIME.

I find it necessary in my locality to make at least five visits in order to cover the swarming period. I do not claim that this does not take work and lots of it, but three of us find it possible to travel one hundred miles each week and control the swarming in 1000 colonies, and I have not lost two per cent. from swarming-out from old colonies, nor absconding from shook-swarms, in the past five years.

Of course, this plan is possible with so many bees only in a climate like this.

I find by following this plan, that I have from 10 to 15 per cent. increase, or a little more than enough to make up winter losses. Again, all colonies are strong, and I don't come up to the close of the season with a lot of weak colonies. Then, too, every colony that is in condition to make surplus honey has a laying queen, and that is a decided advantage over the dequeening plan; as any one who practices dequeening while working for comb honey, *must* be satisfied with less honey, for no colony worked for comb honey will do the work that a colony will that always has a laying queen.

HURRAH FOR THE HOFFMAN FRAME!

And now, before I close this article friend Hutchinson, I am going to give you a rub; don't get mad, for *I* ain't, and I want to say that the only way I can accomplish so much bee work is by having uniformity of fixtures and Hoffman frames, and I defy you or any one else, to come along side of me and go through as many colonies, and handle as many combs, as I do, with

any kind of loose, hanging, or finger-spaced frames, if you will agree to keep your combs as nice and straight, as I do mine; and now I know I will shock you and a few others when I say that the more propolis I have, the more I want Hoffman frames with short rests.

Was it Dr. Miller that said, "what queer critters we mortals be?"

LONGMONT, Colo., Nov. 12, 1905.

Prepare for the Coming Season Right Now.

H. SMITH.

THE honey season over, the bees put into their snug winter quarters, and the most of the season's crop disposed of, and we, as thorough bee-keepers, turn our attention to making preparations for the coming season.

If we have fifty or more colonies, and if we have anything else to take some our attention and time during the winter, *now*, is none too soon to commence preparing the numberless things required in the apiary during the busy time.

Possibly, the man who buys all his hives and fixtures need not get such a rush on. He gets all his material ready to put together, which is not a very long operation. But the foundation is to be put into frames and sections, hives painted, and numberless other things to be done, which if not attended to in spare time, will find him full of regrets in the busy season, when the air is full of honey and swarms.

But the man who intends making his own hives and appliances is the fellow who *must* get to work *now*. That lumber must be brought from the mill, and if he gets it in the rough, it has to be dressed, which is a very long operation, unless he has a planer run by power. In cutting out hives, if he has a circular saw, I would advise setting the gauge and cutting out first what ends for hives he will require; then reset the gauge and cut out all the sides. By doing this, everything will be exact and the hives all one size.

MAKING HOFFMAN FRAMES WITH A HOME-MADE RIG.

I believe those who use Hoffman frames, even though they make their own supplies, depend on the supply dealer for these frames. But I find I can make them cheaper than I can buy them. I select stuff the same thickness as a Hoffman end bar is wide at the widest part, and saw it into blocks the length of an end-bar. By running these blocks over a saw I trim them up, so that when ripped into slats they are perfect Hoffman end-bars. I put a washer on each side of the saw so as to make it wabble, and this cuts the notch on the top of the end-bar, and forms the self-spacer.

I also make my own fence-separators, using a grooved board to tack them together. Four grooves run crosswise of the board to hold four posts, and four other grooves run lengthwise to hold the slats. These grooves are made deep enough to allow the second lot of posts to be laid upon the slats and be just level with the top of the board.

If a person has invested money in a circular saw and power to cut out hives, I believe it will pay him to make

everything about a hive and super, except the sections and foundation.

I am a believer in specialty bee-keeping, and I think a man to be a bee-keeper, should keep bees enough to pay him to get the necessary machinery and employ his time in the winter getting ready for business next season.

THE COST OF SUPPLIES TOO GREAT.

I get 10c for for my extracted honey, and from 12½c to 15c for my comb, but I could not stay in the bee business if I had to buy my supplies from the supply-dealers. I don't say they charge too much from *their* point of view, because I know labor, material, taxes, rent, and all other expenses make the prices what they are, but the bee-keeper experiences some of those expenses, and honey does not sell for one price the year round, as does a bee-hive. The bee-keeper must take what he can get for his product.

PALERMO, Ont., Dec. 12, 1905.

Simple, Easy and Philosophical Wax-Rendering.

A. C. MILLER.

AT the editor's request, I present to the readers of the Review a description of a new wax extractor, one embodying some principles not before used for the purpose, and which, together with a scientific development of the under-water plan of wax recovery, has produced a machine which is winning high praise.

To properly understand the reasons for the design of this extractor, it is necessary to consider the peculiarities of the substance it is to handle. Old comb consists of a series of tubes composed of successive layers of silken cocoons, propolis, pollen grains, dirt, etc. Many of these tubes are more or less filled with pollen. Around about these tubes is a thin layer of wax, the original comb. In the tough rubber-like substance of exceedingly old combs, particularly along the lower part, wax is mixed in with the layers of cocoons, etc. When we proceed to melt these combs, the instant the wax becomes fluid, it soaks into the cocoons, etc., which may be likened to a sponge. It is known to be impossible to press all the moisture even from a sponge, and to squeeze it from such material as I have described is manifestly even more difficult, and the greater the mass, the larger the per cent. of wax retained.

A REASONABLE WAY OF GETTING OUT THE WAX.

Evidently the rational course to pursue in treating such a substance is to break down and disintegrate these tubes, reduce their fibres to as small bits as possible, and subject these fine particles to individual pressure. The new machine does just these things. It consists of two cans, one within the other. The outer can has a conical cover bearing a tube leading from the apex of the cone for the escape of wax, and a funnel for the introduction of water. Through the apex of the cone projects a shaft, which actuates the inner mechanism. Near the bottom of this can is a gate for drawing off the water. The conical cover fastens to the can and seals with a gasket.

The inner can reaches nearly to the upper edge of the outer can, is about one inch less in diameter, has a perforated bottom, and a removable perforated top. It contains one-half of the grinding or disintegrating surfaces; the other half is attached to shaft before referred to. These disin-

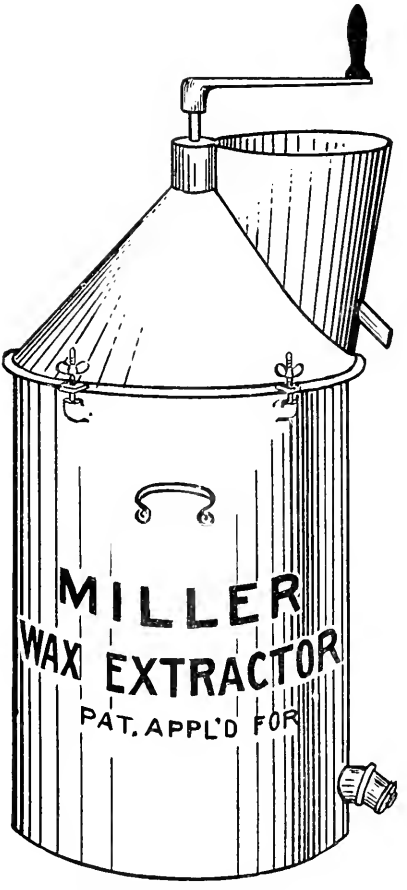
tegrators are so designed that they simultaneously grind, agitate and press in a thin film the ground comb. This is all done under hot water, and the escaping wax rises and flows out through the cone.

SIMPLICITY OF THE OPERATION.

The operation is simple in the extreme, and is decidedly rapid. The method is as follows: The outer and inner covers removed, the can is filled half to two-thirds full of boiling water, and comb is put into the inner can until the molten mass is level with the top of this can. The inner cover is then put in place; next the outer cover is fastened on, a crank set on the shaft, a receptacle placed to catch the wax, and boiling water poured in through the funnel until wax begins to flow from the escape tube. Then the shaft is rotated slowly and from time to time a little more water added. As the water goes in, the wax comes out. It is not even necessary to use the machine on a stove, it working perfectly from the heat of the contained and added water. It does not require much of the latter, for the can once filled, only a few quarts are needed to displace all the wax. If one has the convenience of a hot water boiler connected with the stove, a small stream may may be allowed to flow slowly into the extractor.

When all the wax is extracted, which may be told by holding a dish of cold water under the escaped pipe, the inflow of the water is stopped. Enough water is drawn from the gate to bring the inner level below the top of the can, the covers are removed, and the inner can lifted out and its contents dumped, when it is returned to its place and the process repeated. The water left in the can is plenty hot enough to begin the next batch. If the machine is used in a cold room or out of doors, it is well to wrap it in cloth or paper to conserve the heat.

The escaping wax carries with it more or less fine dirt, most of which may be strained out by letting the wax flow through a cloth as it passes into the receptacle placed for it, and all



will settle out if the wax cools very slowly.

Patents have been applied for and the machine is now being put out by the W. T. Falconer Mfg. Co. of Jamestown, N. Y. The mere fact that this firm recommends it is a gurantee of its merits. It sells for $8.00, and as it recovers all the wax from even the toughest old combs, it is well worth having, and will quickly pay for itself in increased wax production.

PROVIDENCE, R. I., Dec. 6, 1905.

Editorial

It's Alive. "When I think of the Review I think of it as being *alive*." So writes one of my subscribers, and, to me, it seems about the highest compliment that has ever been paid to the Review.

The Specialist who establishes out-apiaries ought not to establish them *permanently*, but be ready to get up and get out at any time, to a more favorable locality, so said Mr. R. F. Holtermann at the Chicago convention.

"Don't Handle on two-wheel trucks," is what S. A. Niver puts in big letters on the top of his shipping crates of comb honey. Combs are broken by bumping them along in the slanting position that they are placed in when wheeled upon a two-wheel truck.

The Wisconsin State Bee Keepers' Association will meet in Annual Convention, at the Capitol City of Madison, February 6 and 7.

An interesting program is being prepared; several bee-keepers of prominence preparing papers, on subjects of special or general interest, which will be discussed.

The Question Box will however be the main feature.

1⅓ rate round trip, on all Wisconsin railroads.

Gus. Dittmer,
Secretary.

Gleanings for Dec. 15th, in its holiday issue, was really the equal of the popular magazines of the day. The American Bee-Keeper sparkles in a way that it never did before. The Rural Bee-Keeper is fresh, clean and progressive. In short, the apicultural journals are a credit to the class that they represent.

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

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

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

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

Some mornings, as I go down town, I see some of our fire department teams out for exercise. How the horses do prance, and arch their necks! They are so full of vim and vitality, that is only with difficulty that the driver keeps them under control. I feel just like those horses regarding my work of building up a series of out-apiaries.

Queen Breeders' Catalogue.

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

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

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

Respectfully yours, E. F. Phillips,
Acting in Charge of Apiculture.
Washington, D. C.

Improvement of Stock.

This is something that has been sadly neglected by the average bee-keeper, yes, and by most of the specialists, and at the same time, there are few things that could be followed at greater profit. Many bee-keepers buy a few queens of this man, and then a few of that, and so on. No permanent improvement will ever be brought about by such a course. Mr. F. B. Simpson, of Cuba, N. Y., who has made a life-study of the laws of breeding, told us this years ago, in the Review. He said we must select the best we can secure, and then, by continued selection, improve the stock that we have. The introduction of new blood might undo the work of years.

Prof. E. F. Phillips, who is now at the head of the apicultural department at Washington, told us practically the same thing at the Chicago convention. He said choose a pure variety, like the Italian, for instance, get the best specimens to breed from, and then by continued selection, both on the queen side and that of the drone, breed only from the best, and let the desirability of the stock be determined by the *scales* — by the amounts of honey produced.

He mentioned two bee-keepers in the northern part of New York. One had 98 colonies, and the other had 200. The one with 98 colonies had tried for years to improve his stock by selection and in-breeding. The one with 200 colonies was continually buying queens from all over the United States. Last year these two bee-keepers, who live only two miles apart, and have practically the same pasture, had *the same amount of honey in the aggregate.*

When the professor was telling of this I could not help thinking of our

good friend J. P. Moore, whose stock I sold for several years under the name of Superior Stock. For more than 20 years he had been breeding the same stock with no introduction of fresh blood, steadily working away, by selection, until he now has what is probably as good stock as there is in this country—perhaps the best.

Specialty in Bee-Keeping.

At the Chicago convention, Mr. E. D. Townsend had a paper entitled "How Many Bees Shall a Man Keep?" Among other things he advised the scattering of out-apiaries, so as not to be dependent upon a single source for the honey. Let one apiary be in a clover region, another in the raspberry region, and another where a crop might be expected from buckwheat, etc. By this management a man is almost certain of a crop from some source, each year. He then showed how such apiaries might be managed, even though 50 or 100 miles from home, by visiting them at stated intervals. I was just a trifle amused by the comments of one speaker. He said that, of course, Mr. Townsend could manage bees in that manner, as *he had nothing else to do*, but *he* (the speaker) had been obliged to give up out-apiaries because they interfered with the other irons that he had in the fire. That is the very point; the one upon which I have been hammering away for years. If you are going to be a bee-keeper, and wish for the highest success, then drop these other hampering pursuits. Mr. Townsend wrote me, not long ago, that he had sold $1,800 worth of honey this year. I presume that a few bee-keepers have done better than this, and I also doubt if many that mix farming, and gardening, or poultry, with bees, have done any better, while Mr. Townsend has avoided all of those annoyances that come from having several interests all calling for attention at the same time. As a writer says in a recent number of Success: "No man ever rises above mediocrity until he rids himself of conflicting ambitions."

Michigan State, Bee-Keepers' Convention.

Michigan State bee-keepers will hold their annual convention Feb. 1st and 2nd in the parlors of the Blackman hotel at Jackson. The Michigan Dairymen will hold their annual convention at the same time in Jackson, and the holding of two conventions at the same time secures sufficient attendance to allow the railroads to give reduced rates—one and one-third fare, providing that your fare going to Jackson amounts to as much as 75 cents. When buying your ticket ask for a certificate on account of the Michigan State Dairymen's convention, and, when the Secretary of that Association signs your certificate you can buy a return ticket for one-third fare.

SOME WHO WILL BE PRESENT.

The following bee-keepers have promised to be present:—

E. R. Root, Medina, Ohio.
Geo. W. York, Chicago, Ills.
R. F. Holtermann, Brantford, Ont., Canada.
A. G. Woodman, Grand Rapids.
W. Z. Hutchinson, Flint.
E. D. Townsend, Remus.
W. J. Manley, Sandusky
C. A. Huff, Clayton.
Edward Willson, Whittemore.
Clyde English, Manchester.
A. H. Guernsey, Ionia.
Floyd Markham, Ypsilanti.
W. D. Soper, Jackson.
Jay North, North Adams.
A. E. Wurster, Ann Arbor.
O. H. Townsend, Otsego.
L. A. Aspinwall, Jackson.
G. A. Bleech, Jerome.
Clyde Cady, Grass Lake.
A. D. D. Wood, Lansing.

TOPICS THAT WILL BE DISCUSSED.

Management of Out-Apiaries.
The Control of Increase.

Use of a Queen Excluder in Producing Extracted Honey.

Is Foreign Honey Affecting the Prices of Our Honey?

What Section is the Best?

What is the Best Way of Ripening Honey?

What Kind of Bees are the Best?

Do we Need More Inspectors in Michigan?

Shipping Cases for Comb Honey.

Selling Honey at Retail.

Grading and Shipping Comb Honey.

How to Take Different Kinds of Extracted Honey Separate, and yet Have the Honey Well-Ripened.

Best Methods of Making Increase.

Best Temperature for a Bee-Cellar.

Upward Ventilation Versus None.

Wintering of Bees in the Cellar.

Can Bees Have Diarrhoea when pollen is kept out of their reach?

Producing Both Comb and Extracted Honey in the Same Super.

Advertising the More General Use of Honey.

Does It Pay to Buy Queens at Fancy Prices to Improve Our Stock?

PRIZES THAT ARE OFFERED.

For the best 12 pounds of Comb Honey the A. I. Root Co. offers $5.00 worth of Supplies at Catalog Prices.

For the best ten pounds of Extracted Honey, the G. B. Lewis Co. offers $5.00 worth of Supplies at Catalog Prices.

For the best ten pounds of bees wax, A. G. Woodman Co. offers $2.50 worth of Supplies at Catalog Prices.

For the most practical new invention, M. H. Hunt & Son offer $2.50 worth of Supplies at Catalog Prices.

For the best pound section of Honey, W. D. Soper offers a copy of the new Edition of Advanced Bee Culture.

In addition to the above the Bee-Keepers' Review will give a year's subscription to the Review to each person who wins one or more of the above prizes.

Geo. W. York & Co. will give a year's subscription to the American Bee Journal to each person who wins one or more of the above prizes.

The first session of the convention will be held at 1:30 p. m., Thursday, February 1st.

E. M. Hunt, Acting Secretary.

The Chicago Convention.

The Chicago convention has come and gone. Taken all in all it was a pleasant, peaceable, profitable gathering. From my point of view, the greatest criticism that can be brought against it is, that the program was a little too full, thus cutting short the question box department. After I had it all arranged with one paper for each evening session, and two for each day session, other matter came up for consideration, and it was hard to say nay. I don't believe in doing away with papers entirely, but I do think that one paper for an evening session, and two for the forenoon and the same for the afternoon, are sufficient; then let the rest of the time be devoted to the question box. There were several very important questions that had been sent to me by mail, and to the discussion of which the convention might have profitably devoted quite a little time, but the time spent upon the regular program was so great that the question box received scant attention. It was not reached until the last evening, and when it was seen how many questions there were to be answered, it was voted that only *two* answers should be given to each question, which proved to be only a farce few questions can be properly and satisfactorily discussed by two persons speaking only once each in an audience of 150 to 200 persons. I feel the more free to criticise this point, as I am the man who made up the program. Well, I'll know better next time.

One very enjoyable episode was the presentation of two gavels, one to the National and one to the Northwestern,

made from wood taken from the limb of a tree that Father Langstroth had planted years ago in his garden in Oxford, Ohio.

Quite a little time was spent, I had almost said *wasted*, in discussing proposed amendments to the constitution. As a rule, the rank and file have given very little thought to these matters, and I really believe that a convention could talk all day about a proposed amendment, and, as Ernest Root expresses it, "be almost where they started from." Proposed amendments might better be referred to a committee chosen carefully by the chair.

Another thing, as in nearly all conventions, some men will talk too much, and others won't talk enough, or not at all. Some men feel called upon to speak upon every question that comes up, and, sometimes speak several times upon the same topic. If what they said was alway of importance, it would not matter so much, but, many times it is trivial in character, and has scarcely any bearing upon the question under discussion. It is very difficult for the chairman to control such speakers. He can't tell a man that what he is saying is of no value and he better keep still and listen. So many don't seem to realize the difference between a friendly chat sitting on the woodpile, and speaking before a convention where the time is worth dollars and dollars each hour. I don't wish to discourage any one from speaking at a convention, but I do say to every one, consider well, before you speak, if what you are going to say is worth while.

Many points of importance were brought out, but, as they will all appear in the forthcoming report, I won't forestall them by publishing them here. We are working on the report, printing it here at the office of the Review. We are working hard to get it out as soon as possible, and the next Review may be a little later than usual because of the work that we will be putting upon the report. If you wish to read all that was said and done at the convention, send $1.00 to the General Manager, N. E. France, Platteville, Wis., and that will make you a member for a year, and entitle you to a copy of the report as soon as it is out.

Some Comments and Suggestions Regarding the Future Review-Apiary.

Some of my readers have been kind enough to write and make suggestions regarding the plans that I outlined last month for the future management of the Review-Apiary. Here are a few of the letters:

"I think if you don't use queen excluders, you will have no swarms—if you do use them, you'll have swarms a-plenty. Geo. A. Hummer, Miss.

FIVE VISITS A YEAR DOES THE WORK.

MILLEDGEVILLE, Ill., Jan. 3, 1906.

Friend H. I enjoy the Review. In the December number I admire your enthusiasm in your new apiary desires, and wish you success. In a recent issue the articles by Frank Coverdale and Mr. Olmstead are worth the price of Review.

In regard to using excluders between first and second stories, I would say that in my out-yards, where working for extracted honey, I give the queen both stories to lay in, until the surplus flow is about at hand. I have no swarming, as the queen's generous laying from four to six weeks seems to be her most prolific time, and, after this, she has little desire for more than the regular brood chamber room. The excluders are put in just before the main flow comes, with the queen below, of course.

Five visits a year does my work in full; but I have some one to look after the bees to see that all is safe or not disturbed. I use 10-frame hives.

Kind regards,
F. A. Snell.

FOR FEAR THE BEES WOULD SWARM, HE WOULD "SHAKE THEM."

INGLEWOOD, Ont., Can., Dec. 28, '05.

Dear Mr Hutchinson—

I am greatly interested in your plans as outlined in the last Review, because,

on looking ahead, I can see that conditions here, may be such that I shall have to adopt a similar plan.

As you ask for criticisms, I shall take the liberty of referring to what I think is one weak point, namely, that third visit "when the flow has been on *two or three weeks.*" Yes, verily, you will find that some colonies have far outstripped others, and for the simple reason—assuming that your bees are anything near like mine—that a large proportion have taken the swarming fever, swarmed and returned two or three times, the queen has been lost or killed, and a young queen has hatched and they have swarmed and taken to the woods. But, even if you arrive before any swarms have gone, nearly two weeks have been practically lost by those preparing to swarm, whereas if you had been on hand to shake them upon six empty combs, or wired foundation or starters, they would have gone right to work and but little time would have been lost—or do as I did last summer with pre-eminent success, cut out all cells and replace the super.

You ask "Shall I use queen excluders?" Yes, by all means, if conditions there are the same as here. There is *foul brood* in this neighborhood and *a few cells in my own yard*, therefore, no queen must get above in the supers. But, even if there were no foul brood, I should not want my beautiful white super-combs which have been built from full sheets of foundation in wired frames, marred by the presence of the queen.

I am anxious, however, that the plan which you have outlined shall prove a success, for, in that case, I shall want *your breed of bees*, and shall wish as far as possible to adopt every detail of your management.

I greatly admire your *courage* in thus starting out again so extensively in the bee business, *with the weight of the "Review" on your shoulders*, but as for your *judgment*—well, we shall see.

Wishing you a happy New Year I am

Yours very truly,

Alpine McGregor.

Friend McGregor, I expect that there will occasionally a swarm abscond where the apiary is left entirely alone most of the time, but, if I have half a dozen apiaries, and lose a few swarms from each, I will make more money than I would with only one apiary from which I lost no swarms because I watched it constantly. I know some will say that the swarms lost at each yard would pay for a man's wages during the swarming season. I don't believe it, if the management is what it ought to be, but I expect to have more positive knowledge on this very important point.

OUT-APIARIES VERSUS LARGE COLONIES AND ONE LARGE APIARY.

BIRNAMWOOD, Wis., Dec. 26, 1905.

My Dear Mr. Hutchinson—

I see by the last Review that you are still enthusiastic over the subject of out-apiaries, and I hope that you will be able to meet in some degree your golden anticipations. My own experiences in 1904 was disappointing, for if I had left all the bees in one yard, I should have gotten a larger crop at much less cost. Out-apiaries figure out beautifully on paper, *but in this locality*, the man who leaves swarming out of his calculations is going to get LEFT. Of course, the bees can be kept so light that they will not swarm—nor anything else that is of any consequence, but when the colonies are run on the high pressure plan—regular *John D. Rockefeller colonies*—it needs a man in charge who knows what to do—and does it at the right time in the right way. I shall watch your experiments with interest, for you have been so enthusiastic in this matter that I have been anxious to see you try the thing. One of the things that has been brought home to me with pile-driver force a good many times—both in bees and medicine—is the difference between theory and practice. I have naturally a very fecund imagination, and it has been easy for me to figure out a beautiful method of procedure, which, sometimes, has been an elaborate failure because of idiosyncracy—that is the word we medical men use to disguise our ignorance of the cause of particular conditions.

Here is an apicultural problem for you: If it takes E. W. Alexander, his son Frank, and two other expert assistants—the quartette being kept on the jump the whole of the time—to handle one apiary of 750 colonies, (see Gleanings, last issue, p. 1321), how many out-apiaries can one man handle suc-

cessfully, if he has time to visit them but five times a year?"

I have given my bee-business a start in a new direction. I am going to keep more bees in one hive—and as many bees in one yard as the location will warrant; hen, if I want to branch out, build up strong yards in various localities, keeping an assistant in the yards constantly during the honey season, with expert supervision over the whole work. In my opinion, this is the only thing that will be successful in this locality. I think I can profitably keep 250 colonies in my home yard, giving personal attention to the condition of each colony so to be certain that all are in good condition for the honey-flow. In this way I expect to get satisfactory returns for my capital and labor.

Now that I am practicing medicine, I shall not be able to give quite so much brawn to the business, though I still expect to invest the brain. I have a good man to help me, and I think I can better afford to give a good part of my time to my profession, especially as there is one-half the year in which there is not so very urgent business among the bees.

The present status of my bee-business is about as follows: 130 extra strong and heavy colonies in the cellar, very quiet and in the best condition of any bees I ever had; supplies enough for the next two years—all paid for; a first-class assistant; a fairly good location; a disposition to have the best 250-colony apiary in the world, with as many more colonies as the locality will profitably maintain.

GETTING AS MUCH COMB AS EXTRACTED HONEY PER COLONY.

One thing to which I am going to give special attention in the future is the sale of honey. My scheme does away with the middlemen, and places the product direct in the hands of the consumer. I have a good salesman who is desirous of handling my crop year after year. He makes about $5.00 per day and his expenses, while my honey brings me 10 cents per lb. for the extracted. While this seems pretty good, I question if it would not be better to produce comb-honey at the same price, retailing it direct to the consumer in 10 lb. boxes, taken direct from the hive, with no cleaning or crating. I can get as many pounds of comb honey per colony as I can extracted, and I am certain my bees are in much better shape. I am aware that this is different than the usual estimate in regard to the relative proportions of comb and extracted honey to be obtained; but this has been my experience in carefully conducted experiments extending over five years. I think I can produce these 10 lb. boxes for $1.00 each, as there is no work whatever in preparing them for market, except to tack on a thin cover and bottom. We can sell the boxes for $1.25 to the consumer, and there is no competition with the extracted honey men, and the honey is better, and the customers will stay right with you.

M. P. Cady, M. D.

My Wisconsin friend very wisely qualifies his conclusions with the phrase "in this locality;" and I may explain that for my guidance and encouragement, I have the years of experience of Mr. E. D. Townsend, of *this* State, who has all this time been working along this very line, and for the last two years, in the *very region* where I am to launch my enterprise.

EXTRACTED DEPARTMENT.

WARMING A BEE CELLAR.

How it May be Done in a Cold Snap.

It is best to have a cellar so far below ground as to be beyond the influence of frost, but, occasionally, there is a cellar that answers fairly well in ordinary weather, but in which the temperature is inclined to go too low in protracted cold spells. How to raise the temperature at such times is something of a problem. Last February I saw an item in the Rural New Yorker describing how a man kept his

potatoes from freezing by the use of charcoal. Perhaps the same plan might be used to warm up a bee-cellar. The only objection that I can think of is that possibly there might some gas escape as the result of the combustion of the charcoal. I confess my ignorance on this point, and would be glad if some of my readers would enlighten me on this point. Of course we don't wish to asphyxiate our bees, but, if there is no danger on this score, it seems to me that the burning of charcoal in a bee cellar would be practical. Here is what the Rural New Yorker said:—

One day during the severe winter of 1903-4, a farmer happened to be in a tin-shop, and noticed that the solder was kept in a molten state with a charcoal fire. His potato cellar was threatened with frost, and it was not convenient to set up a stove in it. He took home five bushes of charcoal, and placing a shovelful of live coals in an old iron pot, he filled it with charcoal. In a short time the kettle was alive with coals, and the iron was red hot. What a heat came from it, and no smoke! Frost had to stand back when confronted with a red-faced, hot-breathed thing like that. Each bushel of charcoal thus used saved many times its bulk of potatoes. I have seen open fires of dry pine kindled on a cellar bottom, but the soot-laden smoke will penetrate nearly every part of the house.

BEE-KEEPERS' SUPPLIES.

In What Way Bee-Keepers Can Secure Them at Lower Prices.

It is almost a law of Nature, it certainly is a law of business, that the man who buys in large quantities buys at a low price. There is also another truth to be considered in this connection, and that is, "In union there is strength." If bee-keepers would consider these two facts, and act accordingly, they might do much to reduce the cost of their supplies. But I won't steal the thunder out of Bro. Putnam's article, which I am copying entire, as it appears in the December issue of his paper, the Rural Bee-Keeper. I asked him to prepare a paper on this subject, and read it at the recent convention of the National. He did so, and then printed it in his paper, and I copy it from there. Mr. Putnam says:—

Fellow Bee-Keepers:

To me has been assigned the difficult task of discussing the question "In what way can bee-keepers secure their supplies at lower prices?"

Coming in contact, as I do, in my attempts to circulate my publication, the Rural Bee-Keeper, with many thousands of bee-keepers, I am amazed at the indifference displayed by the 99 out of 100 who are attempting to make a part of their living out of bee-keeping. It is variously estimated that from 400 to 700 thousand people in the United States are to some extent engaged in bee-keeping. Of that vast army scarcely 2000 can be coaxed, entreated or bribed to join a bee-keepers' association of any kind. I have heard your general manager talk for hours to a gathering of bee-keepers, detailing the benefits to be derived from organization, and had it not been for the determination of one or two who had originated the movement the organization could not have been effected.

The first step in the way of lower prices, then, in my opinion, is to awaken interest to induce the bee-keepers themselves to co-operate. But let us see. What are the conditions? We find that the catalogues read very much alike. Without sections and starters the $1\frac{1}{2}$ story 8-frame hive nailed and painted, $2.45; nailed only, $2.20; one in flat, $1.85; five in flat at $1.70; ten in flat at $1.55; 25 in flat at $1.45 each. The foregoing are supposed to be for retail amounts. The wholesale range is from 25 to 200 hives on a descending scale—50 hives at $1.35; 100 at $1.25; 200 at $1.15 each; and finally the carload price of $1.02 each.

Some dealers put a Chinese puzzle before their quotations, and if you are an adept at rebus deciphering you will make out that A. E. 5. 2. S. 8 describes the same articles as mentioned above. One dealer says, "What's the use of all these tables of complicated figures? I will make a flat rate, one hive $1.85, and give the customer a dis-

count of 25 to 40 per cent. according to the amount purchased."

THE "COMBINE" IS SIMPLY A COMBINE "ON PAPER."

Now there is a discount for early cash orders commencing with 10 per cent. in September and decreasing as the dull months pass by, until finally in March the net price is reached. Some dealers quote a scale of prices ten cents per hive lower than above quoted, beginning with one hive at $1.75 and ending with 92 cents as a carload price. These are printed prices and the wise bee-keeper knows that all he has to do to get a less price is to write to half a dozen dealers or manufacturers and tell them he will give his order to the lowest bidder, and he will get as many different quotations as he do s replies. How do I know? Only last month a reputable firm which turns out thirty to forty thousand dollars worth of bee hives and supplies a year and which publishes prices at the highest rates, named me a price of 85 cents per 8-frame 1½ story hive and $2.98 for No. 1 sections.

Only last year at our St. Louis meeting I was asked for prices by one of our leading members. I quoted him 92 cents for an 8-frame 1½ story hive, and had the sand completely taken out of me by his firm and positive assurance that my prices were away too high—that he could do very much better down home in New York State.

Where is the bee-hive trust? Where is the combination among manufacturers when such a state of affairs exists? Like that other ghost that haunts the path of the poor, deluded bee-keeper—the artificial comb honey lie—the trust does not exist, or exists only in the imagination of some demagogue who is bent on deception and fraud. Nevertheless, the vast army of bee-keepers are paying the long price for their supplies and receiv ng the short price for their honey; but they are the bee-keepers who do not take a bee journal and who do not belong to an organization of bee-keepers; they are the people who wait until the last moment, and rush to the nearest bee-keeper or dealer for a hive into which to hive the bees that swarmed before the bee-keeper thought of procuring a hive.

The vast amount of ignorance in connection with bee-keeping may be illustrated by the true story of the darky boy employed at a dairy, who came to me one September evening about twenty-five years ago with the news that "our bees didn't have anything else to do so they thought they would go to swarming—yes mister, they be hanging on a limb waitin' for dat hive now." Needless to say, he consented to pay $2.50 for a bee hive, which, by the way, he never did. And this brings me to an important part of my argument.

THE CREDIT SYSTEM.

The present credit system is responsible for a large part of the increase in price. When the elder Root established the mail order cash-with-the-order system of supplying this class of goods, it was a cash system. Today the middle man buys for credit—not thirty or sixty days, but long time. He will pay the manufacturer for the supplies when he has sold them. Allow me to quote from page 10 of Collateral on Merchandise Accounts under the heading of

PROTECTION OF PROFITS.

RISK IN CREDITS.

Profit is the ultimate object of all commercial enterprise, and a reliable conserver of profits is therefore of incalculable value to general business. As long as goods are sold on credit, the risk of loss through insolvency of customers is constantly impending. The gravity of this risk is appreciated when one considers how little a dispenser of mercantile credit positively knows about the actual financial condition of each of his customers and the inside facts of their business. And think of how many accounts are outstanding all the time, each involving risk of loss through the incompetence, inexperience, lack of capital, unwise credits, neglect, extravagance, competition, crop failures, strikes, money markets and speculation, which may cause the insolvency of customers. It is not surprising that the losses through insolvency exceed the losses by fire in the United States."

The above refers to general business. The merchants referred to are those of regular trade—dry goods, groceries, hardware, etc.—all of which are rated and reported by Dunn and Bradstreet, with whose assistance it would seem that a comparatively close estimate could be made of a man's financial standing. Nine out of ten of the people

who ask for credit as distributors of bee hives are men without commercial rating. How much more difficult must be the task of the dispenser of bee hive credits. As the risk increases, so must the margin of profit, to cover the risk incurred, so that the fellows who do pay must also pay for the fellows who never pay.

We have here a range of prices beginding with the cash carload buyer at 85 cents per hive for 8-frame 1½ story, and increasing under the varying contions of credit and quantity until the purchaser of one hive set up and painted pays $2.46 without sections and foundation, or $2 85 complete and ready for the bees. Does it require a Sherlock Homes to discern the remedy? Organize! Co-operate! Employ the man from New York to do all the buying for all the bee-keepers! Form one vast co-operative association, and every member will get supplies at the lowest rate! It is being done in spots, all over the country. Why not let the movement become general? In my locality an association bearing the name of the St. Croix Valley Honey Producers' Association has 110 members. A two-leaf circular is the extent of its earthly possessions. The association actually distributed from April 1904 to May 1905 about $1400 worth of bee hives and supplies. The purchaser of one bee hive got it for $1.02 and freight; the user of 1000 No. 1 sections got them for $3.00 at any time through the season, local freight added. The officers and managers of that association received the sum of $52 for their year's services. The association produced and sold for cash at the car door three carloads of honey. The manager of the association received $19 for his services in the marketing of honey. The bee-keeper paid the short price for his supplies and received the long price for his product. The same thing has been going on for years in Colorado. The continued success and harmony of the Colorado Honey Producers' Association is a case in point.

The co-operative committee of the Minnesota Bee-Keepers' Association is battling against the odds of an organization under the control of a leading supply house, with the result that largely added membership pledged to co-operation will shortly overturn existing affairs and elect new officers pledged to co-operation.

We must not be too narrow in our vision or comprehension. I have shown you the state of affairs as it exists today for the purpose of mutual benefit. There is reason on both sides. The bee-keeper who keeps bees for profit cannot afford to pay $2.85 for his hives. Neither can the manufacturer afford to sell a well-made bee-hive from good material at 85 cents. He does so at a loss, and if all his sales are made on that basis it is only a question of time when that manufacturer will suspend.

By the way, had you heard of the recent advance in the price of shop lumber? It is getting scarce and now commands a price of $3 or $4 per thousadd more than one year ago. Then there are the requirements of standard goods The lumber must be clear, surface smooth two sides, ⅞ thick. There are only a few mills that saw lumber that will season out and surface two sides ⅞. All St Croix and Mississippi river mills cut green ⅞, and when seasoned out will barely skin ¾. A large box manufacturer and lumber dealer recently remarked to me "It will only be a year or two more that you fellows can cultivate that ⅞ fad." It is only the extreme northern mills that cut for the eastern market that can supply the full inch shop lumber, and as each mill completes its cut the circle of available material rapidly diminishes, and in consequence the price goes up.

There is no doubt about it—the soft white pine full ⅞ thick is the best bee-hive on the market A bee-hive may be made from chippings and scraps from some wood pile, scant thickness and mixed quality of material—some white pine, some Norway, some cross-grained, cross-breed material—and sold for less money than the standard goods, but the quality is not there, and in the long run it will be found that the standard goods will outlast the cheaper article.

Nowhere will the well-tried maxim prove more true than the purchasing of bee-hives "The best is the cheapest."

Springing up in a few places in the country are co-operative associations that have done much in the way of assisting their members in the purchase of their supplies and in the sale of their honey. Co-operation in a National way has not yet proved a success may never be a success but these smaller, local, co-operative associations have been successful. California has one or

more such associations; Colorado has one; and Bro. Putnam mentions another, the St. Croix Valley of Wisconsin and Minnesota. I might also mention that the bee-keepers of New York, or some of them, have banded together and appointed a committee to buy supplies for the members. In this way bee-keepers can do much to save money and improve their condition.

SECURING WORKERS FOR THE HARVEST.

The Importance of Having Them at Exactly the Right Time.

Common sense would teach us that the time to have the workers is when the harvest is on, and that at other times they are of no value, are a detriment, as they are consumers, except that there must be sufficient numbers to keep up the economies of the hive. There is an old saying, or proverb, among bee keepers, which is like many other proverbs, only a half-truth, and this one says "Keep all colonies strong." There are times of the year when populousness in a colony of bees is a real disadvantage; but, before saying more on this subject, let me quote from Mr. G. M. Doolittle, as he expresses himself in the American Bee Journal. Here is what he says:—

A bee-keeper called on me a few days ago, and in our conversation he brought out the idea that it was impossible to have the colonies in any apiary give anywhere near the same results in honey. He said that some of his colonies give a surplus of only 10 pounds of section honey, while others produce from 50 to 75 sections, well filled. I told him that I thought this could be remedied to quite an extent, but he seemed to doubt it; and as I have many letters on this subject, perhaps it would be well to have a little talk on the matter through the columns of the American Bee Journal.

I used to find things very much as this man and others claim they do at this time, but of late years I have succeeded in making each colony produce nearly like results; that is, if one colony contains 60,000 bees and gives 100 sections of surplus honey, I am able to secure about that amount from every colony in the apiary having that number of bees; while a colony having 30,000 bees will give a yield of 50 sections. If I fail to secure the 60,000 bees in any and all colonies, it is not the bees that are to blame for this state of affairs, but myself; add the bee-keeper who cannot bring each colony up to the standard of 60,000 at the beginning of the best honey flow, will not meet with as good success as will the one who can.

Then, the bee-keeper who fails to make the colony with 30,000 bees give nearly half as good results as the colony with 60,000, will not meet with the success that he might were he able to do this. I have been years studying on this matter, and this study has shown me that colonies which I pronounced "exactly alike" on June 1st would not be so at the time the honey harvest was at its best. The trouble was that I did not have the knowledge that I should have had regarding the working force of my bees at all times, nor of the amount of brood in each hive, which was to give this working force at the time of the honey harvest.

For instance, the colony which I called my best on June 1st might become one of the poorest by June 10th, at which time the main honey-flow from basswood would be on. This, as a rule, would come about by one queen not keeping up her laying capacity as well as another, or, in other words, she would not be laying her maximum number of eggs from 30 to 50 days before the arrival of this main honey-flow. Let me try to illustrate what I wish to bring out.

Near me lives a man who is interested in fancy poultry, and the demand for eggs from this stock comes in the spring, the eggs to be used for breeding purposes; and the prices which he gets at that time are almost fabulous. Being there a few days ago, he came from his chicken-house with two eggs from his spring pullets. I ventured the remark to him, the same as the ordinary barn-yard poultry keeper would do, "Quite lucky that your pullets have begun laying thus, right on the eve of the high winter prices for eggs, as eggs are worth about 3 cents each at the grocery now, and will be still higher before the holidays."

He gave me a glance which told me that he thought I did not know much

about keeping fancy poultry (and he was right), and said, "I am using every effort at this time of the year, through feed, etc., to keep these pullets from laying now, for those which lay when eggs at the groceries are the highest are not apt to lay much in the spring, when I can sell my eggs at ten times as much, egg for egg, as I can during the winter months."

This set me to thinking regarding the bees, and reminded me that the queen which bred too prolifically "out of season" was not the one which gave the best results when the honey harvest was on.

I have often noticed that a colony which wintered extremely well, so that the queen goes to breeding very rapidly in the early spring, does not equal the one which comes out in an average condition, but commences brood rearing in earnest about May 20th or 30th. The reason is that by June 10th the queen in the stronger one ceases to be as prolific as the other, or becomes like the man's hens which are laying prolifically in mid-winter; they giving few eggs in the spring, just at the time when his eggs bring him the best price.

So the early strong colony spends all its best force at producing bees prematurely, bringing them on the stage of action too early to take advantage of the main honey harvest, while the queen ceases her prolificness just in time so that what workers there are store their first honey in the brood-combs, thus crowding the queen down to less and less room, with very little honey in the sections.

It has been noticed by very many, and many times, that if the bees are allowed to get the start of the queen so as to make any general storing of honey in the brood chamber before entering the sections, during the first of the honey harvest, such a colony will not give the best results in section honey. And for these reasons I work as does my poultry-fancying neighbor, to discourage all extra-prolific brood-rearing, except at the time when such prolific breeding will bring the bees in just the right time for the main honey-flow, be that from white clover, basswood, or buckwheat, or all three.

Then when the harvest arrives, if I find colonies which do not have a hive more than half full of brood, dummies are put in to take the place of the combs containing no brood; and in this way I am enabled to make the colony containing only 30,000 bees produce nearly as much section honey as does the one which has come up to the honey harvest in the desired condition.

The colony given to early breeding can in a measure be restrained by allowing it a scanty supply of stores, and contracting the room in the brood-chamber with dummies till the time comes for the rush of brood, when it will "rush to the rescue" when you wish it to do so by filling out the hive with combs having a liberal supply of honey in them.

Those given to late brood-rearing can be hurried along, when the right time comes, by giving a frame of brood from one which "has run a little too fast," together with stores sufficient to make them feel in a prosperous condition, thus bringing all up to the right point just at the right time, and when best to take advantage of the main honey-flow when it is on.

It is the attending to such items as these in bee-culture that gives the best success.

I often recall an experience of my first year's bee-keeping. I started with four colonies. Three of them were quite strong at the opening of the season; the other, while not exactly weak, did not contain more than half as many bees as either of the other three. At the opening of the main harvest the three populous colonies were not so *very* much more populous than they were at first, while the weaker colony had gradually increased until it was nearly as populous as any of the other. Still further, it *kept right on increasing*, until it surpassed the others, and it and its swarms stored a third more honey than any of the other three that were so promising early in the season.

I also remember another year when I had taken the bees from the cellar, and dug some out of some clamps, that I felt so proud of a few colonies, they were so full of bees, that I called my wife down from the house that she might join me in my admiration. Those colonies did nothing remarkable in the way of storing honey, being far surpassed by colonies that had not

more than half as many bees when taken from the cellar.

The great point is to have the workers, the field-workers, at the time that they are needed—when there is honey to gather. Had there been a big harvest to gather within a week after the bees were taken from the cellar, it is quite likely that those populous colonies would have outstripped everything in the apiary but such was not the case. When the harvest *did* come, they had passed their prime, so to speak. And this brings up a point that Bro. Doolittle did not mention, viz., that a queen that begins laying too late is just as detrimental to success as the one that exhausts herself too early. A colony with a hive full of brood to nurse when the heavy flow is on will not store the surplus that will be stored by the one that has its bees already reared, and of the right age, when the main flow opens. There must be a lot of bees of the right age, and the right proportion between the bees and the brood when the honey flow comes, or there will be no harvest gathered.

The moral of all this is that each bee-keeper must thoroughly understand his own locality, and how to make the most of it. When I go to the conventions in Northern Michigan the members are always asking how to have their colonies strong early in the season, because the flow from the raspberry comes early. A bee-keeper living where his main crop comes from buckwheat would have little interest in this proposition. The bee-keeper in Northern Michigan gets his bees out of the cellar early in the spring, and protects them if necessary, and encourages early brood rearing the bee-keeper whose surplus comes in the fall, needs to do nothing of the kind. Study your location, your honey resources, and learn how to so manage as to bring upon the stage of action a large field force of workers at just the right time, then success will crown your efforts.

World's Greatest

Magazine Bargain

THIS is the greatest magazine combination offer ever made to the American people. There is nothing to equal it in the history of the publishing business. Each magazine is the leader of its class—the greatest and best in the world. The three cover the entire magazine field, and are a unique and desirable collection, filling exactly the needs of every American home, and at an unheard of remarkably low price. Order today. Don't put it off.

Woman's Home Companion

is not excelled by any other ***home and family publication in the world in beauty, fashion, fiction,*** art and illustration, helps, and entertainments, special articles, artistic features, fine paper, superior printing, boys' and girls' departments, household departments, knitting, crocheting and all fancy work. The Help-One-Another Club and scores of other exclusive features.

In one year the **Woman's Home Companion** gives to the subscriber at least ***sixty complete stories, two serial stories,*** more than one thousand pictures and illustrations, hundreds of the newest and most correct fashions—and furnishes paper patterns for each one at ***ten cents each***—scores of special articles and hundreds, and even thousands, of other helpful and interesting suggestions and advice.

The Review of Reviews

Many other publications are desirable, and you may prefer this or prefer that fiction and art publication, but "Review of Reviews" is necessary. Substantial American men and women are going to keep up with the times and they are going to take the shortest cut which is "The Review of Reviews." Twelve hundred pictures a year, departments giving the best that is in all the other important magazines all over the world; timely and informing articles almost as fresh and full of news interest as a daily paper; and Dr. Albert Shaw's interpretation of the public men, events and issues of the month, in "The Progress of the World."

The Cosmopolitan

will shortly become the most widely read magazine in America, now that it has passed to the ownership of the most successful publishing house in existence—the Hearst organization. 500,000 copies a month will shortly be required to fill the demand, while within a year it will outrank every other magazine in this country. "The best no matter what it costs," is the motto of its editors, therefore to the Cosmopolitan ***will be contributed the best, and come first!*** It will be in the Cosmopolitan that you will seek the writers of world-wide reputation; its fiction will be masterpieces of pen-craft, its whole contents will set the standard for magazine perfection.

AN AMAZING OFFER

The Bee-Keepers' Review	**$1.00**
The Woman's Home Companion	**1.00**
The Review of Reviews	**3.00**
The Cosmopolitan	**1.00**
Total value of all four	**$6.00**

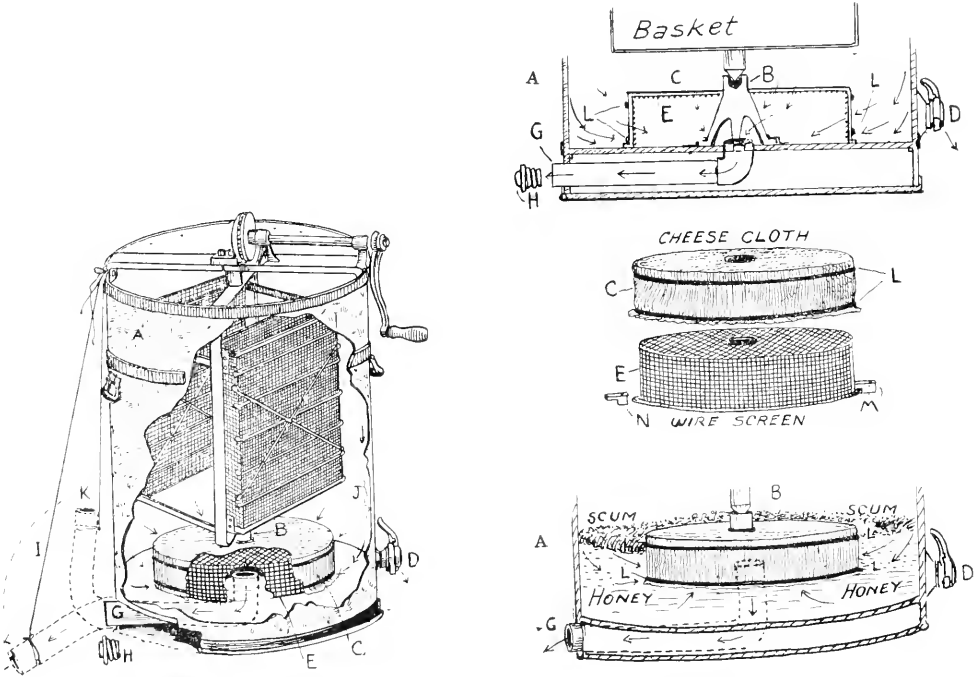
All Four sent regularly for one year

$3.25

This is a Limited offer and Should be Accepted at Once

Send all Orders to

BEE-KEEPERS' REVIEW, Flint, Mich.



Holtermann, Automatic Honey Strainer.

Courtesy of Gleanings.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor

VOL. XIX. FLINT, MICHIGAN, FEB. 15, 1906. NO. 2

Some Short Cuts in Extracted Honey Production.

R. F. HOLTERMANN.

MANY years ago, when I first began bee-keeping, a long winter lay before me, with nothing in particular in view for me to do. Times were hard, and work not easily obtained, so I hired out with a firm of manufacturers at 85 cents a day. I did not try to make myself just valuable enough to earn that 85 cents a day, with a mental promise to do better when my pay was increased, as so many mistakenly do, but sought to make myself as valuable as I knew how.

To illustrate: They were punching three holes in a piece of band-iron, then three holes in another piece, and afterwards riveting the two pieces together in pairs. Sometimes the holes were not punched in *exactly* the proper places, the rivets would not go through both pieces, and there was trouble. I "raced" the two pieces, and punched them in pairs, thus performing the two operations and the riveting in greatly reduced time. Other "simple-when-you-once-see-it" time-saving devices followed, and, in two months, my pay was raised to $1.50 a day, and when I finally left the firm I was getting $5.00 a day, and there was no desire to have me leave, either.

The great struggle today, among manufacturers in the same line, is, by short cuts, to reduce the cost of production to produce a better article at less cost. The successful man in any line of production must do the same.

IMPORTANCE OF SHORT CUTS.

Bee-keepers have heard a great deal about many subjects, but not enough attention has been paid to the cost of production. Now there seems to be a more united and determined action in this direction, and, once the search light is thrown on the cost of production, we will use every means in our power to reduce that cost. In the *short cuts* of business often lies the difference between profit and loss. Other things being equal, the man who is up to date, or a little ahead, in this matter, can smile at all opposition.

HAVE THE BEST TOOLS REGARDLESS OF COST.

Much has been said about "more bees," and, while I do not object to this, it is quite as desirable to say, produce more honey from the bees you now have, and do it for less money. How many neglected stocks of bees there are, out of which twice as much honey might have been secured. How many implements there are in use that require twice the time and patience of others that may cost more. If a smoker can be bought that can be lighted more quickly, kept burning with less trouble, one that will respond to our efforts more readily at critical moments, that will stay loaded for a greater length of time, then away with our old one to some one more easily satisfied then ourselves—or else throw it away. If there is a brush that will do the work enough better than our old one, let's have it. If our honey extractor is not the best for handling combs without breakage, for extracting the combs clean and doing the work rapidly, then, especially in a large business, every hour we use it we are losing money; we are handicapped, just as out of date methods and machinery handicap the manufacturer. It is only because the production of honey has the margin of profit that it has, that greater attention has not been paid to this subject; but there is no sound reason why we should not pocket all of the profits of production that we can.

DO ONE THING AT A TIME.

In planning my work I have found, as others have found, that system and specializing are necessary for economy. Where, day by day, work is to be carried on, each man has his place. He learns his work and becomes an adept at it. Of course, with my students, I have to make an exception, and allow them to learn each department. Changing from one kind of work to another is always done at a loss of time. If the entrances of 100 hives need adjusting, the hives leveling up, and the grass cut around them, don't do all of these things to one hive, and then to another—perform one service to all of the hives before taking up another branch. Never move a foot unnecessarily, or perform an operation unnecessarily, which will require another move to bring the conditions back to the place of advantage that you were in. As far as you can, so locate your hives as to have all of them near as possible to the bee house door. If your extracting combs are to be raised to a point six feet above the floor, when once raised to this level, arrange the stands, etc., so that there will be no necessity of lowering them again, only to raise them once more, or you will have doubly lost work.

THE FOLLY AND SIN OF EXTRACTING GREEN HONEY.

In the past, I have extracted honey when it was far from ripe, put it upon the market, and sold it for just as much as though it had been well ripened, and there was no complaint, and there are times now, when, owing to the season, or because dark honey is beginning to come in, I might extract honey that would be improved by leaving it with the bees for a longer time. I believe there are times when the combs are not more than half capped, and we might extract and get a fair grade of honey, but I feel that the person who will deliberately, without strongly extenuating circumstances, extract honey when it is green, to save the labor of uncapping, or to secure a trifle more honey, is doing a great wrong, and trading upon the good reputation which has been made by others. He is not only robbing the man who has given extracted honey a good reputation, but he is robbing the man to whom he sells. Frequent extractings demoral-

ize, or disorganize, a colony more frequently, as the result of giving them freshly extracted combs to clean up. Then, again, one can extract 150 pounds of honey from a colony at one operation more quickly and economically than to extract the same amount at three different extractings. When near the close of the harvest, if some colonies are crowded for room, and others are slow in filling their combs, full combs may be exchanged with those having plenty of room. In this way, when we came to extract, there are no blanks to cause loss of time.

WHERE BEE ESCAPES ARE NOT NEEDED.

In freeing the combs of bees, it would be an easy matter for me to say, "use bee-escapes," and no doubt I shall meet with strong opposition in advising against their use in the production of extracted honey, but I fail to see where they are a labor saver. They may be an advantage to timid bee-keepers, but, in all of our manipulations, we try to avoid as much as possible the lifting of supers filled with combs and bees, and, in extracting, I never break loose the last super body, as, with crowded hives, we must work slowly or kill more or less bees. With the use of bee-escapes, every pound of honey has to be lifted once oftener than without them. That is, when the escape is put in place, and this is no play when one has three or four supers of ten combs each in a twelve-comb space. Then, again, it necessitates the running back and forth to the hives ahead. As you take one off, you must run, say, ten hives ahead, and put the escape-board in place, which is a great waste of time. The colony is disorganized a much longer time, which, in a good honey flow, is a serious item. In cool weather the honey becomes cooler, and I am not sure that the crowding of the bees into the brood chamber during hot weather does not have an influence in starting the swarming impulse, where the crowding is greatly prolonged it may be the last straw in that direction.

THE USE OF A "SMOKE-BOX."

I have used, with excellent success, a smoke-box invented by Mr. S. T. Pettit. It is an inverted box, the size of the top of the hive, and about three inches deep, with a hole in one side which can be closed with a button. The cover of the hive, together with the cloth or honey board, is removed, and the box very quickly put in place. The button is turned and the smoke puffed into the hive. By smoking gently, giving the bees time to keep ahead of the smoke, the combs can be fairly well cleared of bees; unless the queen should have passed above the queen excluder and filled the combs with brood. This is the quickest method that I know of for freeing the combs of bees, but a mild smoke must be used or the cappings will become tainted, when a delicate palate might detect the flavor. With strong-flavored honeys this point need not be considered. The best way that I know of is to smoke the bees through the ventilator in the super, which every super ought to have at its back, doing this work in advance upon the colony that we next expect to manipulate. This induces the bees to fill themselves with honey, when they are easily dislodged from the combs, and have little disposition to fight.

GETTING BEES OFF THE COMBS.

For bringing in the combs we use a wheel barrow upon which we can set two supers, one above the other. An empty super is placed upon the barrow, one man smokes the bees, while another removes the cover, honey board and cloth, when the bees are well-smoked, the smoker being handled with a sort of sweeping movement that drives the smoke among the combs. The more skilled operative (and this will be the one not using the smoker) now removes the first comb; then both remove combs, setting the first four on

end beside the hive, and the balance are freed of bees by shaking them into the hive, unless there is a super below that is to come off, in which case the bees are shaken in front of the hive. The combs are then brushed entirely free of bees and placed in the empty super. For brushing bees from the combs I use two brushes that I imported from Germany. They are soft and durable, yet water makes no impression upon them. These two brushes, besides other work, brushed the bees from the combs of a 60,000-lb. honey crop, yet they show no wear, as yet. In shaking bees off the combs, give several quick shakes in rapid succession. Shaking bees off a comb is very much like shaking a boy off a gate upon which he is swinging—swing him pretty fast in one direction, then *suddenly* pull the gate in the other direction. In doing this you catch hold of the side-bars of the frame as well as the lugs, or you may break many lugs. Bees that have filled themselves with honey, as the result of previous smoking, will leave the super more readily, and can be shaken from the combs much more easily. I do not like the comb-buckets and carrier methods—they are lacking in capacity. When the two supers are full they are wheeled to the honey house, and a call given to those inside, unless the door is kept closed with a light spring or weights, and, when the door is opened, the wheel barrow and its load are wheeled directly into the house. This is a great saving of time and strength over carrying and shoving the comb baskets through openings in the wall. The return load brings the needed number of combs for the last hive. This is an important point, and in every way a much better plan than that of having the more or less honey-daubed combs (even though covered with a cloth) standing in the apiary while the full combs are being removed. I know that the returning of the combs immediately after the extracting, or at the time of extracting, has been opposed on the ground that such return leads to robbing. We are very gentle, yet expeditious, about this, and careful that the first bee never gets a load from these wet combs. I think most of the trouble comes from letting outside bees get a taste of the honey while returning the combs to the hives. As we are running out-apiaries here and there, we often have to extract in places that are not bee-tight, yet, with quick work, keeping the combs covered, and using a little smoke in the extracting house, if necessary, to neutralize the aroma of the honey, we get along all right. Prevent the first load of green honey from being carried home. If any bees get into the extracting house, let them stay there until the extracting is finished, instead of getting out to carry tales home.

The uncapping is done over a large tank about three feet six inches wide, four and one-half feet long, and two feet six inches deep. There is really one tank inside of another, with six inches of space between the bottoms for the honey that drips from the upper tank. The inner, or upper, tank has a bottom and sides of perforated steel through which the honey drips into the outer tank, which has a screw-cap through which the honey can be drawn off at will.

As our honey is practically all capped, it requires three ordinary hands, or two good hands, to uncap enough so that 5,000 or more pounds per day may be extracted. The wax more than pays for the labor. When in New York State, I was told, by one who should be in position to know, that Mr. Alexander extracts his honey, practically before it is capped, and the entire absence in his article, in Gleanings, about the uncapping, when writing upon the production of extracted honey, confirms my suspicions that the honey is taken green.

AN UNCAPPING MACHINE.

This season I will have in operation an uncapping machine designed about a year ago. The comb will be placed in a form, its position being the same as when hanging in the hive, when, by means of a treadle operated by the foot, the comb will be drawn down between two rollers running at a high speed, nails driven into the surfaces of the rollers striking the cappings and scraping them off. The uncapper, as well as the extractor, will be run by a small gasoline engine furnished by the A. I. Root Co. With my present capacity, uncapping by hand, and using a six-frame, reversible extractor, we can comfortably extract, strain, and store in packages ready for selling, from 5,200 to 5,300 pounds of honey in eight and one-half hours. One man does nothing but run the extractor. For uncapping we use a knife with a bevel as in the Root knife, in fact, we have the Root knife, not a knife with the bevel extending to the center of the back, as with such a knife there is too much suction, while, with *no* bevel, the capping is likely to stick to the comb after the knife passes through. I think it pays to uncap fairly deep, but level. The cleaner combs are extracted the better, as there is less time lost in the bees cleaning them up and getting them ready for storing more honey in them. In a good honey flow this is an important point. Surely, no one is foolish enough to think that bees can or do put their heads down into the sticky cells to deposit their loads of nectar. I would not accept a non-reversible extractor as a gift, and use it, even if paid the price of it each year. Too many combs are broken, and there is too much delay in turning the combs. If I had no more than 20 colonies, I would have reversible extractor. Again any one who has ever had plenty of storage room under the baskets, will never wish to go back to the close quarters that some adopt with false ideas of economy. With a good weight of honey below the baskets, less attention is needed in balancing the combs. Each of my extractors has three legs, and the legs are fastened to the floor, or to blocks, or to stakes driven into the ground. These legs, are long enough to bring the bottom of the can on a height above any vessel I may wish to fill.

AN AUTOMATIC HONEY STRAINER.

If honey can be strained and extracted all at the same time, surely it is a waste of time to make two operations of it. We all know what it is to run honey from the extractor into a pail, to transfer it from the pail to tanks, or strainer-cans. Unless the pail is constantly watched, it is likely to run over occasionally. This means a loss of material, time and patience. The honey is the warmest, consequently the thinnest, as it comes from the hive; every minute that it is off the hive it becomes cooler. To keep honey liquid the longest, and to have it retain its aroma the most perfectly, to keep out of it the germs of fermentation, it should be sealed as quickly as possible after removal from the combs. To accomplish this, and relieve the congestion of work at a critical time, I use a strainer in the bottom of the extractor as shown in the frontispiece of this issue of the Review, and described as follows in Gleanings:—

A is the extractor-shell; B is the point at which the extractor-reel rests on the cone, which rises above the strainer. The strainer is fastened to the bottom of the extractor by four buttons or a similar device, M (closed); N (open). The strainer is constructed just the opposite way of an ordinary strainer. The pan, let us call it that, is inverted, and the outside surface used instead of the inside. The upright surface is used, and the honey approaches the strainer and passes through it sidewise; but only in case of a partial or threatening block does the honey rise above the sides of the strainer, when immediately a much enlarged straining surface, the entire

top of the strainer, comes into play. The honey runs down the sides of the can, and then rushes in its impetus from all sides to the center of the can, where, warm from the comb, every feature, impetus, and warmth being taken advantage of, it is forced through a strainer of wire cloth and a fine quality of cheese cloth over it. The scum naturally keeps to the top; finer particles are drawn down; but whenever the strained honey outlet is closed it begins to gravitate toward the top of the honey, and finally, when the extractor is emptied, almost all of it will rest on the bottom of the can between the extractor-can wall and the strainer.

The first thing in the morning, this, with a flat-ended scoop, is collected and emptied through the gate. In this way I have used the strainer, without further cleaning, day after day, or until *that* extracting was finished and everything thoroughly cleaned as every extractor should be. I used to remove the cloth each day and wash it. This I did by placing the baskets and arms in a position to give the most room to get down, then slip on a long pair of print sleeves and remove and readjust the cloth. There is no great difficulty about this, but I found it unnecessary.

It may be fairly asked, "Why not cover the entire distance across the can with a strainer?" By this method the straining surface is not increased. Again, the scum must all settle on the strainer—a very objectionable feature; and, next, a very important feature in my system, and which is a new feature also, is that if, for any reason, we have to extract honey very thick through cold, etc., artificial heat can be applied to the straining and unstrained honey, *and kept applied* until it passes out through the rubber hose K. This can be done to the degree required by putting a coal-oil or gasoline stove under that portion of the extractor bottom which has above it unstrained honey. The metal bottom being an excellent conductor, if needed it can heat the entire can, and the honey be made sufficiently warm for every emergency. My son Ivar has attended to using or not using, raising, or heating, covering the flame as required as he turned the extractor. For this idea I am indebted to a young man, a student of mine, Arthur Feather. The honey, as will be seen in the illustration, is drawn off through the pipe G, which runs from inside the strainer to the outside of the can, where it is connected with the pipe K, which is raised when the flow is to be shut off, and lowered when in use. A moment does the act.

The drawing is not quite correct. The outlet from the inside of the strainer should not be directly under the cone, but a little to the side. We have various lengths of this rubber hose, with joints, so the honey can be conducted at various distances. No one need watch the larger tanks, and they can be shut off when about but not quite full, or the boy who handles the extracting combs, if a barrel is to be quite filled, watches them to the last moment.

Another advantage I find in the strainer is that, in the old system, fine strings of honey are constantly passing through the air, carrying that air into the honey, and producing a froth somewhat like the white of an egg and air beaten together. This scum does not form with my strainer, because the honey as seen by the lettering, flows unbroken through and out. It has been argued that the froth is foreign matter, such as wax particles. The froth, doubtless, will have this if the strainer used is not perfect, and the same care must be used in properly adjusting the cloth as with other strainers. It is well to bring the cloth right under the edge of the inverted wire-cloth strainer as well as using rubber bands, L. L.

This extractor can, perhaps, be improved. Several who have not used it, and therefore speak simply from theory, have tried to do so and failed. These features, however, must be retained: 1. A strainer inside of a honey-extractor; 2. Two outlets through the can, one for the strained honey, the other for the ejection, from day to day, of the scum which accumulates; 3. A portion of the unstrained honey to reach the bottom of the can before straining, this to enable the application of artificial heat when needed to allow the main portion of the scum to settle on the bottom of the extractor instead of the strainer; and, lastly, to allow a side-surface as well as top-surface through which the honey can strain.

In this system of straining, the honey is exposed to the air for the least time, and the aroma is retained if the honey is at once stored in air-tight vessels, which, in this system, it can be, as it is strained as it comes from the extractor. In straining in the ordinary way,

or by gravitation, which requires storage-tanks, besides the added work, aroma is lost in the store-rooms which ninety-nine out of a hundred have, and in ordinary climates moisture is collected, and germs of fermentation, which are always floating about, settle in the honey, and may be the foundation for trouble at a future time.

BRANTFORD Ont., Jan. 20, 1906.

With a Knowledge of Principles Increase can be Controlled.

R. C. AIKIN.

THIS subject is important. I go so far as to say that until we can "control increase"—swarming, for I take it that is what you mean—we are not master of the bees. Until we master them we are at a very great disadvantage. The fact is, until the apiarist becomes master of swarming, there is no certainty as to results in anything, except at too great cost of time and labor.

When a colony is just strong enough to properly handle the brood chamber and one super, when gathering at the rate of five pounds of nectar daily, in steady warm days and nights, we will call it a normal or fair one. Increase the flow a little, and the bees will use a second super. Decrease it, and the one super is too much; they will fill it if the flow lasts *long* enough, but slow super-work means poor finish unless we take away the extra room. The problem is not simply to get the bees *into* the super, it is a question of *proportion*, always. So, as the flow is slow or fast, steady or intermittent, the weather cold or warm, as the proportion of fielders is to the nurse bees, as the queen is young or old, feeble or vigorous; so will results change, and any change in the relation of the factors necessarily has its bearing on the work being done.

You see how utterly impossible it is to have all the factors right; hence, we must provide, as best we can, against loss by the weather being too hot or too cold, or the flow being free slow, or intermittent, etc.

Years ago, when no effort was made to control swarming, and when few men ever undertook to keep bees in large numbers, then we were careful to watch almost daily for swarms; also the progress made in the supers, so as to add to or take from as the case required, such as slipping out a full section and in an empty; yes, in those days we did get some fine *results*. Such methods do very well for those who have a few colonies only for recreative uses or to study the bee, but when it comes to using the bees to make the most out of them, as a business, it is different. Instead of being a servant, daily, ministering to conditions that are ever varying, we must eliminate as far as possible those hindrances—*make* conditions that are least affected by these changes or irregularities. The thing that seems to offer by all odds the greatest relief, is *control of swarming*.

THE FACTORS THAT CONTROL SWARMING.

But when we go at the control-problem, what will do it one place or time will not in another; that is to say, sometimes we have present factors that lead to swarming, etc., that are not

with us at other times. Intensify and add to the factors in a problem, and you increase the need of greater effort to control and guide properly.

That fair or normal colony, spoken of at the beginning, is just about right to swarm with hot weather and enough nectar and pollen coming in to load well the brood nest. If they just fill up the brood combs, and do nothing in the super, they are almost *sure* to swarm soon. While such conditions prevail, *give a large brood nest*, large enough to hold all the stores coming, and also give abundant laying room to the queen, together with a cool comfortable condition.

That laying room should be BENEATH the present brood and stores, or toward the entrance—do not forget this. A large brood chamber UP and DOWN, not wide, used as above, is almost a positive preventative of swarming until the main flow, or the time when they *will* do super work.

THE EFFECT OF ROOM BENEATH THE BROOD NEST.

Use hives large up and down, 8-frame width, and two stories high. I am decidedly partial to about 12 to 16 L. frame capacity. Use this large brood chamber up to the time the flow starts that gives your surplus, then divide, massing the brood in one chamber on the old stand, and put your super on this. Take the other combs with the queen and enough bees to care for her and all the brood present and prospective, to a new location. Nine or ten days later cut out all cells but one in the queenless colony on the old stand. This for a strong flow and favorable conditions generally for good work. The old stand retains the field-bees and most of the nurses too. These nurse-bees will soon have all the brood cared for, and can then give their time to wax, and to ripening and storing nectar.

FIRST, GET THE BEES, THEN MASS THEM WHERE NEEDED.

But such procedure will not always give enough bees to the supered hive on the old stand; in that case, unite two, or three if necessary, massing the combs containing the most brood, together with the bees, as in the case of the one colony. You have spent the preceding weeks and months *getting bees* to do *business*, now, when the nectar is on hand, mass those bees just where you want them—be sure that you do *mass* them, and you won't regret it. 'Tis better to take 100 supers off 50 of these massed colonies, than to take them from 100 weaker colonies where they will not be so well done.

This makes you some increase, but you have *controlled* swarming. If you do not want the increase, just double colonies until you have just what you do want. If increase is wanted, you can have it. If more increase than this gives, is desired, just make nuclei by dividing some of those old colonies that are put upon new stands, having anticipated your needs by having cells or queens ready for them as soon as they are ready to receive them.

MAKING A WISE DIVISION.

Supposing you have a second or late flow; if so, this management is *par excellence*. Those old queens, put off to new stands, and robbed of field-workers, are not crowded out of laying room; and, finding themselves with limited brood, much room and abundance of feed, will just spread themselves in the laying of eggs, and when the next flow comes you have rousing good colonies that will work supers just as they are and not swarm. In most fields, when the late summer or fall flow comes, there is little tendency to swarm no matter how strong the the colonies. I estimate that the ultimate laying room allowed these queens by such treatment, gives so *many more* bees, that if there is a *fair* flow, late,

you will be just about an extra case of honey per colony ahead of what you could have had by retaining the old queens on the old stands where they *could not possibly* lay freely. A queen cannot do much business brooding in a colony under section supers.

APPLIANCES VERSUS LABOR.

You may object that this requires extra hives. Well, not many; but, what if it does? I am sure the extra room in the brood nest, when brooding up before the harvest, will give enough more bees per colony to gather enough more honey in one fair season to pay for every extra hive-body needed. These extra bodies cost about 50 cents, new, say a dollar, by the time they are filled with comb; half a case of honey will pay for it. Besides this you have saved time, either your own or that of hired help, because you have become *master* and not servant to the bees.

But, if you wish to use smaller brood chambers in winter, and cellar the bees, you can still make good use of the extra bodies by putting them under the ones cellared, doing this when they begin to get strong. Have each chamber so used, full of dry, or nearly empty, comb. *Always* put this extra story *under* the colony.

If you must draw brood and make new colonies or nuclei to keep down swarming before the flow, you need the extras. The fact is, these extras are almost a necessity. They are cheaper by far than extra help, or even your own labor. *Labor* is the most expensive thing in our business. Put into equipment in supplies, what you now pay for labor when using old methods, and, when done, you have your supplies still as an asset; but if the money goes into labor 'tis *gone*.

We must, so far as possible, get rid of such work as constant watching for cells, examination to find if a colony is preparing to swarm, together with any thing else that keeps one in a state of anxiety and uncertainty. The bees must be fixed to *stay* fixed until we are ready to return for more fixing. The double brood chamber plan gives much brood room *beneath*, and toward the entrance, from present brood and stores, which, in itself, is almost a sure preventive of swarming before the harvest flow; gives room for comfortable clustering, room for plenty of feed-stores, or anything coming in, makes easy the dividing for increase, in fact, simplifies the whole business at almost no cost whatever, for they pay for themselves. I, therefore, recommend to those using 8-frame hives, to have extra bodies, and, at all times outside ot the harvest-flow, to use them double. By a thick dummy in each chamber, they may be reduced to seven, or even six, frames to the chamber. And with any double or divisible chamber hive, have zinc, slat, honey boards to use when needed; they are a great convenience and help.

THE ADVANTAGE OF THE DIVISIBLE BROOD CHAMBER.

To users of the Heddon hive, or any similar one, control of swarming and making of increase and all the whole business is made easier and simplified. I will illustrate by telling how I use a divisible chamber hive. Each chamber is $5\frac{1}{4}$ inches deep, 12 wide and 16 1-16 inches long, 8 frames to the body. This hive used in two sections gives 8-L-frame room and capacity; 3 of them gives 12, and 4 of them 16-L-frame capacity. They are to be used 3 and 4 sections for a brood nest at all times outside of the harvest flow, when out-door wintering is followed. Never use less than 2 in any case for full colonies (one can be used for nuclei), and, if for cellar wintering, 2 after the honey flow starts, but 3 or 4 before it if needed to give that room of empty dry comb beneath the increasing brood and store supply, to control swarming.

In case a colony has, when the flow is starting, the use of 3 of these brood bodies, but has shown no tendency

whatever to swarm, *just as the flow starts*, put next the bottom board the section having the *least* brood in it (no matter if it has honey, especially unsealed, if sealed stores, better to break the cappings on most of it), on this the one having the next least amount of brood, and have the queen with these two. On these put the queen excluder, and next a super (or two of them if the number of bees, weather, temperature and strength of flow demand it), then on top of all put the third chamber containing the most brood. If the queen is not found, put a queen excluder also on top of the supers, then, at the next visit, you can quickly tell where she is without seeing her. If she is in the *one* chamber on top, she has not done much laying, as they will crowd her out of business. You may find queen cells in both top and bottom; if so, take all cells from the two lower chambers and put the queen in them, and, if the supers are being worked, take the top brood chamber to a new stand; you cannot possibly find anything better to make a *first-class* nucleus. If the queen is below and no cells there, if there is still empty brood comb in the bottom section, leave them as they are below, but take off the section above the supers to be used for nuclei, for strengthening weak colonies, or in any of a number of ways they may be easily utilized. But if the two lower bodies are well filled with brood, put under *all* a set of dry combs or of full sheets of foundation.

Here are some facts to remember: A sectional brood chamber hive, used as before described, always keeping *empty* comb below, will get as much and as well finished section honey in a 12- to 16-frame brood chamber capacity, as can be done otherwise with an 8-frame chamber brood nest. The reason is simple and natural; it is *empty* comb below, brood and honey next, and honey stored *above* the brood. If perchance the flow is very free, and the empty comb below (next the floor and entrance) should be filled with honey, the very first lull in business it is moved up; and such a condition is a blessing, for the super-room does not need to be kept so large in anticipation, so less unfinished honey, and the moving up goes on after the flow has ceased.

GETTING COMB HONEY FROM A WEAK COLONY.

I have taken weak colonies that, at the beginning of the harvest, did not occupy two sections of this hive (8 L frame capacity), put the queen in the bottom one, on mostly empty comb, over her an excluder, and on this a super of sections, then, above all, the other brood section. Enough bees stay below with the queen (she should have a little brood with her, if none in her chamber, put in some comb) to keep her in business, the super is occupied and worked, and there is not the least danger of swarming. In a few days, when more bees have hatched and super-work has started, take the brood from above and place it below the super. Such colonies would not otherwise have worked a super, but would most likely have swarmed a little late. This heads off swarming, gets super honey, and leaves the colony in prime condition. If they seem to increase fast, and there is danger of swarming, put *beneath* a set of dry combs to occupy the queen's attention; it won't stop super-work but will prevent swarming if the fever is not on already and cells started.

In all these manipulations an excluder is important. You must be *master*. Where you put a queen there she must stay. When you do not know where she is, and no cells are present, use the excluder, and, the next trip, you can know very quickly where she is.

Clip every queen early, before the bees get too numerous; then, if, perchance, you *do* make a slip or miscal-

culation here and there, the next trip reveals the fact, but you have not *lost a swarm*. Clipping is a splendid precautionary measure; and helps to keep track of the age of the queens.

BEE-KEEPING A KALEIDOSCOPE.

Now, Mr. Editor, there are hives and hives, methods and methods, and a great multitude of variations in localities and seasons. This bee business is a kaleidoscope; change *one* factor and *all* is different. But, while this is true, principles do *not* change What bees will do in Michigan they will do in Colorado, or anywhere under *like* conditions. The first thing for any prospective bee-keeper to do is to learn principles, then the application can be attained by various routes or methods

I have pointed out some principles and a way, or ways, of applying them. The man who has not the capacity, or the willingness, or the means, to put in practice these principles, will not succeed. Swarming can be controlled. Various fields, seasons, or climates, need varying degrees of effort to give and keep control, but when the factors are known, each apiarist must apply them to suit conditions and environments.

Paste these in your hat: 1st. Large brood chamber room and sufficient stores at all times outside of the harvest flow. 2nd. During the flow, plenty of empty or available brood room beneath the queen with store room above. 3rd. Keep the colony comfortable always in the swarming season, so far as room and ventilation can do it.

LOVELAND, Colo., Jan. 11, 1906.

Some Mistakes for the Review Editor to Avoid.

E. D. TOWNSEND.

"EVER since going into Northern Michigan I have had a longing to have an apiary in that part of the State, * * * I would like to go somewhere in the region where you are. There are yourself, Kirkpatrick, Chapman, Bartlett, etc., who are in a good bee country, and I would like to be a neighbor to some of you, without at the same time encroaching upon occupied territory."

The above is an extract from a letter written to me by the editor of the Review, under date of Oct. 10, 1905; and I think I voice the sentiment of the bee-keepers of Northern Michigan, when I say he is welcome to establish apiaries in our beautiful part of the State; especially, when he comes in the spirit expressed in the above extract; and we, "in this neck of the woods," will very closely watch each step of progress that he makes, in this new venture.

OBJECTIONS TO CROWDING THE HIVES AND PUTTING THEM IN LONG ROWS.

In opening the Review for December, the first to catch my eye, was the Review-apiary of 104 colonies, and my first thought was that the editor had brought his bees home, preparatory to putting them into the cellar, and had unloaded them all in a bunch, and then photographed them; but after reading his description, I saw this was all the room the 104 colonies had during the season. They do not appear to occupy over four square rods of

ground. This crowding will do very well as long as we buy our queens, but just as soon as we begin to have queens mated, trouble begins. It does not matter much about the workers mingling together, but it is all off when a young queen returns to the wrong hive. We had this point brought out very forcibly at the Kalkaska yard this year, where 200 colonies were kept on four terraces, about 50 colonies in a row, without any particular landmarks to guide the young queens home. The consequences were that we lost one fourth of our young queens at this yard, and only about five per cent, at our other yards.

WHAT MAY BE GAINED FROM OUTSIDE PROTECTION.

The editor asks to have his mistakes pointed out. Mistake No. 1, is in not selecting a more sheltered location for the Review-apiary next spring; and it is a very serious mistake. To illustrate: Mr. Geo. H. Kirkpatrick, of Rapid City, Michigan, has an apiary at his home that has just about the same protection, I should judge, as the pin-hole photo, shows that the Review-apiary will have—rather chilly. Mr. Kirkpatrick's bees were all wintered in the same cellar, and were the same in May, when, without any care in selection, about one-half, were moved to a more protected location. The results were, with pasturage about the same, that the protected yard, produced *one 8-frame upper story, more*, per colony, then the unprotected yard. This lack of out-side protection has cost me more bees, and of course, more honey, than any other one thing in bee-keeping; as it has only been a few years since I have realized its importance. There are dollars in it, so, when locating in Northern Michigan, select a sheltered nook for the bees to occupy.

A HIVE STAND FOR TWO HIVES.

Then, another thing, when you begin to count your colonies by the hundred, you will not think of using your little blocks under each hive, for a stand. Make a stand out of four pieces of 2 x 4; two pieces four feet long, and two 16 inches long; spiking the two long pieces to the short ones. This will make a rim four feet long, and 20 inches wide, which is large enough for two colonies. These long stands level up easier than single stands; and, when level, they stay to their place almost indefinitely, while the 4-block stand will need almost constant tinkering to keep it level. Just as soon as you begin to keep large numbers of bees, you will begin to cut all the corners possible.

One of the *wisest* things the editor has done, is to discard the eight-frame, for the ten-frame size of hive, for outyards, to be run for extracted honey.

MOVING FULL COLONIES IN THE SPRING.

Under the head of preparing full colonies for shipment, he says he will draw off quite a per cent. of the flying force before shipment, and the full colonies will each have an empty upper story placed above, the top of this upper story being covered with wire cloth. Now, I am quite certain that this extra empty story above is not necessary, during May, especially after drawing off the flying force as proposed; and those upper stories will be needed for crating the surplus frames; as these ought to be all ready nailed up, and wired; but *don't* put the foundation in the frames before shipment, as it will not stand shipment.

REMUS, Mich., Jan. 5, 1906.

[I agree with all that Bro. Townsend says in regard to the necessity for having hives scattered and a distinctive character given to the location of each hive, where queens are to be mated. I learned this most thoroughly when engaged in rearing queens for the market. The more scattered the nuclei, and the more odd their ar-

rangement, the less the loss of queens. Where I lived at the time I was engaged in commercial queen rearing, the shop stood within two rods of the house, and the nuclei were irregularly scattered around these two buildings which made the best of land marks. Then there was occasionally a small tree. The loss of queens in mating was very small, indeed. With my apiary arranged as I am to have it another season, I expect to so manage as to have the queens mated in the hives standing at the ends of rows. I don't remember as I ever lost a queen from a hive standing at the end of a row. One more point: I doubt if the distance apart that hives stand has so much bearing upon this question, as does the arrangement.

I presume that Mr. Townsend is entirely correct regarding the advantages of having an apiary located in a sheltered nook. Mr. J. E. Crane told us, in the Review, not long ago, of an apiary that gave such poor results that he seriously contemplated moving it to another part of the country, but a move of only 40 rods, to a more sheltered location, changed results most radically for the better. By the way, this location that I have all in readiness for use next spring is not to be a permanent location; the coming season is probably as long as I shall keep bees on that spot, but sheltered nooks, in the suburbs of a city, near one's home, are not always to be found. I believe I have my eye upon a spot that is almost ideal in this respect, and it is not far from my home, and, if I should continue to maintain an apiary here in Flint, as I probably shall, as it is an ideal clover location, I shall probably buy the lot, and build a cellar and shop, or honey house. I would like to have two or three apiaries in the raspberry region, one here at home in the clover country, and then one or two in a buckwheat County in the State, upon which I have had my eye for some time—but this is certainly building castles in the air. However, everything must be first formed in the imagination before it can be made a reality.

The pin-hole photograph, and the lack of more explicit description, have led Bro. Townsend into the error of supposing that I intended to mount each hive upon four stakes or blocks, which is not the case. My hive-stand so far has been simply two strips of hemlock, 2 x 2 inches and as long as the hive is wide. One strip is placed under the front end of the hive and one under the back end. In laying out the ground, a piece of section honey box was stuck into the ground at each corner of where a hive was to stand, then these hemlock blocks laid down between the stakes, and leveled up, but they are so nearly the color of the dead grass that they scarcely show. I have never used two colonies upon one stand, and don't know how I should like it. I have always imagined that the manipulation of one colony would disturb the other, with the result that it would be resented. However, this may be mostly in my imagination; and, even if a reality, the objection might be overcome by giving both colonies a little smoke before commencing operations. Aside from the fact that a double stand can be made a little more cheaply than two single stands, and that the other hive affords a table upon which to set down the smoker, or any other tools, I fail to see any advantage in the double stand. Yes, Bro. Townsend says that such a stand will stay level longer without any tinkering than is the case with a single stand, and it seems reasonable. The same space of land will accommodate more colonies, which, in some instances would be a decided advantage.

I presume my critic is correct again when he says that colonies from which most of the flying force had been drained the last of May might be shipped in safety without placing any

upper story over each colony; but the putting on of these upper stories does no harm. It does not increase the ventilation, but it does allow the bees liberty to get off the combs if they so desire, while it does not prevent their remaining upon the combs if that is their wish. In other words, they will do no harm, and may do good, especially if a very hot spell of weather should come on, as is sometimes the case at that time of the year. As two empty stories are to be shipped for each colony that goes, one of these stories will hold three-fourths of the empty frames and the other one-fourth can be placed in the story that goes over the bees, and be held in place at one side of the hive, by strips tacked over their ends. I am much obliged for the information in regard to not not putting in the foundation before shipment, as I might have done that very thing.—Ed. Review.]

Editorial

This issue of the Review is unusually late, because we dropped everything to get out the annual report of the National Bee Keepers' Association. It is to be hoped that subscribers will pardon this delay, as the annual convention was held so late that it made the report late, and members were impatient of the delay. By the way, the report this year is of unusual value—contains a lot of really useful, helpful information. If you are not a member, I would suggest that you send $1.00 to the manager, N. E. France, Platteville, Wis., and thus become a member for one year, as well as receiving a copy of the report.

Editor of Review Does Not Endorse Mining Stock

A year or two ago, having full faith in Dr. W. B. House and his "Yellowzones," I furnished him a list of bee-keepers to whom he sent circulars. A few months ago, on account of the ill health of his daughter, he moved to Oberlin, Ohio, and has since engaged in selling the shares of a Western Mining Company, sending out circulars to the list of bee-keepers that I had furnished him. He also enclosed "Yellowzone" circulars, some of which bore my recommendations. Since then I have received numerous letters asking if I endorse the mining stock as well as the medicine, the inference being that, if I endorsed the doctor and his medicine, there was an implied endorsement of the mining stock. In explanation I would say that while I have perfect confidence in the integrity of Dr. House, I have no personal knowledge of the mining stock that he is selling, and do not endorse it, and the doctor writes that he did not expect that view would be taken of the matter.

Using Wires in Brood Frames Without Embedding Them.

Unless swarms are to be hived upon full sheets of foundation, is it really necessary to embed the wires? Suppose that the sheet of foundation is woven in between the wires, that is, passed under the first wire, over the next, under the next, and over the last, then securely fastened to the top bar, will not the bees extend the cells out over the wires, thus doing the embedding themselves? Perhaps this is not exactly the form in which to put the questions, as we all know that the bees

will do exactly this thing, but the point is, will it answer the purposes for which wires are used, aside from that of sagging when swarms are hived upon full sheets of foundation? If I were going to have full sheets of medium brood foundation drawn out between other combs in established colonies, I would not need to wire the frames to prevent sagging, but I want the wires to support the combs when extracting the honey while the combs are new, or if colonies are to be shipped or moved about the country. I shall be glad to hear from any of my subscribers who have had experience along this line, or from anyone who has any suggestions to offer.

We Will Have Over 400 Colonies in the Raspberry Regions of Michigan.

How the flow of events, one following so quickly upon the heels of another, sometimes changes our plans. Six months ago I had no idea that I should have any bees in Northern Michigan the coming season. I thought I might have in a year or two; but repeated visits to that region, and consultations with men owning bees in that locality, finally led me to the decision that I would establish an apiary there the coming season. I had not much more than out-lined my plans in the December Review, than I received a letter from Mr. W. E. Forbes, of Plainwell, Michigan, saying that *he* would like to put an apiary in that region if he could find some good man to run it. Like a flash, it came to me that *I* might just as well care for 200 colonies as for 100, and I entered into correspondence with Mr. Forbes; finally made him a visit, and now have a contract to manage 100 colonies of bees for him, on shares, for three years, in Northern Michigan, and will move them up there in the spring.

On my way home from Plainwell, I stopped at Jackson, and attended the Michigan State convention. There I met my friend, Fred B. Cavanagh, of Missaukee County, who has nearly completed a course in mechanical engineering at the Agricultural College, but is now assistant superintendent at at the Jackson Gas Co., with a prospect of some day becoming superintendent, at a tempting salary, and who has over 300 colonies of bees which he was intending to move into the raspberry region the coming season (having moved part of them last fall) and he probably would have taken this step had not the Gas Co. captured him. The problem was, what to do with the bees. He, too, wanted to find some man to work them on shares. I took this matter under consideration, slept on it, and then took *his* bees, too, and am to move the rest of them north in the spring.

Some of you may wonder how I am going to manage so many bees. Well, I'll tell you. My brother Elmer, who has three boys, nearly, if not quite, man-grown, is going to move into Northern Michigan in the spring, and he and his boys, advised and assisted by myself will manage these bees to a T. Elmer was with me three years when he first took up bee-keeping, and has kept bees ever since in connection with farming; now he is going to drop farming and make a specialty of bee-keeping.

Seeing that we are to have so many bees in the raspberry regions, and that it will be quite a job to move them all up there, I shall keep my own bees here at home this year, and work them for extracted honey—perhaps sell a few colonies in the spring—see advertising columns. This will enable me to have bees in two widely different localities—one clover, and one raspberry.

All of our successes and failures will be told of in the Review, that others may profit thereby.

ADULTERATION STORIES.

To What Extent do They Effect the Sale of Honey?

There has been a great deal said and written about the sale of honey being greatly lessened by the stories about its adulteration, and it may be well to at least consider another view of the matter. Mr. G. M. Doolittle, in Gleanings, in one of those "conversations" of his, brings up one phase of the matter that has not received much attention. Here is what he says:

"Say, Doolittle."

"Yes, Clark."

"You remember that question from the question-box at Syracuse before the Onondaga Co. Bee Convention of three days ago, regarding honey selling slowly this fall and winter?"

"Yes."

"What was the conclusion in the matter? I had to come away before the discussion had fairly commenced."

"I could not stay until the discussion was ended; but one of the ideas that was advanced was that adulteration had largely to do with the matter, in that it made the common people suspicious of all honey: consequently there was an under-consumption of our product through this suspicion."

"Do you believe that?"

"I do believe that there is an under-consumption of honey, and quite agree with the idea brought out—that, with less than half a crop of honey in the United States the past year, honey rarely ever sold as slowly as it has been doing for the past three months."

"Yes, that part I agree with. But do you think that the cause is the adulteration of honey, or, rather, that there are stories in circulation to the effect that honey is largely adulterated?"

"I think that this may have something to do with the matter. Don't you?"

"Do you remember when there was such a great cry a few years ago in the agricultural papers about oleomargarine, and how the markets would be ruined for butter, and the dairymen out of employment, unless the thing was stopped?"

"Yes, I remember how the papers were filled with the subject of oleomargarine, and about the great injury it was, and would likely become, unless there was some law passed regarding the matter."

"Well, did the oleomargarine matter cause butter to sell more slowly?"

"But there was a law passed that caused oleomargarine to be sold for what it was, and not for butter."

"Correct. But was there an under consumption of butter during the oleomargarine scare?"

"I do not fully remember."

"If you will study up I think you will find that there was no less butter on the tables in the homes and hotels of the country during those times than there was before or since, in proportion to the means with which the people had to purchase. So far as my memory serves me, the cry of adulterated butter cut no figure as to making the people use less butter."

"That is something I had not thought about in my reasoning that the adulteration scare had to do with a lack in the call for honey."

"Then look at the liquor business. All admit that the larger share of the whiskey drank is adulterated with the rankest poison, and some of it to such an extent that there is little if any pure whiskey about it. Yet statistics tell us that the consumption of liquors, per capita, is greater today then it ever was before. Does the cry of adulterated liquors cause a slowness of their sale?"

"If you state the case correctly, it would seem seem not."

"It looks to me that this laying of the trouble of a lack of an energetic call for our honey to an adulteration scare is far fetched, and that it is not a reasonable ground for such bee-keepers as Doolittle, House, Betsinger, Kinyon—yea, and the *bee papers* generally to take. Facts in other matters show that the cry of adulteration does not scare consumers of other products quite so easily."

"Aren't you coming out pretty strongly in this matter?"

"Possibly so: but I like to see people reasonable in the position they take—yes, more; I like to have them dig deep enough into a thing to know for certain whereof they affirm before they make an assertion."

"Without stopping to argue further along the adulteration line, allow me to ask how you account for this slowness in sale of our honey; for we al-

admit that there is not the demand for honey which we wish there was."

"Simply on the ground that the great mass of our people do not consider honey as something which it is necessary that themselves or their families have. In other words, the desire for honey is not so great as it is for butter, whiskey, tobacco, etc. Their *butter* they must have or the dinner is not worth eating. The whiskey they *must* have, even if it means sorrow, ruin and crime to themselves, their families, the nation, and the world. Their tobacco they must *use*, even if their clothes are ragged and their shoes are out at the end of their toes; and the tea-drinking habit must be indulged in whether there is any honey on the table or not."

"But don't you think that we could educate the people to a point where they would consider honey of as much a necessity to them as tea, and the things you have mentioned?"

"No, *never*."

"Why not?"

"Because when you get them educated, and the time comes from straitened circumstances that they must retrench, they never retrench in favor of honey. Did you ever know of a family giving up their butter, sugar, tea, or tobacco for honey? And even without the straitened circumstances, after once having honey, and knowing of its goodness, many families which I know of tell me that they can make a good syrup for their buckwheat cakes, a syrup that answers all purposes, and that at a cost of less than one-half of what they have to pay me for my honey. All other families which I know of will buy honey of me if I go personally and press it on them each year, but will never come to me or any other bee-keeper after it. But they would go miles and miles after their tea, tobacco, sugar, and butter, with honey right at their next door, before they would use honey as a substitute for either."

"Well, you are advancing some new thoughts—thoughts that are, perhaps, well worth thinking over. But in your ground there is very little hope. Is there no remedy?"

"I see only one."

"What is that?"

"Let the bee-keeper stop putting the rosy side of apiculture before the public all the time, thus putting more bee-keepers into our already overstocked honey-field. Give the truth or the thing as it is and make the question of more or better bee-keepers the prominent one for a while. Then with fewer and better bee-keepers as a basis, add a goodly lot of energy spent in a house-to-house canvass each year with our honey, perhaps we who are in it may be able to hold on and make a living out of bees. What do you think of the proposition?"

"This is a little new to me, and I wish a little time to think over the matter. Meanwhile I will give your ideas to the readers of Gleanings, and let them do some thinking with us, for 'in the multitude of counselors there is wisdom.'"

That honey is a luxury, especially when used as a table sauce, must be admitted by all. This is the reason why the price does not go up when there is a short crop. People have been accustomed to paying about so much for it, and won't pay much more they will go without it first. It is not so with potatoes, or butter, or any of the necessities of life—we must have these regardless of the price, or of the stories about oleomargarine being sold for the latter. The consumption of flour, butter and potatoes can't be increased by advertising, but the sale of luxuries *is* increased by advertising. It is as Bro. Doolittle says, that, in order to hold our customers for honey, we must "go personally and press it on them each year," or, in other words, we must advertise. All luxuries must be advertised, or they meet with limited sale. Honey is no exception. Yes, it is true that honey has been *known* for centuries, at least, it has been known *of*, but one-half the people don't really know how luxurious a luxury, how really good and healthful, is *good* honey. They look upon it as a luxury, and, now comes the point, when they hear these stories about its being adulterated, about its being made by machinery, etc., they think, "well, if that is the kind of stuff it is; I don't want any of it." I have heard quite a number of our most intelligent bee-keepers take the same

ground as that taken by Bro. Doolittle, viz., that these stories don't amount to anything. Candidly, I can't take that view of the matter. I have met too many men and women who have told me that they had read and heard these stories, and *believed them*, and that they had refrained from buying because of this belief. People are going to eat bread and butter, no matter what the stories they hear—not so with luxuries. They must be genuine, not imitations, or we don't care to pay out our money for them.

Neither do I agree with my good friend in his proposed remedy, that of discouraging people from entering the business of bee-keeping. I agree with him most heartily in saying that the shady as well as the bright side of bee-keeping should be exposed to view. I agree that we should not persuade men to enter our ranks. I agree that the influx into bee-keeping has probably been increased from too persistent y painting it in rosy colors, and this may have increased the crop somewhat, and thus had a tendency to lower prices, in a slight degree, but I greatly doubt if it affects prices in the *degree* that Mr. Doolittle thinks it does.

Here is a point worth considering: The use of honey for manufacturing purposes, particularly by bakers, has been the *salvation of bee-keeping*. Some of us may not realize this, but it is a *fact*. Before extracted honey was used for this purpose, it was almost a drug in the market. Now, there is an almost unlimited demand for it, although at not a very high price. The demand is steady and reliable, however, and many men who were once producers of comb honey, have now turned their attention to the production of extracted honey. This lessens the amount of comb honey put upon the market. There are many other uses to which extracted honey might be put, and would be put, if it could be furnished at a low enough price

The Survival Of The Fittest

Lewis Beeware

It Always Fits

Did you ever stop to consider why you should insist on Lewis goods in preference to any other?

At the **Lewis Factory** the greatest pains are taken to see that all goods are made scientifically correct.

Perfect matching, necessary bee spacing, accurate dovetailing, correct grooving and careful polishing, besides a thousand and one other important details of manufacture are all brought to bear as a result of the thirty years' experience of the Lewis beeware specialists.

Lewis' Goods go together right. Why? Because they are right.

Every part is made to fit every other part just like a watch.

Lewis hives and sections go together with a snap.

What a comfort it is to have bee goods fit!

What bee-keeper can estimate the value of time and patience lost with poor goods that don't and won't go together accurately? Steer clear of them by ordering Lewis' goods.

You can't afford to take chances of not receiving full value for your money even if the goods are ordered in the winter time. But now suppose it is swarming season, hives brimful of honey, bees are busy, you can't afford to tie up your bee industry, lose time, lose money and have your peace of mind annoyed and patience tried by bothering with ill-fitting, inferior goods. Lewis goods are necessary to your welfare and happiness.

Look for the brand. Send for catalog today, if you haven't one.

There are a score of our agents besides ourselves who can furnish you with Lewis goods at factory prices. They are:

ENGLAND—E. H. Taylor, Welwyn, Herts.
CUBA—C. B. Stevens & Co., Havana.
C. B. Stevens & Co., Manzanillo.
CALIFORNIA—Paul Bachert, Lancaster.
The Chas. H. Lilly Co., San Francisco.
COLORADO—R. C. Aikin, Loveland.
Arkansas Valley Honey-Producers' Association, Rocky Ford.
Colo. Honey-Producers' Association, Denver.
COLORADO Fruit Growers' Association, Grand Junction.
Robert Halley, Montrose.
ILLINOIS—York Honey & Bee Supply Co., Chicago.
IOWA—Adam A. Clark, Le Mars.
Louis Hanssen's Sons, Davenport.
INDIANA—C. M. Scott & Co., Indianapolis.
MICHIGAN—A. G. Woodman & Co., Grand Rapids.
MINNESOTA Wis. Lumber Co., Fairbault.
MISSOURI—E. T. Abbott, St. Joseph.
OHIO—Norris & Anspach, Kenton.
OREGON—The Chas. H. Lilly Co., Portland.
PENNSYLVANIA Cleaver & Greene, Troy.
TEXAS Southwestern Bee Co., San Antonio.
UTAH Fred Foulger & Sons, Ogden.
WASHINGTON The Chas. H. Lilly Co., Seattle.

G. B. LEWIS COMPANY,

WATERTOWN, WIS. U. S. A.

ADVANCED
Bee - Culture

Typographical Beauty

This page was printed with the same type used in printing ADVANCED BEE CULTURE. See how clear, plain, and easily read! The paper is the same as this, only thicker and heavier. The pictures are simply incomparable with others in the same line. As Dr. Miller says "they are what may be expected from one who is **almost daft** in that direction."

Ernest Root says: "The book is the equal, if not the superior, from the standpoint of the **printer's art.** of anything that has been published in bee culture."

Walter S. Ponder writes: "The first thing to attract my attention was the dainty and **beautiful binding.** Surely you have given us the most beautiful bee book that has been printed."

The design upon the front cover is not elaborate; simply a trailing green vine of clover, with a bee in gold sipping nectar from one of the dainty, white blossoms. Although my eye has rested upon it thousands of times, yet the **harmonious coloring,** the natural, well-balanced grouping, the appropriateness, never fail in giving me a thrill of pleasure.

The Contents

As Seen by Others

While beauty is enjoyable, of much more importance in a bee book, is the **helpful Information** that it con-

tains in available form. It is an easy matter to write page after page introducing a subject, and to dismiss it in a similar manner, but what pleases the busy bee-keeper is to be told in a few words clear, plain and concise exactly **what** to do and **how** to do it. This is the strong point of ADVANCED BEE CULTURE. Let me quote once more from my good friend Earnest Root. He says: "The style of writing is simple and easily understood. One does not have to read over a paragraph a second time to comprehend its meaning. Indeed, I doubt if there is a clearer writer on bees in all beedom; and, what is more, he seems to have the happy faculty of arriving at the very **kernel** of every idea."

As a rule, people are quite inclined to neglect praising the members of their own family, hence the following in a letter from my brother Elmer, comes with added force. He says: "It may not be an elegant way of expressing it, but it seems to me as though you had **skimmed the cream** from the Review, ever since it was published, churned it, and this book was the butter."

R. L. Taylor says. "You are too modest in intimating that ADVANCED BEE CULTURE is only for the experienced bee-keeper. I should consider it **indispensible to the new hand.** It certainly fills a gap in apiculture literature."

C. W. Dayton, of California, writes: "I did not know that the whole subject could be **done up so compactly,** and yet treat of all parts so completely. While it fits the specialist, it is also good for the beginner. It contains all that the common bee-keeper cares to know and in such shape as to be easily found."

Price of the book, $1.20; or the Review one year, and the book for only $2.00.

W. Z. Hutchinson

Flint, Michigan

People say

Review subscribers do not read the ads. or they do not know a bargain when they see it.

CO-OPERATION

Means---You Work for Me, and I Work for You for Mutual Benefit.

A well-known manufacturer wishes to cash $2,000 worth of goods during

FEBRUARY.

He has made me the lowest prices I have been able to secure in years, viz: The 8-fr. Dove, hive, 1¼-st. at $1 10 each –any frame, any cover, etc. 10-fr., $1.20.

No. 1 White Basswood Standard Size Sections a $3.50 per 1000. No 2, $2.00.

I will take you Mr. Bee-Keeper, into partnership. There are three conditions, viz:

1st. Cash to reach me not later than March. 30, 1906.

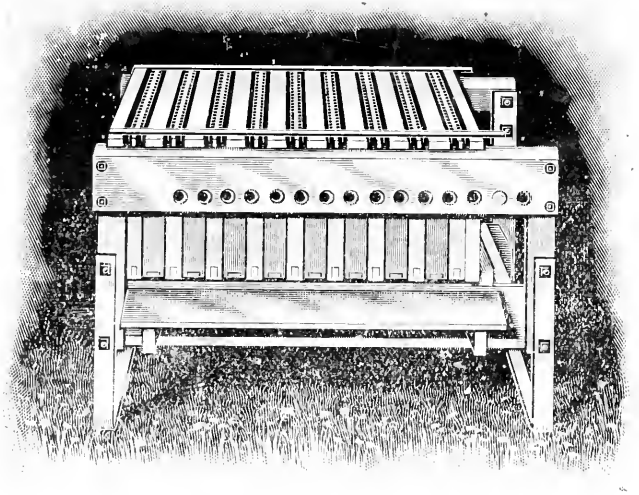
2nd. You subscribe for Rural Bee-Keeper, one year, $1.00.

3rd. You pay me a comission for my services, viz.

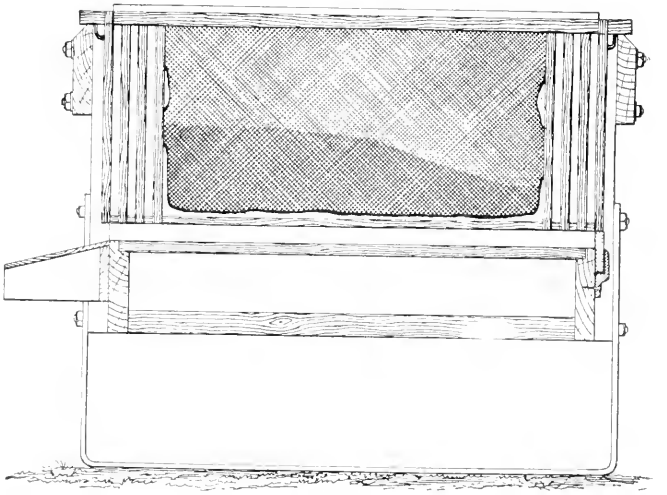
10 percent. on all orders for $50 or less.
8 percent. " " $50 or more.

You run the risk of paying more if you do not accept at once.

W. H. PUTNAM, River Falls, Wis.



Cover and Sections Removed, Showing Slatted Dummies in place.



Sectional, Side-View, Showing Slatted ends of Brood Frames.

Aspinwall, Non - Swarming Hive.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, MAR. 15, 1906. NO. 3

The Prevention of Swarming by Means of the Hive.

L. A. ASPINWALL.

THE ultimate control of the increase of colonies, culminating in the absolute prevention of swarming is no less essential to successful bee culture than the control of increase in stock and poultry breeding. With no visible means to prevent increase among our domestic animals and poultry, perplexities would prevail, not unlike those experienced by bee-keepers during the swarming season; and, I might add, with the promiscuous mating of queens.

THE YIELD DOUBLED BY NON-SWARMERS.

With our colonies under perfect control, we may reasonably expect the yield of honey, in average seasons, to be at least double. Furthermore, with non-swarming hives the ability to secure all the honey possible from white clover, gives an added value to the increased product.

Having experimented 17 years with from 30 to 50 colonies of bees, involving great expense (both as to labor and money), in the employment of various methods, I must take issue with experimenters generally in this line; in, that a successful method to prevent swarming must primarily be found in the *hive*, rather than in the methods adopted. However, be the hive ever so perfect, any neglect to use the methods requisite in its use, will result very largely in failure.

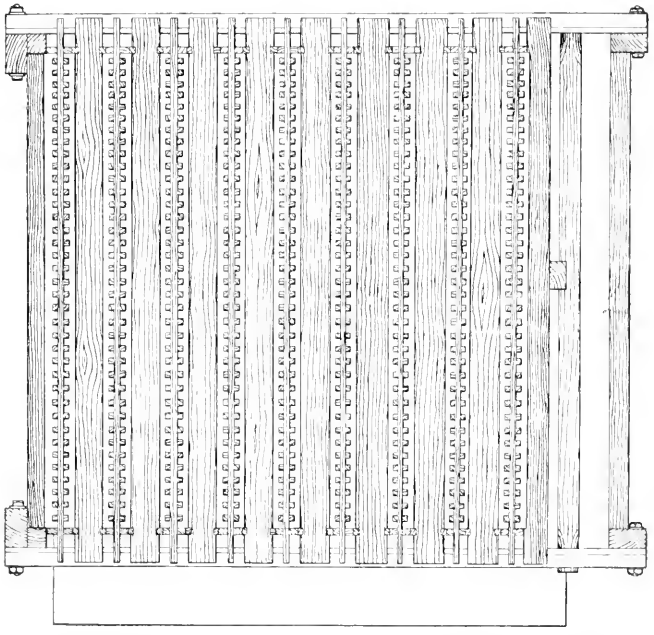
In the prevention of swarming we must first prevent a development of the factors which induce it. These hinge mainly on a crowded condition of the colony. This condition results in the clogging of the brood apartment with honey, and impeding the queen in her work of laying. The lack of storage room is a very important factor to be considered in this connection. Ventilation, and freedom of access to all parts of the hive, must in no way become impeded. The hive employed

must embody requisites, which, with proper management, will prevent a development of these factors.

ESSENTIAL FEATURES OF A NON-SWARMING HIVE.

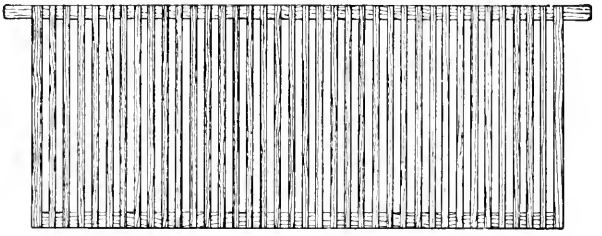
The essential feature embodied in the construction of my hive, is an arrangement whereby the brood combs may be separated, or spread, covering a greater area. It is an established fact that any amount of box or surplus room will but partially overcome a crowded condition of the brood nest.

The introduction of slatted frames, or dummies, previous to the swarming season, I have found to be the great essential in overcoming the crowded condition; thus retarding the swarming impulse. This plan has been the basic or foundation principle of all my experiments since 1893. The thickness, size, and number of these slatted frames have been wonderfully changed during the 12 years which have followed. I now arrange the comb frames with slatted dummies between them, and on both sides and ends of the hive, which includes a new frame. While I have used slatted dummies at the sides for four years, the new frame was first made with the view of rapid handling, and to prevent the killing of bees thereby. By reference to the accompanying illustration, a slatted extension at each end of the frame will be seen. As already stated, through the tendency of bees to crowd the brood nest, the slatted portion, although filled with them upon opening the hive and removing the frames, will almost instantly become free for closing, by their movement towards the combs. It is evident that a sufficient distance of slatted space between the combs and end-bars may be employed which would extend entirely beyond the reach of the strongest colony during the warmest weather.



TOP VIEW OF BROOD NEST, SHOWING UPPER EDGES OF SLATTED DUMMIES.

But there is a mean distance which is practically right. This I have made to conform to the number of sections; five of which are used in each holder contained in the super. We will now see that, with additional length of the slatted dummies, which, together with the improved frames, tend to expand the colony, also affords free movement of the bees at either end; thus relieving the tendency to become crowded at the

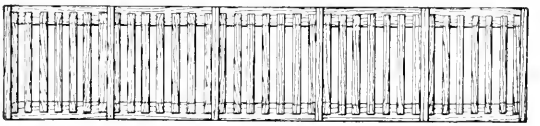


SLATTED DUMMY FOR USE IN BROOD NEST.

side where the bees enter in greatest numbers, during a honey flow. Furthermore, we have the combs, by reason of the slatted ends, most thoroughly protected from the outside heat during very warm weather; which is another factor overcome in the prevention of swarming.

THE IMPORTANCE OF FREE COMMUNICATION WITH THE SUPER.

As with the development of mechanical contrivances, we find intricacies,



SLATTED DUMMY FOR USE IN SUPER.

evolving and forming a part of a non-swarming hive. Not only must the crowded condition be overcome, but much greater access afforded the bees for entering the supers. Who has not noticed sections, well-filled with honey, having the lower edges of the wood gnawed by the bees? This to the thoughtful mind is an evidence of their requirements. It is equivalent to a *demand* for *wider* openings. By reference to the accompanying illustration, a plan or top view of the hive may be seen, showing the comb frames and dummies alternating each other. Instead of the latter having wide top bars, additional bee-space is given, which is correspondingly furnished by the super dummies or separators. This construction never fails to make the supers acceptable to our bees. With increased bee-space the supers become, as it were, more a part of the brood chamber, inviting the storage of honey where it will be accessible to the cluster during winter. Bees reluctantly place their stores where it will fail to meet their requirements in cold weather.

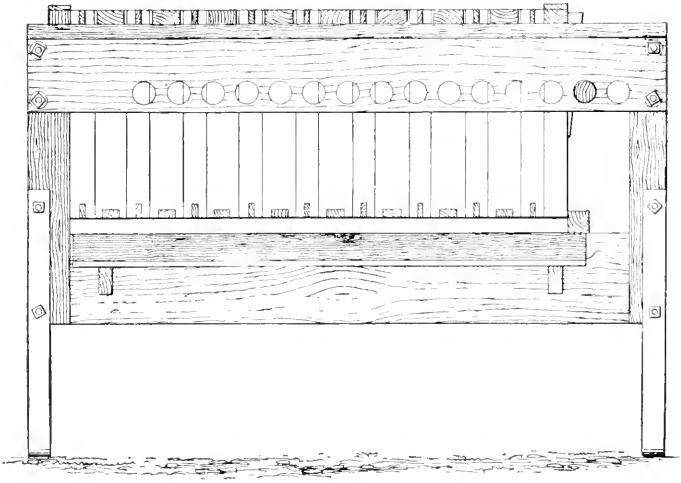
But, with this free passage to the supers, a corresponding evil presented itself which had to be overcome in order to achieve complete success. I refer to the storage of pollen in the sections. The additional bee-space invited the storage of pollen as well as honey. I found, however, that although the bees ventured above with pollen,

that the queens confined themselves exclusively to the brood-nest.

THE PART THAT DRONE CELL FOUNDATION PLAYS IN THE PROBLEM.

The past season has been prolific in methods developing the non-swarmer. Knowing that bees seldom deposit pollen in drone comb, I concluded to experiment with over 1,000 sections containing drone cell foundation. Although fearing the queen might occupy them, I was agreeably surprised to find that but four sections out of the whole number contained a few cells of brood; which I could readily account for. If, however, sections containing drone cell foundation be placed on swarming hives, a crowded condition of the brood chamber would be likely to force the queen above and occupy such cells in the laying of eggs. The slatted dummies of a non-swarmer prevent the crowded condition, and overcome all tendency to crowd the queen, which is a factor inducing the swarming impulse.

In the field of invention the unexpected invariably happens. It occurs in two ways. In the development of a principle many of the difficulties overcome are attended with a corresponding evil; which, upon being eliminated, gives us *more* than was anticipated. In respect to the latter, drone cell foundation above the brood nest entirely eliminates the storage of pollen; and with sections containing worker-cell foundation *at each end* of the section holders (where no pollen is likely to be stored), a wonderful impetus is given to the storage of honey. By this arrangement we give the bees just what they build when left to instinct—both kinds of comb. We frequently find worker foundation in sections largely changed to drone size, thus displaying their instinctive demands relative to the construction of comb. Using three sections of drone foundation, and but two of worker size, which are placed at each *end* of the holder, thus making an outside row, induces the bees to complete them (the outside ones) much sooner than if all contained the same sized cells. This rapid filling of the outside sections, which is due to the excess of drone size



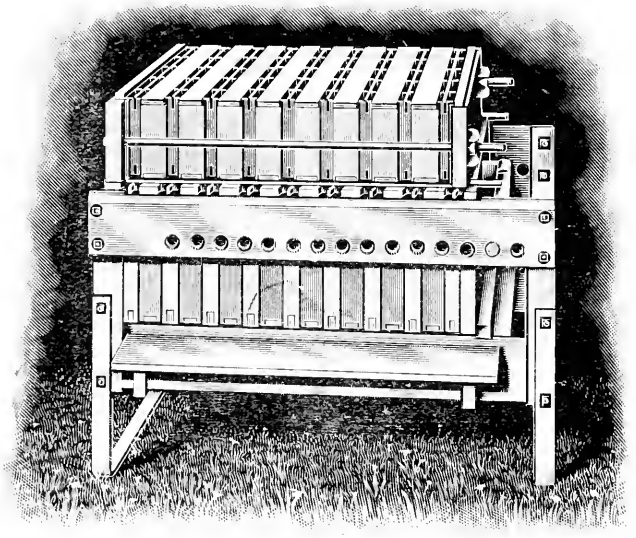
FRONT ELEVATION, SHOWING SLATTED DUMMIES ALTERNATING ONE ANOTHER.

cells, affords another illustration in which the unexpected happened, giving more than was first expected. It may be well to state in this connection that the supering surface should be sufficient to contain from 35 to 40 sections in a super, or approximately about 25,000 cells, and 50,000 upon being tiered; which should be done when the first set of combs are about half drawn out, provided the honey flow is good. In order to give employment to all the comb builders, as well as those engaged in the storage of honey, without interference in their respective duties, emphatically, the hive for progressive bee-keepers.

But some one may inquire as to the quality of honey and the thickness of comb, when drone cell foundation is used. I will simply say, it transcends honey in worker comb for beauty, while the amount of wax per pound of honey is not increased in the least.

Another advantage contained in the non-swarmer is (if properly managed) the almost complete elimination of burr combs, which are so annoying in the production of comb honey.

From 35 colonies, with an average



HIVE WITH COVER REMOVED, SHOWING SUPER WITH SLATTED DUMMIES BETWEEN THE SECTIONS.

from 50,000 to 75,000 cells are requisite. Let us also note that *a non-swarming hive is imperative*. I mean by this, unless we keep pace with our colonies in the storage of honey, by adding supers *when required*, the brood apartment will become clogged, and the building of burr combs ensue, thus developing a factor inducing the swarming impulse. The non-swarmer will be, most

production of 128 sections per colony, the burr comb scrapings amounted to less than a quart; and most of these were due to experiments. Having conducted these experiments to prove the correctness of the principle involved in the hive, much less honey was stored than would otherwise have been received. Under the best developed working plan, my bees would doubtless

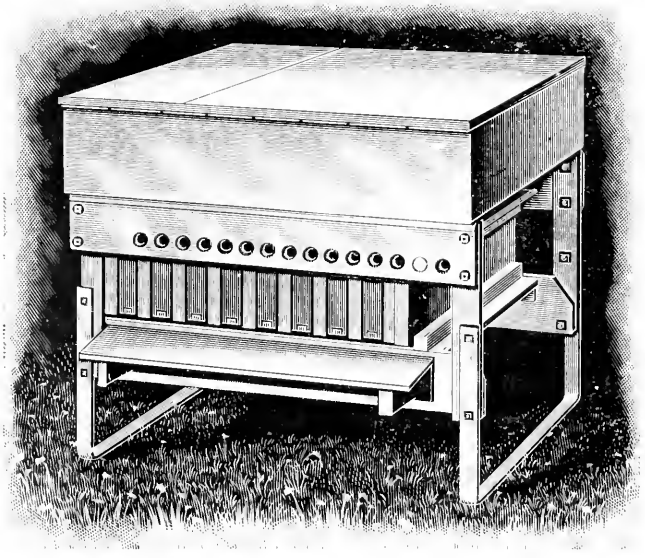
have averaged 150 sections per colony. The activity of a newly hived swarm does not compare with that of a strong non-swarming colony, when the honey flow is good.

So rapid has been my progress in the development of a non-swarmer of late, I can safely say that more advance has been made the last two years than in the 15 which preceded them. And what a comfort to keep bees with all swarming eliminated!

What possibilities in the maintainance of out-apiaries, also, to unite the keeping of bees with some other occupation.

In producing the non-swarmer, five important and distinctive features essential in its construction have been developed. As already stated, the basic principle lies in the slatted dummies. Next came increased communication between the hive and supers. Following this, slatted ends were made in the comb frames; and, in consequence, longer dummies were used. To prevent the storage of pollen in the sections, and at the same time retain wide passage ways, led to the use of drone cell foundation. In order to increase and equalize the storage of honey throughout the super, it was found advantageous to supplement the drone cell foundation with worker size placed at the holder ends.

JACKSON, Mich., Jan. 16, 1806.



HIVE COMPLETE, WITH COVER IN POSITION

Some Objections to the Use of Shallow Brood Combs.

E. T. ATWATER.

IN talking and writing on the hive question, so far as I have noticed, no one has emphasized properly the matter of the comparative *condition* of the *combs* in each. The deeper the frame, the poorer the combs are apt to be. This was brought to my attention last spring, while talking to Mr. G. J. Yoder.

Mr. Yoder uses largely a ten-frame hive, with frames 7½ inches deep, comb surface 6⅜ x 17, when fully built to end and bottom bars He uses also a few ten-frame hives of standard depth. During the season of 1904, the colonies in shallow hives made more honey than the ones on deep combs. His explanation of the matter was that the shallow combs were practically *perfect*, no sag, and so were very well filled with brood, while the deep combs had sagged to such an extent that there was very little brood reared within, perhaps, two inches or more of the top bar. Of course, more honey is stored in the brood nest in which the deeper frames are used, but even if average returns were slightly less, the deep hive would be better adapted to an extensive business, as that extra honey in the brood-nest is the best kind of insurance against losses and extra care. Of course, two stories of 7½ inch combs may be left for the bees, but I find that few do so. I cannot believe that results, even with the combs in the Yoder hives, would always be in favor of the shallow hives. I have always had more deep (standard) hives, than of the shallow, although I have had in use, perhaps, 100 hives with five inch combs, and another 100 with six-inch combs. In no case that I can remember, has any colony in which the queen was confined to a single case of either five-inch or six-inch combs ever produced the largest yield in a given yard. Reluctantly, have I admitted this truth, for, from the first, I have had a strong leaning toward the shallow brood-nest, and have been willing to give the shallow hive the benefit of the doubt. My shallow hives were equal to 5, 6, or 7 L frames. Have used L hives with from four to ten frames in the brood-nests, for comb honey.

DON'T USE TOO LIGHT FOUNDATION, NOR PUT IT IN THE FRAMES TOO EARLY IN THE SEASON.

Now, brother bee-keepers, if you realize the importance of good combs, you will likely fight shy of all light brood foundation. If you use five-inch combs two wires are needed. With L frames we use three wires; with a deeper frame it may be that four wires would be necessary.

I know that Doolittle recommends filling frames with full sheets of foundation during the winter, or spring, but my experience again says *no*; unless you have a place where they can be kept *cool* until ready for use, be that time May or September. Full sheets of foundation, well wired, if long exposed to a temgerature of 90 degrees or higher, will sag, *badly*, and may even break from the wires, and "Weed Process" at that. Have your frames properly wired, then wait as long as possible before putting in the full sheets of foundation. With our plan of using melted wax to fasten the foundation to the top-bar, two persons can put in several hundred full sheets in a day.

Upon this matter of combs with little or no sag along the top-bar, depends

very largely your success in obtaining results proportionate to the size of the hive. Perhaps the reason that some have condemned the deep frame is because they never had perfect combs in the deep frames; while such combs are more easily secured in the shallow frames, especially would this be the case with the careless operator.

As your combs, barring foul-brood, are to last a life time, be sure to have them perfect at the start.

I find that combs built wholly by the bees sag less, as a rule, than the combs built from full sheets of foundation. But such combs built from starters, if at any time heavy laden, and near a hot, dark colored, or unpainted, single-lid, will often sag all along the top-bars. Paint your lids *white*. Some advise having all combs (from full sheets of foundation) built out in the extracting super during a good flow, so they will be built clear to the bottom bars. That will do, *if* you are sure that you will never wish to use any of those combs in the brood-nest, (and "*never* is a long time"). No matter *how* well-wired, many of them will sag to such an extent as to be entirely unfit for use as brood-combs. Have your foundation drawn out in the brood-nest, at such a time that every cell, as nearly as possible, may contain brood at least *once*. Then you can fill up your extracting supers with such combs, and no *sag*; always ready anywhere, and how fast you can extract the honey from them! Many of them will be built down to the bottom bars.

I know that, with the passing years, I have come to appreciate more and more the value of good combs. When comparing results from different queens, be sure that you consider the comparative condition of the brood-combs in each hive. Poor brood combs may so handicap the best colony as to allow some really inferior stock to accomplish greater results.

SHALLOW COMBS THROW THE POLLEN INTO THE SECTIONS.

In regard to pollen in the sections, my experience is emphatically the same as Dr. Miller's. When comparing hives of the same capacity, or even though the shallow hive be of greater capacity, far more pollen goes into the supers above the shallow hives.

I have also seen strong proof of this in a large yard near one of my own.

Suppose that I am a bee-keeper getting into the business on a large scale, using a shallow brood-nest and working for comb-honey. Results may be satisfactory, little or no pollen being stored in the sections, and I stock yard after yard with 100 or more colonies in the shallow hives. The keeping of such great numbers of bees favors the perfect pollination of the flowers of certain plants, with the result, as years pass, of a marked and positive change in the flora, as has actually happened here, and in many places, and I know that my field now furnishes so much pollen that far too much is carried into sections above the shallow frames.

To adopt a deeper frame and hive to cure this trouble (as it surely would) would be an immense expense, and to *endure* this trouble, would be at great loss. Especially, it seems to me, should the beginner adopt a hive that will *not* favor pollen in the sections, as does the shallow hive. And so far as any magical superiority in the shallow hive is concerned, bee-keepers who depend on their bees for a living, are fast learning that *hives* do not gather honey. Give me the *proper number* of Dadant, Gallup, Langstroth, Heddon, Danzenbaker, or American frames, and I will produce honey to compete very nearly in quality (or quantity) per hive, with anyone, barring pollen in the sections. Of course there are some styles of frames that I would not like to handle.

MERIDAN, Idaho, Jan. 15, 1906.

Intensive Versus Extensive Bee-Keeping.

S. D. CHAPMAN.

MR. EDITOR, in the December number of the Review, you have given us the methods that you followed in increasing from 20 colonies to 104. I have been very much interested in the way you have built up such a nice apiary. It shows the work of a masterly hand. Now, as you are coming to Northern Michigan, I extend to you a hearty welcome. I can give encouragement to a man having the knowledge and experience that you have had. I can see only one thing needful; "just a little enthusiasm." Not only are *you* coming, but others are coming from Southern Michigan, also from Southern California, Nebraska and Illinois and several other States. I receive letters from bee-keepers as far east as New Hampshire, who wish to move their bees to the raspberry fields of Northern Michigan. These men not only ask questions pertaining to our industry, but in regard to farming, as well. So many letters coming to a busy man they nearly swamp me; in fact, I am in sore distress. As nearly all have referred to the Review, when writing, I ask permission to pull off my coat and answer some of these questions in the Review.

The first question that I wish to notice comes from Indiana, asking me if I think it would be profitable to come to Northern Michigan with 90 colonies of bees, dividing them into three yards of 30 colonies each, and increasing each yard to 100 colonies. To this part of the question I can answer "yes," if the writer is a man that has the necessary push and energy. Not only must he possess these qualities but he must also have *experience*. Through our experience we obtain the skill, that enables us to make a success of bee-keeping. But this is not *all*. He wants to know if I think he can run these three yards, when they contain 100 colonies each, with only four or five visits each year. It is a pretty hard question. I have have had no experience in running a yard with only four or five visits a year; but I *have* had *sad* experience in neglecting my bees so that I thereby lost hundreds of dollars.

I will tell you just how it looks to me. I would just as soon think of running a dairy on the out-yard plan. Turn the cows out in the spring; milk them three or four times during the summer; then, when fall comes, round them all up and give them a good milking, seems to me as sensible, as to run an apiary with four or five visits a year.

Would it be profitable for the farmer to plant a field of corn, and when it is about knee-high give it a cultivating, and then, when fall comes, harvest his crop? Is this the kind of farming that pays? And do our farm journals recommend, to that class of farmers, that they "keep more cows," and "plant more corn?" I think the tendency of the times is to keep *less* cows, and then take better care of what we already have.

SHIFTLESS FARMING AND BEE-KEEPING TO MATCH.

The bee-keeper who runs his bees with four or five visits a year is in the same boat with that class of farmers. The question resolves itself into just this: Is it profitable to furnish capital

for running a business that is to be neglected from start to finish? That there is just as much of a loss, some years, with such bee-keeping, as there is with such farming, is true, and I will show you where the loss comes in.

Men, like Mr. Townsend, or Mr. Hutchinson, may make a success at that kind of bee-keeping, as they are two of the best bee-keepers in the State of Michigan. *They* have the knowledge and years of experience to help them out. But can we recommend such methods of management to these new comers? To men with less experience? Will *they* make a success of it? If we are to judge any kind of management it is necessary that we have some other methods to compare it with. For this purpose I will refer to the plans in the December Review. Not for the purpose of criticism, but I wish to show where many of our bee-keepers, who work for extracted honey, lose from a quarter to a half of what they *might* have secured.

About the middle of May I will set a colony over here, and Mr. Hutchinson may set one over there. As there is nothing to do with his colony, at present, he may return to Flint. I will commence working with my colony. I will not give my management here in full, as it would make this article too long, but I wish to show where the loss comes in to the man who runs his bees with four or five visits a year. There are two things that a colony will size up, viz, amount of stores and amount of room. Even a good strong colony lacking in stores will not build up rapidly. The lack of honey destroys confidence. Then, when a colony *has* built up, so that it is a strong colony, the want of room destroys the usefulness of that colony. My methods are as follows: I take two frames, containing as much sealed brood as possible, from the brood-nest, putting two empty combs in be place of those taken out, and put on the queen excluder above the brood nest, where it remains to the end of the season. The two frames of brood are put in an extracting super and set over the colony, filling up the remainder of the upper story with empty combs. In a few days I will take out two or three more frames of brood from the brood nest, and put them in the upper story. The raising of brood to the upper story starts that colony to working there *immediately*; and if it is done at the beginning of the honey flow it puts the colony from three to four days ahead of where it would have been, provided we let the bees go up as they take the notion. It seems considerable work for one colony, but on 300 we make a good many dollars.

Here comes Mr. Hutchinson, and it is near the beginning of the honey harvest. He has two upper stories for his colony. I see he is going to follow the Townsend plan, as he has no excluder. He smokes his colony, takes off the cover, and places both of the upper stories on his colony.

Let us take a small boy for an example. There is a natural growth to this boy. He would soon need more more room if his mother should provided him a new pair of pants that just fitted him nicely at the time. But see here: Mr. Hutchinson has put the *father's* trousers on the *kid!* He has added 200 per cent. of room to his colony at *one time*. It looks as if the boy had gone from the A B C class to the multiplication table at the first recitation. "Smart lad!"

One of the grandest truths known to the bee-keeper is the value of "tiering up." When a colony has an upper story partly filled, raise it up, and put an empty super under it. This stimulates that colony to work. In my colony, every bee that hatches out in the upper story thereby furnishes an empty cell for honey. But in Mr. Hutchinson's colony the queen has gone to the

upper story, and every egg laid in those upper stories occupies a cell 21 days. The queen and the bees are both drawing on the room of the upper stories; and, as the brood hatches in the lower story you have lost the use of it for the season. Worse than that, in some seasons my bees have stored a large amount of surplus pollen in those combs, as the brood hatched; and it will remain there a long time unless at some future time these combs are used as brood combs. Bees will remove old pollen to give the queen room, but, when used as surplus combs the bees store the honey on top of the pollen.

WHY AN EXCLUDER IS NEEDED.

When we use the excluder, very little pollen gets in the upper stories in a solid form. I would use the excluder if they cost one *dollar* each! The loss of the lower story that was the brood nest is probably caused by our cool nights. When the queen goes to the first upper story it is not long before she takes possession of the next upper story, and about all the work the bees do for the season will be done in the extracting supers, leaving your colony in the worst condition possible; not only for extracting, with about 40 per cent. of those combs occupied with brood, (and you can get only a partial crop at the best) but see the work you must go to, to get your bees into *one* of the stories, that you may prepare your bees for winter. With the use of the excluder we have our brood nest just where we want it at *all times*.

Now, I want your attention for just a few moments. I can pass through my yards, and there may be 60 or 80 colonies to my right, and if there is a colony in need of room I will know it at a *glance*. Every drop of honey brought in occupies space; and it requires twice the space to ripen honey that it does to store it. This is good logic.

I have noticed that your colony is not flying as it should; there is something wrong; the bees *want* to work, they are *willing* to work, but they *cannot work*. A good colony should bring in from five to eight pounds per day at this time. Let us look at your colony. We find that the upper stories are pretty well filled with honey, though there are portions of five or six combs that are not sealed; in fact the cells are not filled *quite* full. Now, close the hive, and leave it three or four days. When you examine this colony again you will find it in nearly the same condition that it was in at the previous examination. The bees have stored just a little nectar each day in the cells, and this stops the sealing of the remainder of the combs. Right *here* is where you have lost five pounds of honey each day. At six cents per pound it would be 30 cents for one colony, and $30.00 for 100 colonies. When we have a good day for honey, my bees must bring in $100.00 worth. I can see how easy it is to lose one-quarter or one-half of it by neglect.

I can see one good thing in running bees with four or five visits a year; the the owner would never *know* or even *suspect* that he has sustained any *loss*. While, on the other hand, the man that is after his bees all of the time, always in season with everything that should be done, can plainly see where he has made a *big thing*.

THE ADVANTAGES OF TIERING UP IN A PROPER MANNER.

In putting on upper stories, every empty super should be placed right next to the brood nest. There is the best of reasons for this. I keep the first super put on at the *top*, as it contains the first honey brought in, and the honey in this upper story is sealed first. During the honey season I visit each yard at least twice each week, and three times if honey is coming in rapidly. I do this for the purpose of

storifying. I never add two stories at a time as this is wrong. Put on one story at a time, and that just where it should be. It stimulates the colony to work; it adds industry and vigor to the bees, and as soon as they need it I put on another story. I keep my bees working as well as a colony that was a prime swarm the day before; *and there will be no swarming.*

Three years ago was a good season. My home yard colonies were all three or four stories high—nearly all four—the two upper stories were filled and nearly all sealed. I commenced extracting, and I took an average of 70 pounds per colony at the first extracting; and, although, for the want of cans, it was five days before I finished the yard, of course I got 70 pounds from each colony extracted the last day. As fast as I extracted I gave the colonies more room, and when I had finished extracting, the colonies extracted the *first* day had from 30 to 40 pounds more honey than those extracted the last day. Here was a loss of over 4,000 pounds in my home yard. The yard was large, and, of course, I only lost on those needing room. Many times we *think* our bees have plenty of room, but, if we look carefully, and do a little figuring, we will find that five or six pounds of honey will fill every cell full in the extracting supers The bees should bring in from five to seven pounds per day, but you have got them where they store less than *one.* Careful attention at this time furnishes you the hammer that will drive the nails every time, when you are building for a large crop of honey: and, during the honey season, you must make up your mind to *live with your bees.*

LIGHTNING METHODS OF EXAMINATION.

I like to work with my bees. When I examine my colonies to find out if they need more room, I go over them at the rate of four a minute, or one in 15 seconds, and I don't hurry to do this. Of course, if a colony needs an extra super put on, that would take more time. You may laugh at me, but here is my way: I always keep a smoker going, so that if it is necessary to put on more supers I can use it. In working with the bees I prefer rubbers, or shoes with rubber soles, as I wish to slip up to the bees so quickly, yet so quietly, that they do not know that I am in the yard. At the first examination in the spring I clean all the propolis from the under side of the covers, and we have no more to bother here till in August. My covers are two inches longer than the hives, and extend one inch in front and back, when on the hives. Now we are ready for business. I always approach the hives so that my right hand is towards the entrance. Grasping the front end of the cover with the right hand, and the back end with the left. I jerk *instantly*, and *hard* enough, to bring the cover clear from the hive. I can move the cover in any direction till the larger part of the hive or extracting super is exposed, and then bring it back to its place. This operation requires *less than two seconds*, and I have 13 seconds left to go eight feet to the next colony. Why did I do this way? The very second that I jerked the cover loose, I let in daylight on those bees, and saw the exact condition of the colony. I saw the number of spaces occupied, and if an extracting super, I judged very accurately as to the amount of honey in the super. I closed the hive and did not even disturb the bees; if I *did*, I was gone and they never knew anything about it.

Not long ago I visited a young beekeeper, and he wanted to show me his bees. He was on one side of the hive with a screw driver, and I on the other with a jackknife. But before the cover would loosen, he had to get a chisel. Now every jar, every bunglesome move we made about the colony was a *challenge to fight*, and when we *did* get the cover off, the first thing I could smell was—

well "venom" I think that is the word I want.

To make good progress in working with bees we must have simplicity in hives and fixtures, and skill in handling the bees, that we do it in such a way as to make the least disturbance to the bees and trouble to ourselves.

Northern Michigan is a healthful country. It has the best of water, and is good for fruit. Land is from $5 00 to $10.00 per acre for wild land that has been lumbered. Our farmers, even the smaller ones, are making money, and are contented; in fact, it is as good for farming as it is for bees. I have been here over 25 years, and the worst objection, really, the *only* one I have, is the deep snow in winter; but, to succeed at anything it requires *push*. Many men choose a business that they are not adapted to. They start right, but soon they *bend their business* to meet their own ideas and inclinations; this soon becomes too much of a strain on the business, and the result is a collapse.

In the last 18 years I have sold bees to nine different men, giving them the best advice that I could at the time, to get them started right, and, today, only *one* owns any bees. Neglect of their bees and the winter problem has trimmed them up in good shape.

MANCELONA, Mich., Jan. 23, 1906.

[It has been a long time since I have received a communication the reading of which I enjoyed as I did the reading of the foregoing. There are several reasons for this. One is that it opposes the views that I have expressed It is seldom that I can induce a correspondent to do this. Of course, I don't wish a man to oppose me just for the sake of being obstinate, but, if he doesn't agree he is inclined to keep still. Another thing that I enjoyed is the way that it is told. It is so clear-cut, so graphic, yes, even humorous, and above all, so fair. Another thing, the Review, of late has been advocating extensive bee-keeping, and it is only fair to admit that there are two sides to the question, and that the Review-readers should hear both sides. Mr. Chapman makes a good point when he says that experienced men might succeed where the beginner would fail. I certainly would not wish to be understood as encouraging the novice to endulge in this long-range bee-keeping; and I may as well explain right here that I fear I gave a wrong impression in the December issue, although it seems as though I made it clear enough, viz., that I do not expect to start in the *coming year* to manage an apiary with only four or five visits a year. What I said was that I had started in to "develop a system that would enable me to do that." That is, I am working in that direction—have that end in view, but shall work very cautiously at the outset. First, I must learn my locality. It would be poor policy for a bee-keeper to do much experimenting in a locality with which he is not perfectly familiar.

Before taking up Mr. Chapman's article point by point, it may be well to say that, in a general way, I have been arguing for extensive bee-keeping; for keeping bees extensively in large numbers, and then putting into practice all of the short-cuts possible; perhaps leaving undone some things that a man with fewer colonies might find it profitable to do. Mr. Chapman takes the opposite view, that of having fewer bees, looking after them with great care, and doing all things possible to increase the crop. Just what it will pay to do with the bees, or for the bees, and what it will be more profitable to leave *undone*, brings up one of those fine points upon which we can make no cast iron rules. What might really be called neglect under certain conditions, might be called, well—*profitable* neglect, under other conditions. Here is the point: Some things

may be done at a *profit*, but there are others that may be done at a *greater* profit, and it is more profitable, in the aggregate, if we use our time in doing those things that are the more profitable. To illustrate: If a man has a single apiary of 100 colonies, and is able to keep the honey extracted so that there is no loss for lack of storage room, he may secure 100 pounds of honey per colony. Not to extract promptly in this case would be neglect. Let us suppose that another man has six apiaries of 100 colonies each, and he is so busy giving stories of empty comb during one of these "honey showers" that he neglects (?) to extract from some colonies that *may* need it. This is what might be called "profitable neglect." The man with the six apiaries may lose 25 pounds per colony from his "neglect," but he gets 45,000 pounds of honey, while the man who has not "neglected" his bees gets only 10,000. See the point? The man with a few colonies does well to make the most of them, but the man who has the ability, inclination, and capital, to keep more bees, drawing the line carefully between proper and improper neglect, will make more money.

I see that my good friend takes it for granted that I will not use queen excluders. In the December Review I asked the question, in a parenthesis, if I *should* use them. That is, I wanted my subscribers to say which plan I better follow. I expected then that I should use them, but I was not absolutely *positive*, and I am very glad to get Mr. Chapman's views. However, some men, notably, Mr. Townsend, have made a success of producing extracted honey without them, but the management was different from that followed by Mr. Chapman. I expect to use them, and to practice tiering up, to a certain extent, substantially as described by Mr. Chapman; but I must say, that, to me, the raising up of brood seems to be another case of something that *may* be profitable, but I think the time might be *more* profitably spent. I must admit that my experience is limited on this point, as compared with that of my good friend Chapman, but I have never seen the least difficulty whatever in getting bees started to storing honey in extracting supers of drawn combs, providing honey was being brought in. In the very same mail that brought me Mr. Chapman's article, came a letter from Mr. Walter Harmer, of Manistee, Michigan. Let me quote one paragraph: "On the 16th day of last June, at 10:30 a. m, I unloaded and liberated 20 strong colonies of bees at an outapiary 13 miles from home. The white clover was abundant, so much so that it was almost impossible to walk about after releasing the bees, without stepping on them. I put on supers filled with empty combs; and just before hitching up my team to start for home, I examined these supers, and found the bees already *storing honey in them.*" Mr. E. D. Townsend came home with me from the Michigan convention, and, in talking over this point, he told me of two men who had in mind the moving of their bees to a locality where willow herb was in bloom, but, before moving the whole apiary, thought it would be well to first move one colony, and note the results. Towards noon they reached the location, and released the bees, putting on an upper story of empty combs, the same as Mr. Harmer did. In the afternoon before starting for home one of the men thought he would go out and take a look at the combs in the super. To his surprise they contained *several pounds* of nectar. He accused the other man of putting in combs that had contained some honey, but his partner was *positive* that he did *not*. They hitched up and drove post haste, and, it seems to me Mr. Townsend said they worked all night getting their bees ready to move the next day,

but, be that as it may, the point that I wish to bring out is that when there is honey in the blossoms, and empty combs in the supers, no extra inducements are needed to get the bees to work in the supers. Other objects may be attained by this removal of brood to the upper story, it probably has a tendency to prevent swarming, but it is hard for me to believe that it is really needed to get the bees at work in the supers. But supposing that it *does* start the bees in the supers a trifle sooner, I doubt the advisability of doing it for that purpose alone. Mr. M. A. Gill, of Colorado, who manages over 1,000 colonies, said, in the January Review, that his aim in early spring was not to see how *much* work he could do, but how *little*. You see, it depends upon the point of view, of how we look at things. Mr. Chapman is aiming to see how many things and how much he can do to get as much honey as possible from a given number of bees, and I am scheming to see how many operations may be *left out* in order that I may keep more bees. In a certain sense we may both be right. A man with a limited number of bees is certainly justified in doing everything that he can to increase his crop, and, as to the extent that their numbers may be increased by practicing more or less "neglect," is a point that each man must decide for himself.

The illustration that Mr. Chapman gives in regard to giving a large amount of surplus room at once (putting daddy's trousers on the kid) is decidedly graphic and humorous. I can just imagine how it would have "brought down the house" at a convention. But, seriously, at the time when surplus room is given, the weather is usually so warm that the question of loss of heat does not cut any great figure; but Mr. Chapman says that tiering up, raising up one story and putting another under it, acts as a stimulus to the bees. I must confess that, from my own experience, I am unable to say whether I can agree with him or not. Suppose we put one super on one hive, and two supers on another hive. When the super on the hive with a single super is partly full, we will raise it, and put another under it. Query, which colony will produce the greater quantity of surplus? I must confess that I don't know. Suppose that tiering up *does* produce greater results, it brings us right back to the primary question of this discussion, viz., shall we keep fewer bees and do a lot of work with them, or shall we keep more bees and do less work? I might add, however, that tiering up is not a great deal more work than putting on all the supers at once, and it might be advisable, unless a man had a long ways to go to his apiary, to put on one upper story, and then later, go again, make an extra trip, and put another story under the first one. There is another point comes up here, and that is, that tiering up gives a different *age* to the honey in each super. That in the top super is ready to extract first, and, unless we are to wait about extracting until the harvest is over, this might be a very important point.

This whole matter can be simmered down in a very few words, and that is, that each man must carefully plan and work out a system that is fitted to himself and his environments, and what is best for one man may be very bad management for another.

In closing let me say that such an argument as this is one that I heartily enjoy. No personalities, no sarcasm, just plain, straight forward *fair* argument, that raises each in the opinion of the other, and cements friendships instead of shattering them. Neither may be able to prove that he is wholly in the right (and, perhaps, he *isn't*) but the arguments throw added light upon the subject under discussion.—ED. REVIEW.)

Editorial

The Bee and Honey Co, of Beeville, Texas, has bought the Atchley steam bee hive factory, and moved the same to the railroad track in Beeville, where it is in better shape than ever to accommodate patrons.

Enthusiasm is a great thing. Coupled with good judgment, industry and perseverance it can accomplish wonders. It can't do everything, but it is the foundation and the keystone of nearly every success. If a man has no enthusiasm for his work, he better manufacture some at once, or else get into some business for which he can have some enthusiasm.

This Issue of the Review is out on time, and, it is likely that the one for April will also be out on time, although it is *possible* that it may be a few days late, as I expect to be in Northern Michigan the fore part of April selecting locations for the several apiaries that we expect to move there this spring.

Foundation can be fastened into brood frames as satisfactorily by using the melted wax plan as by any method. In using this plan, some put on the melted wax from a spoon, others use the Van Deusen wax tube, but Mr. M. D. Whitcher, of Los Olivos, Calif., writes that an ordinary, spring-bottom oil can, holding about a pint, is ahead of all these for putting on the wax. Keep the wax just hot enough by setting the can over a small oil stove. Have a handle on the can to take it up by, or else use a cloth "holder."

Divisible Brood Chamber Hives allow of the transposition of the halves of the brood nest; raising the lower half and putting the upper half beneath it. This divides the globular form of the brood nest in the center, bringing the large, flat surfaces to the top and bottom, and putting the spherical points in the center. In one sense this is spreading of the brood. Mr Louis F. Burgess, of Danbury, Conn., wishes to know how extensively this has been practiced, and with what results. If any of the readers of the Review have had experience in this line, let's hear from them.

Northern Michigan bee-keepers will hold their annual convention in Kalkaska, April 4th and 5th. Special rates at the Manning Hotel. My brother Elmer and myself expect to be present, as well as Mr. Root of Gleanings, Mr. E. D. Townsend, Mr. Chapman, Mr. Kirkpatrick and others "too numerous to mention." A set of bee-keeping, stereopticon slides have been secured from the A. I. Root Co., and will be shown one evening. All are cordially invited to attend.

Pennsylvania bee-keepers will hold their annual convention at the State College, March 29th and 30th, first session being on the evening of March 29th. Excursion rates for the round trip for one and one-third fare will be furnished upon card orders to be furnished free by the Secretary, Rev. D. L. Woods, of Muncy, Penn., or by the President, Prof. H. A Surface, Harrisburg, Penn. Persons wishing to attend should write for a card for each

system of railroad over which they will travel in coming to the convention. Speakers present will be Dr. E. F. Phillips of Washington, D. C., E. R. Root and E. L. Pratt (Swarthmore). A cordial invitation is extended to all.

The Mixing up of the bees of different colonies when they are first set out of the cellar is sometimes a serious affair. Some say that this can be avoided by placing each colony upon the same stand as occupied the previous season; this may help a little, but it will not entirely prevent it. If a strong colony comes out with a rush, then some one near it follows out, the bees of the latter are quite likely to join in with the former. If the bees are taken out when it is warm enough for them to fly, something can be done to avoid mixing by scattering the colonies as they are carried out. Carry the first colony to the northeast corner of the yard, the next to the southwest corner, the next to the southeast corner, and so on, never putting two colonies near each other when they have just been brought out. In this way, a colony will have quieted down before another is set out near it.

Another aid in this matter is that of contracting the entrances to all hives, so that no more than two or three bees can pass the entrance at once. Then a strong colony can not throw all of the bees into the air at once—it can make no more demonstration than can be made by a weak colony.

A Honey House, and a work-shop, are something that every bee-keeper must have. I expect to build one up north the coming spring. I intend to build it over a cellar dug in a sandy hillside, the cellar to be used in wintering the bees. The house will be used as a storage room for honey and hives, for extracting honey, and as a general work shop. I expect to put up a partition across the center, so as to use one end for storing honey before it is extracted, and warming it up with a fire before extracting it. When the honey is extracted, I expect to strain it in the extractor *a la* Holtermann, and run the honey down through the floor, with a rubber hose, and fill up the tin cans as I extract, storing them in the cellar until sent to market. I wish for criticisms and suggestions in regard to building this cellar and house. In the first place, it must be built as cheaply as possible, as I may not wish to remain in that location more than two or three years, at the most—and I may—that is uncertain. I had thought of putting down cedar posts and boarding up the walls of the cellar with hemlock lumber to keep the earth in place. In building the house I would use cheap lumber for the sides, batten the cracks and cover the roof with some kind of roofing; perhaps Paroid: Is there anything more desirable? What size shall I make it? I may wish to put 500 colonies of bees in the cellar next winter. By the way, I expect to have double floors, and the space between, from eight to twelve inches, filled with saw dust or planer shavings. Mr. S. W. Cressy, of Corinth, Maine, wishes to build a workshop and extracting room the coming season, to accommodate for working from 250 to 300 colonies, and he, too, would like some "working pointers."

Co-Operation.

Co-operation is, I believe, the next step that bee-keepers need to take. I know we have talked this before, and felt that something might be done in a National way, but it has always ended in talk there are too many obstacles and complications. Perhaps I ought to except the fact that the members of the National Association are

able to buy tin cans at a lower rate. Why could not this plan be applied to foundation, sections, and the like?

While National co-operation, with this one exception, has been a failure, it is a pleasure to note one or two brilliant examples of co-operation, viz., the Colorado Honey Producers' Association, and that of the St. Croix Valley Honey Producers' Association, with headquarters at Glenwood, Wis. According to the Rural Bee-Keeper, this Association bought $1,400 worth of supplies for its members last year, effecting a saving of $600. This Association now has a membership of over 200, and they are not all in Wisconsin, either. Some are Minnesota, Iowa, South Dakota and Michigan. I would suggest that every bee-keeper in profitable shipping distance of this Association join in, and help himself and others — co-operate. Write to the Manager, Leo F. Hanegan, Glenwood, Wis. Mr. Hanegan is really the prime mover, the father, of this Association, and what he has done in Wisconsin can be done in other States. New York is following along in this line, and I shall be interested in seeing how she will succeed.

The Aspinwall Hive.

It was nearly 20 years ago when I first met Mr. Aspinwall, at a State fair, in Lansing, Michigan, and we drove out to the Agricultural College to see a colony of bees occupying *wooden combs*. It certainly was a novel sight to see the queen laying, brood being reared and capped, honey being stored and sealed over, all in little round holes drilled in slabs of wood. Mr. Aspinwall's theory at that time was that by preventing drone production, swarming would be prevented. The use of wooden combs proved that the theory was not correct. His next theory was that swarming might be prevented by avoiding a crowded condition in the hive—by furnishing lots of room for the bees in proportion to the combs occupied. It was easy to give this room by spreading the combs apart, and giving space outside the combs, between them and the walls of the hive, but the trouble was that the bees would *build combs* in this space, and thus defeat the object. Mr. Aspinwall filled these spaces with dummies. His first dummies were slabs of wood with holes bored through them. He found that slats of wood were just as effectual, and much cheaper to make. The introduction of these slatted dummies prevented swarming, provided a generous surplus room was given. That was decided a dozen years ago, but there were other factors that sprang up; principally the putting of pollen in the sections. This has been overcome at last by the use of drone-cell foundation in the sections that are over the brood nest. The hive is now a practical success, and has been for two or three years. One or two minor points are yet to be decided. For in-instance, Mr. Aspinwall is not yet decided as to the best thickness to have the dummies. He is using them much thinner now than at first, and they are effective. How far this reduction in thickness can be carried is yet to be determined.

Isn't the hive expensive? How much will it cost? These are the questions that will be asked. Of course it will cost more than an ordinary hive; but special machinery can cut up the stuff for the dummies at a low cost, and they can be made from the waste of a hive factory. Let us suppose that a hive would cost $2.00 more than an ordinary hive, which is an extreme figure, the interest would be only 12 cts a year on a hive. If a man could put out an apiary of 100 colonies a dozen miles from home, and get a big crop of comb honey, couldn't he afford to pay $12.00 to have absolutely no swarming—no *desire* to swarm?

The Survival Of The Fittest

Lewis Beeware

It Always Fits

Did you ever stop to consider why you should insist on Lewis goods in preference to any other?

At the **Lewis Factory** the greatest pains are taken to see that all goods are made scientifically correct.

Perfect matching, necessary bee spacing, accurate dovetailing, correct grooving and careful polishing, besides a thousand and one other important details of manufacture are all brought to bear as a result of the thirty years' experience of the Lewis beeware specialists.

Lewis' Goods go together right. Why? Because they are right.

Every part is made to fit every other part just like a watch.

Lewis hives and sections go together with a snap.

What a comfort it is to have bee goods fit!

What bee-keeper can estimate the value of time and patience lost with poor goods that don't and won't go together accurately? Steer clear of them by ordering Lewis' goods.

You can't afford to take chances of not receiving full value for your money even if the goods are ordered the winter time. But now suppose it is swarming season, hives brimful of honey, bees are busy, you can't afford to tie up your bee industry, lose time, lose money and have your peace of mind annoyed and patience tried by bothering with ill-fitting, inferior goods. Lewis goods are necessary to your welfare and happiness.

Look for the brand. Send for catalog today, if you haven't one.

There are a score of our agents besides ourselves who can furnish you with Lewis goods at factory prices. They are:

ENGLAND—E. H. Taylor, Welwyn, Herts.
CUBA—C. B. Stevens & Co., Havana
C. B. Stevens & Co., Manzanillo.
CALIFORNIA—Paul Bachert, Lancaster.
The Chas. H. Lilly Co., San Francisco.
COLORADO—R. C. Atkin, Loveland.
Arkansas Valley Honey-Producers' Association, Rocky Ford.
Colo. Honey-Producers' Association, Denver.
COLORADO Fruit Growers' Asso., Grand June.
Robert Halley, Montrose.
ILLINOIS York Honey & Bee Supply Co., Chicago.
Dadant & Sons, Hamilton Ills.
IOWA—Adam A. Clark, Le Mars.
Louis Hanssen's Sons, Davenport.
INDIANA—C. M. Scott & Co., Indianapolis.
MICHIGAN—A. G. Woodman & Co., Grand Rapids.
MINNESOTA—Wis. Lumber Co., Fairbault.
MISSOURI—E. T. Abbott, St. Joseph.
OHIO—Norris & Anspach, Kenton.
OREGON—The Chas. H. Lilly Co., Portland.
PENNSYLVANIA Cleaver & Greene, Troy.
TEXAS Southwestern Bee Co., San Antonio.
UTAH Fred Foulger & Sons, Ogden.
WASHINGTON The Chas. H. Lilly Co. Seattle.

G. B. LEWIS COMPANY,

WATERTOWN, WIS. U. S. A.

ADVANCED
Bee - Culture
Is Readable

It appears that ADVANCED BEE CULTURE has an unexpected merit, one that was not planned -just grew of itself. The *style* is enjoyable. Dr. Miller says: "It has the fine quality of being readable." Somnambulist, in the *Progressive*, says: "From the single spray of white clover which has attracted a golden bee, on the front cover, to the very last page, **fascination holds sway."** While attending the recent, Michigan convention, I had the pleasure, one night, of occupying the same room with Ernest Root, and, in those semi-confidential chats that we always have on such occasions, he told me that, once he began reading the book, he could not lay it down; it was simply *irresistible* -like a story.

In writing the book there was no attempt, not even a thought of making it "readable." Had I had this object in view, it is more than likely that I would have spoiled it. I suspect that this very charm lies in its unconscious **simplicity.** I was full of my subject, to overflowing, and then tried to write so simply and clearly that my readers would **see the ideas** rather than the language in which they were expressed; and, now to be told that the book is "readable," "fascinating," and "irresistible," brings to me an added pleasure I think that I enjoy fine writing, word pictures, imagery, poetry, etc., as much as any one does, but when it comes to describing the intricacies of bee-keeping, simplicity is best.

There is also one other point along this line that ought to be mentioned, and that is the conciseness of the style—it is **boiled down.** It would have been an

easy matter to have made the book twice its present size, yet have given no more facts or information. I believe that Dr. Miller once praised my ability to say much in a few words of being able to condense and this trait shows itself in the pages of ADVANCED BEE CULTURE.

Knowledge

On the Spot

In most professions, a man must have a thorough knowledge of his business, tucked away in his head, where it is available at all times. The life of a sick man may be saved if given the proper treatment *promptly*. In many cases a physician has no time to go home, consult books, and study up the case; he must know what to do **on the spot.** In going about the country using my camera, there are many occasions when the lack of certain knowledge would leave me all at sea. I must know it **on the spot.** Bee-keeping is no exception to this rule. If we find the bees starving or robbing, if a honey flow comes on or stops suddenly, if we find foul brood in the apiary, if the bees are uneasy in the cellar, if well, there are hundreds of unexpected combinations coming up all through the season, when there is no time to send off after books and study them, we must know what to do **on the spot.**

Get ADVANCED BEE CULTURE, and read it now, while you have leisure, then the information that it contains will be available in these emergencies that are *sure to come*.

Price of the book, $1.20; or the Review one year, and the book for only $2.00.

W. Z. Hutchinson

Flint, Michigan

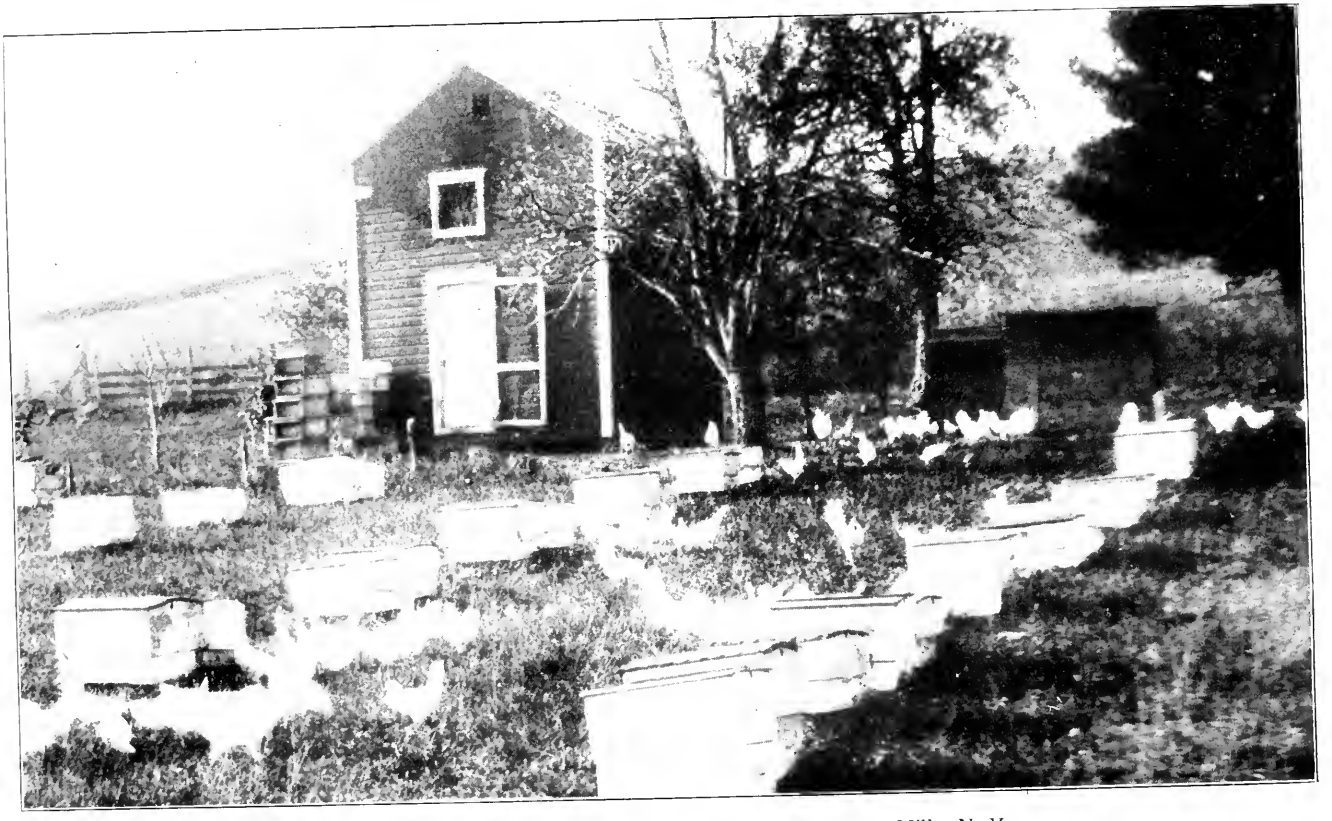
Farm for Sale.

I have three boys man-grown, and, for that reason, I wish to sell my farm and go into Northern Michigan where wild land is cheap, that we may all secure farms near together. The farm that I wish to sell is located eight miles east of Vassar, Tuscola County, Michigan. It consists of 40 acres, 30 of which are cleared. It is well-fenced and well-drained. There is a small orchard, stables for the horses and cows, and a small story and a half house. The soil is a dark sandy loam, and can't be beaten for raising potatoes, corn, hay, buckwheat,, etc. There is rural mail delivery, school $\frac{1}{4}$ of a mile distant, and railroad station only two miles away. The location is a good one for honey. From twenty colonies, last year, I secured 120 pounds of extracted honey per colony. I offer this farm for only $600; two-thirds down, and bal. on long time if desired. Would accept bees in part payment if they were not too far away. For further particulars address,

ELMER HUTCHINSON,

Vassar, Mich.

Reference, Editor of Review.



Bees and Poultry Belonging to L. A. Stafford, Blodgett Mills, N. Y.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, APRIL. 15, 1906. NO. 4

Forming Nuclei with no Loss of Bees or Brood.

L. A. STAFFORD.

IN making artificial increase, my practice is as follows: As early in the spring as the weather will permit, a colony is lightly fed until full of bees and brood; then the second story of full drawn combs is put on, the queen having access to all. I let them alone until a swarm issues. The queen being clipped, she is caught and caged and safely put away until wanted. While the swarm is in the air this hive is moved to another stand, and the weakest colony in the apiary is placed on the old stand, and receives the swarm in the air, a super being put on, and I have a colony that will reap the harvest if such a thing is possible.

Next, the queen is taken to the colony from which she came, the cage containing her placed between two combs, and the hive closed and let alone for five days if the previous weather has been favorable for swarming, if not, she is left three days.

At this time there are as many nucleus hives placed handy as there are frames in the hive, which, with me, are 19. Then I take out the cage and queen and lay to one side, also two or three combs, and place one in a hive to make room to handle the remaining frames, which are all looked over, and every cell cut out and placed in a box. I now make up as many nuclei as there are cells, the remaining combs, if any, being left in the hive and the queen liberated on them. If there are cells enough to use all the combs, then the queen is left in the cage, and the empty hive supplied with one frame of honey and three empties, until the returning bees from the nuclei are enough to take care of the queen, when she is let loose among them. As we use the Carniolan bees for this purpose we hardly ever have less than a dozen cells; and, many times, every comb in the colony can be used.

These nuclei have young bees, all brood is matured and hatching, and there will be a queen in a few days. There is no loss of bees, to speak of, before the brood of the young queen is coming out. These are some of the ad-

vantages over the old way of drawing brood, and confining for several days, when there is a loss of eggs and larvae, and, by the time a queen is reared, and her brood is hatching, the nucleus is very near to nothing.

The weak colony that received the swarm, that would have been of no use for surplus that season, is brought to the swarming point very quickly, as the queen is old, and almost sure to swarm, in due season, when the same thing of making nuclei can be repeated.

It is a well-known fact that the bees of a queenless colony in the air, that divides, and enters two or three colonies (which are nearly always strong, as the pouring in and out of the workers is a drawing card) are nearly all killed; and occasionally a weak colony will show fight, but no damage will be done; I find it better not to use a particle of smoke on the weak colony, nor shake it up any more than possible, and not place it on the stand until the swarm is returning, and will thus enter quickly, then the weak colony, being quiet, will form in a ball around the queen, and no fighting will occur.

This plan of hiving in with weak colonies is a great advantage where no increase is desired, as the old queen can be put back home, and the swarm in the weak colony will gather more honey than before they swarmed.

All this is simple, and perhaps not new, but is ahead of any method I ever heard of.

BLODGETT MILLS, N. Y., July 3, 1905.

Foretelling and Preventing Swarming.

C. A. OLMSTEAD.

I DOUBT there being any one thing that bee-keepers want and need, any more than they do some means by which swarming may be *successfully* and *practically* prevented. Or if swarms are desired, some way to know just when to expect them, without going through the whole hive. This is especially desirable where bees are kept away from home. Shook-swarming is a great help; and by it I have, in past years, been able to keep bees in three counties at the same time; but one of the greatest hindrance was to know just which colonies were preparing to swarm; as it is not best to shake them unless necessary. To overcome this obstacle was the first object of my intention; and when I had the hive arranged so that I could learn the exact condition of things in the brood nest, in less than a minute, without removing the super or cover, in fact, almost without the bees knowing that any one was around, it required only one more step to make it possible to *entirely do away with swarming*. That this is no dream, that this can be done, and done in a satisfactory way, I believe will be apparent to many practical bee-keepers, even before trying my plan, and I wish to say to those who may think that I have been selfish in the matter, and especially to friend Doolittle, who gave me a sort of a friendly prod in Gleanings, that had it not have been for severe sickness, from February to August, they would have had this a year ago.

FORETELLING SWARMING.

In the place of one of the ordinary, central top-bars I have one ¾ inch deep, and not quite as long as the in-

side length of the brood-chamber, just so that the bees will stick it to to the tin or wood just below its supports. On each side of this bar is nailed a strip of tin, the lower edges of which are bent at right angles, just under the bar, and toward each other about $\frac{1}{8}$ inch. A frame is made one inch shallower than the others in the same hive (for other styles of bottom boards it must be $1\frac{1}{2}$ inch shallower) with a top bar $\frac{3}{8}$ or $\frac{1}{2}$ inch deep. Along on the top of this is nailed a strip of heavy tin. The two upper corners of this bar are slightly cut away, rabbet-like, or may be beveled, which leaves a little groove under each edge of the heavy strip of tin; or, if the bar is made of hardwood, a saw-kerf along each side near the upper side of the bar will answer, if the tin rests are set a little lower, and the strip of heavy tin may be dispensed with. The top-bar of this frame slides close under the first named bar, the edges of the tin resting on the little incurved edges of the strips of tin which are nailed to and project 1-16 of an inch below the first or upper bar. This forms a sliding joint which allows the frame to be drawn out and returned through the opening in the end of the hive as shown.

The next step, where swarming is allowed, but where one wishes to know just when the bees are preparing to do so, is to graft some old queen cell cups into the comb in this frame. They should be put where the queen will be most likely to use them first. By simply drawing this frame out, one has the whole situation under his thumb, or, rather, his eyes. One can learn from this one frame all that one usually cares to know about the condition inside of the hive. One can use more than one frame, but, if properly managed, the number of failures with *one* is not worth considering; besides, if one uses a little smoke, where the frame is taken out, a fair view of two more combs can be had; and one may have places in them that would favor queen cells, and they could be easily seen.

PREVENTING SWARMING BY REARING A YOUNG QUEEN WHILE THE OLD ONE IS STILL LAYING IN THE HIVE.

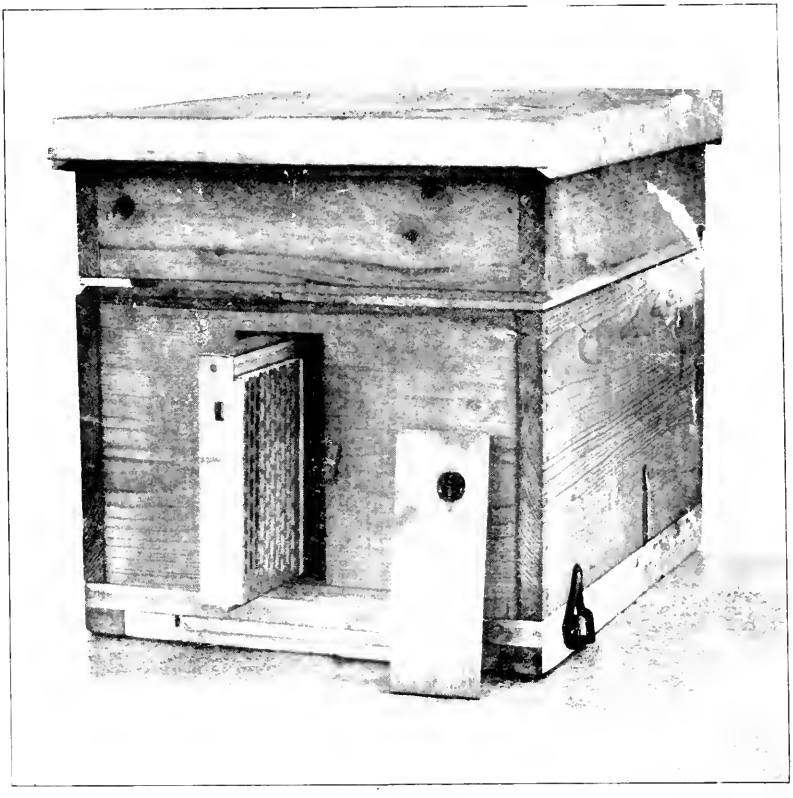
An upright bar, $\frac{1}{4}$ x $\frac{7}{8}$, is fastened between the top and bottom bar, so as to leave a space of about 4 or 5 inches between it and the end bar of the frame. Into this space is fitted a light frame that may be taken out aud returned, much as sections are held in brood frames. In this little frame is a sheet of heavy brood foundation which must be fastened all around with melted wax. It should be somewhat to one side, and there must be *no holes* through which a bee or queen could pass; or else a wire screen must be put on the side opposite to the zinc. When a queen is to be reared, this little frame is crowded over to the left a little, to allow the little $\frac{3}{8}$-inch, zinc-covered rim of the same size to be put in with it, forming a thin cage, as shown in the cut. A passage is made from this cage to connect with the round hole shown in the little door, and this allows the young queen to take her flight. A tin furrule set in the back of the hole in the door, and projecting $\frac{1}{4}$-inch, bridges the space to the end-bar.

If one wants to rear queens to sell, have three frames made like the large one first described and supported by the sliding joint. First slide in a zinc-protected comb, then a larger unprotected one, and follow with another protected one. In this way one can have two queens mated as often as one; and sell queens all summer, with no loss to colonies.

This arrangement does not of itself prevent swarming *but* it provides the means by which the apiarist may do it; not merely part of the time but practically all the time.

In any locality these little combs will be occupied by the bees and filled with brood and stores long before the swarming season, and a few weeks before swarming time (here the period of fruit bloom answers nicely, but the earlier it can be done the better), much depending on the weather and strength of the colonies, graft a queen cell into each little comb—if cups only are used, put in two or three in same, as some may not be accepted, protect the whole comb with the zinc queen protector as shown, slide the frame into the hive, close the door and the *entrance* through it, *if* the weather is bad, until the queen is old enough to fly. If the weather is *reasonably* warm the round hole may be left open all of the time.

I have had good success by simply grafting in a cell cup with food and larvae, letting the bees build their own cells, but many would succeed better by starting the cells in specially prepared queenless colonies as for rearing queens in quantity



Olmstead's Queen Rearing Attachment.

INTRODUCING A YOUNG QUEEN BY CLIPPING THE OLD QUEEN'S STING.

As soon as it is time for these queens to be hatched, go through and give another cell or a pulled queen, to those where the cell did not hatch. When they are laying, kill, or remove, the old queen, and release the young one. If you do not want the old queens to sell you see, the second year all will be just nice tested yearlings—you can save yourself much work in the busy

season by hunting up the queens in all your colonies any time before you want to introduce a new one, and clipping [illegible] all one has to do is [illegible] the [illegible] clipped queen, and [illegible] do [illegible] and killing. See?

I have tried [illegible] plan of int[illegible] four or five queens, [illegible] in each [illegible] slightest doubt [illegible] always work [illegible]

[illegible]

early as I could get young queens from the South to replace them, and only once did I have a colony swarm that was given a young queen early in the spring, and, in that case the queen was imperfect."

This looks to be five times the work that it really is, but if one goes at it, at the right time, and has the proper appliances, and enough of them to have a whole apiary going at once, the work does not compare with that required to manage swarming; and, with swarming, one has to have a lot of extra hives.

If a colony has one of these young queens and plenty of room they need no fussing, and go into the harvest with enough more bees to pay for the trouble of rearing her. If she is given at the beginning of fruit bloom, the colony, if a strong one, should have a crate of sections in which to store their honey, for such a queen makes business hum, and there will be no crowding of the brood nest if there is any room above.

The picture shows the super cover, which is also a bee-escape board and cover to the brood chamber, on which rests the hive cover when super is off. The bottom board is perfectly plain, the entrance being down through a saw-kerf then out horizontally; in the picture it is closed.

EAST BLOOMFIELD, N. Y., March. 23, 06.

K[illegible] Queens and Sections All Together.

M. A. GILL.

EDITOR REVIEW:—I have read with much interest two articles from the able pen of R. C. Aikin—one in the American Bee Journal, and one in the last Review, in which he advises those who are to practice shook-swarming to leave the young swarm on the old stand in a queenless condition, and carry the old queen away with the brood to the old stand

Now, I know what it means when a fellow "locks horns" with R. C. Aikin, but, as I consider him one of my personal friends, I am going to take the chances.

First, I am going to assume that in giving the above advice he is wrong, both in theory and practice. Now, why is the theory wrong? Because any young swarm of bees, either natural or forced, should have *at once*, a laying queen, in order to prevent the building of a lot of worthless drone comb; a thing they are *sure* to do if queenless.

Again, a queenless swarm *never* works with proper vim until after the young queen is hatched and mated.

Now when a young swarm is put into a hive, it is going to be a future asset, and a valuable one, if the combs are worker, but nearly worthless if mostly drone.

As friend Aikin so frequently speaks of *massing* his bees, I assume that when he makes a new swarm he makes a good strong one, and I claim the proper place for the laying queen is with this young swarm, on the old stand, in order to secure the best re-results. First, because there is nothing much for her to do if carried away with the brood for a week, as *all* the flying bees are on the old stand, and that week is *very important* to the new swarm.

HOW TO SECURE THE BUILDING OF WORKER COMB.

Now, I want all beginners to note one *fact* that I shall bring out, and that is this, if you can get a hive *filled* with comb the *first week* of a swarm's life, that comb will invariably be worker comb, providing there is a laying queen, plenty of nurse-bees and a good honey flow. With these conditions, the incentive is for workers there is no desire or use for drones.

Now, if friend Aikin had left the queen with the young swarm, and used starters in the brood chamber (with one comb to establish a brood nest), and set the super over from the old colony with partly drawn combs (as there would be) I will warrant that, in eight days, he would have had a hive of brood more than he can get with his plan, where the old queen would be simply waiting for young bees to hatch out to become nurses for her brood. Better, by far, to let the young queen be raised by the brood, as there is nothing to do there, for two weeks, except to wait.

Again, friend Aikin says a queen cannot do much business brooding in a colony under section supers. Strange that two people, living as close together as friend Aikin and myself, should have such directly opposite experience. The most complete and beautiful hives of brood I ever saw are in my two-weeks'-old swarms (either natural or forced) that have been hived on starters only; the honey going into from one to three supers above the brood. Why, it's an *axiom* with me, *always* have a laying queen and a hive of brood under every super, if much surplus is to be secured when working for comb honey.

Now, to return to the question of, where is the proper place for the old queen? Who has not noticed the magnificent work of young natural swarms with their laying queens, and who has not seen the abnormal and imperfect work of a young natural swarm that has been so unfortunate as to lose its queen? Yet, friend Aikin would have us *produce* these abnormal conditions with all our swarms.

WHICH CELLS PRODUCE THE BEST QUEENS.

Again, he says, after a certain number of days, go to the swarm and cut out all the cells but one, and advises cutting out all the *oldest* cells, leaving one of the youngest cells; here, again, I think he is wrong, as he would raise

the best queens possible, for the oldest cells were started under normal conditions, while the younger cells are abnormal; possibly, to the extent that they might be built over the oldest larvae and given but little royal food.

One other writer has recently said that a queen was no good for the rest of the season after bringing a colony up to the swarming point. In this I know his queens are different from mine; and feel sure they are different from those kept by the masses.

THE TRUTH IS ALWAYS THE TRUTH.

Now, there is certainly a proper place to put the old queen when shaking a swarm; and when the *truth* has been established its *always* the truth, and becomes one of those inexorable laws in Nature that cannot be reversed.

The only way that shook-swarming can be successfully followed in handling bees on a large scale is to adopt the right plans, and then follow them with the same "fixity of purpose" that the Japanese followed in their attack upon Port Arthur.

Friend Aikin writes such a readable article that one is apt to be carried over errors without seeing them; but he is surely mistaken when he advises us to provide ourselves with extra hives so as to run our colonies two stories high, except during the honey season. I am speaking of this country where bees are kept by the thousands of colonies, and where, after the proper equalization of brood, not five per cent. of the colonies will come up to June 10th with more bees and brood than can be contained in an eight-frame hive with one super. I am always highly pleased if I can arrive at the above date with my eight-frame hives "choek full" of bees and brood; for then I know I can get results if there is any honey to be had.

I feel certain that friend Aikin has not put into practice, to much extent, the plans he advises in the Review, American Bee Journal and Irrigation; and I also feel certain that he has not practiced shook-swarming as extensively as I have in the past, and this is why I cannot let his advice, as to where to put the old queen, go unchallenged. He admits that much drone comb will be built in the brood nest, but that the young queen will not use it, that she will skip around to the worker comb, and suggests that this drone comb honey can be cut out and sold as chunk honey. While all this is true, I claim that more honey could be sold in sections if the brood nest were worker comb, and filled with worker brood, as it would be with a young queen.

And where is the progressive young producer who has time or patience to prod around a brood nest hunting chunk honey. ?

While friend Aikin's articles are valuable along other lines, he has yet to learn the great value of uniformity, "thorough system," and the best methods to practice in shook-swarming.

LONGMONT, Colo., Mar. 19, 1906.

Some More Experiences in Starting Out-Apiaris.

MRS. F. WILBUR FREY.

MR. HUTCHINSON, I am interested in seeing how your experiments with bees in the north will lead you a race in surprises.

Four years ago we moved 50 colonies in chaff hives, to Tustin, 70 miles from here. We set them in the yard the 4th day of August, with not five pounds of honey in a hive, and very little brood.

We put on supers and went home. In 10 days we heard they were swarming lively; and in 25 days after moving, they had stored enough honey to winter, and made 1,000 pounds of surplus comb honey.

The next spring we moved up 25 colonies more to hold our number good, and to consume the honey left by the colonies that died in the winter. The second winter we put 95 colonies into winter quarters, and had 50 in the spring—most of them were mere handfuls. We went home, after building them up the best we could, and giving lots of room, and in three weeks were surprised to hear that they were swarming every day.

It will surprise you when all of the most approved plans of shook-swarming and dividing fail, and nothing will stop swarming except to take away the old queens.

We have two out-yards run for comb honey, and do not allow swarming except as one sometimes gets the start of us.

Swarming is *the* problem to solve when running for section honey.

I think your plan for securing extracted honey is good.

I think clamps will not compare with chaff hives for wintering. Nothing, short of the cellar, will be successful in northern Michigan.

TELL US HOW TO PRODUCE COMB HONEY AND NOT HAVE SWARMS.

Why don't you run for comb honey, and teach us something? *Any body* can run for extracted. Comb honey is worth twice as much as extracted, and will sell four times as easy. We never get enough nice early honey to supply the demand.

Here are a few of the things I want to know:

1st. How to keep a large apiary together until the honey is completed?

2nd. The easiest way to get rid of old queens, and have all young queens in the bee yard in the fall, and, at the same time, keep the colonies all strong, and ready for all harvests?

3rd. How to keep bees from *wanting* to swarm?

4th. How to get all nice clean honey without travel stains?

Then we can have all honey of fancy grade.

Next spring I shall put supers on all my colonies just as soon as they are strong enough to take two, 45-pound supers, each. Then, if they will swarm after this, I will take away their old queens. After all desire for swarming has passed, I will requeen again. I requeened 300 colonies last year, while I prevented swarming, and think I did not lose a pound of honey by re-queening. Some colonies sulked and would not work, and some used all their energy in raising brood, but would not make any surplus. This year I shall try to head off the *desire* to swarm and sulk, and, at the same time, start all at work as fast as they can occupy two large supers. A super that holds less than 32 pounds is "no good" here, only to cause excessive swarming.

If you ripen your extracted honey good, on the hives, you will have swarming just the same as we do.

SOME HARD NUTS FOR SMART BEE MEN TO CRACK.

The bee-keeping world has only begun to learn the art of producing comb honey, and I would like to see a few of the smartest bee men practice comb honey raising. Shook-swarming will *not* work where red raspberries grow. I have seen 10 or 12 colonies shook one day, and swarm out in the next two or three days. I want these smart bee men to go where red raspberries grow in profusion, and learn how to secure

large crops of comb honey, without swarming, in out-yards, and keep their colonies strong and in good shape to winter. When they can do *this*, they will have done something that is worth giving to the world.

The Sibbald plan will not work when bees are *determined to swarm*; they will *not* leave the queen until she goes with them. Even dividing will not work; both sides will swarm if the honey flow is a good one. We want a comb honey system of management that will keep the bees home, and at work, when honey is coming in a flood; *then* we will have "honey money" a plenty of it.

[Upon reading the foregoing, I wrote to Mrs. Frey, sending her a copy of ADVANCED BEE CULTURE, and asking her for further particulars regarding her varied experiences with out-apiaries. Her reply is as follows:— ED. REVIEW.]

Dear Sir, I was very much surprised when I received your book ADVANCED BEE CULTURE. It is rightly named; and a book that will arouse the enthusiasm of any good bee-keeper. Even my children are anxious to read read it.

About 35 years ago my father-in-law got some bees in box hives He took care of them in this way until 19 years ago, when my husband and I moved upon a new farm. He was tired of taking care of them in that rude manner, without veil or smoker. I learned what my husband knew about bees, and then I took care of them alone until we had 25 colonies. Since that I have usually hired a woman to help me through the busy season. Some years I hire a boy that is large enough to lift the heavy supers. My daughter, Daisy, is 17, and she and Harold (21 in the spring) have helped me do the shop-work ever since they were old enough to fold sections or drive nails.

TROUBLES WITH BRUIN.

I think it was 14 years ago that we had our first out-yard, two miles north of our home. We kept it there two seasons, and an old bear and her family visited the yard several times, and destroyed seven or eight colonies during the two seasons. Then, one night about two o'clock, when my two brothers were watching from a scaffold in the bee-yard (and one had fallen asleep) the brother that was awake saw an old bear and three cubs coming for another meal of honey. He shot the old bear and one cub, killing them with two shots, and the two got away.

The second winter three-quarters of the bees in the out-yard died, and we brought home what were left.

Nine years ago we started two more out-yards. We kept from 5 to 75 colonies in there during the winter. We took up one at the end of two years as the location did not prove to be a good one. One yard was four miles north and one four miles west.

MOVING NIGHTS AND LETTING THE BEES WORK IN THE DAY TIME.

Then, seven years ago, we moved 50 colonies to Tustin over some or the hilliest roads in Michigan. We put 12 single-walled hives in the box, and 13 in chaff hives on a rack on each wagon, We traveled nights, and rested daytimes, and let the bees fly from the wagons every day. They had such a small amount of honey that we knew they would perish on the road if they did not fly.

I drove ahead of the teamsters with a horse and buggy, in order to warn them of any dangerous places on the road.

We sometimes had to drive until nine or ten o'clock in the morning, before before we could find a camping place.

The weather was extremely hot, and we had the hardest rainstorm I ever

saw fall while we camped, the afternoon of the fourth day. It wet us all through, and poured in torrents down over the bees and brood in the single-walled hives. The chaff hives on the top all had on covers.

A few hives in the boxes worked loose, so that the bees swarmed around the wagons the last two mornings when the teams were towing up the hills, and the bees on the wagon that was standing still would be bringing in honey and pollen before the teamsters would return.

We had our two children with us; were five nights on the road; travelled four nights and put up one night to sleep and dry our wet clothes.

When we had kept bees four years at Tustin, our little boy Harry was born. We thought then our work was too much divided, so that fall my husband went up and killed 100 colonies and moved everything home.

We now have 200 colonies in winter quarters. We killed 100 colonies last fall and stored the honey for building-up-purposes. The bees are in three yards three and four miles respectively from our home-yard.

Our two out-yards both made more comb honey than the home-yard. We do not watch any of them in swarming time. For the past seven years my children have helped in the yards when we were dividing and hiving. My husband usually farms, while I keep bees, although he *can* do his part in the bee yard when he is needed. The part he likes the best is drawing home the honey, and helping to *spend* the *honey money*. My little three-year-old Harry, is also a bee-keeper. He does all the work he can around the shop—and bothers the rest of the time.

I think Mr. Frey has done one thing with bees that few have ever accomplished. Three years ago last June he went to the Marion yard, four miles west, to get two loads of bees for the purpose of starting an out-yard at Sand Lake, nine miles east of our home.

It was a dark night; and when three miles on the road, as they were crossing over a corduroy, his teamster, while driving behind him with a load of 18 large chaff hives on his wagon, drove off the end of the corduroy, and turned wagon, bees and all, bottom side us. They were all large colonies working in 45-pound supers, and the supers were on. They loaded 11 of them again, and then Mr. Frey had to go home for lights and other things to use, as it was raining by this time, and he had to fish a part of the remaining hives out of a water hole with poles.

This yard proved a failure that summer, so he brought the bees home in the fall. In all the moving of bees we have done, tipping over included, we never had a comb break out of its frame. You see we use the *right style* of frames.

On the whole, out-yards have paid us well. We often get our best crop from the out-yards.

If you want experience that *counts*, keep out-yards.

SAND LAKE, Mich., Jan. 30, 1906.

[Some of the things that Mrs. Frey wishes to know, are things that some of the *rest of us* would like to know—but *don't* know. However, let me begin with the questions that I *can* answer. For instance, why don't I produce comb instead of extracted honey? One reason is because I wish to run out-apiaries, and swarming is more easily controlled at out-yards when run for extracted honey. Another reason is that bee-keepers living in that northern region to which I am going say that the seasons are so short, and the nights so cool, that bees do not build comb and cap the sections so readily as they store honey in ready-built combs, and that they can ripen and seal the honey to better advantage where they can remain and work in

one great mass, as in an upper story of full-size combs, instead of being divided up into numerous small clusters as they are with most of comb honey supers. They tell me that the cool nights drive the bees down out of the comb honey supers in single-wall hives; that chaff hives are really needed in the successful production of comb honey in the northern part of the lower peninsula; I have travelled about considerably in this region, and have found, almost without exception, that it is extracted honey that is produced. The universal practice of any region is usually (but not *always*) the best practice for that region. There is some good reason *why* such plans should be followed.

To be able to run a colony for comb honey, keep all of the bees together, with no *desire* to swarm, is something the secret of which we have not learned. We can so manage as to *prevent swarming*, but that does not answer the purpose. We must not have any sulking. What we must prevent is the *desire to swarm*. While I do not expect to produce comb honey in the apiaries in the northern part of the State, I am not without experience in comb honey production. I never yet had *all* of my colonies swarm. As a rule, at least one-third of them have not swarmed. One year, not over half of them swarmed. All were treated alike. Just *why* some of them swarm, and why some of them *don't*, is to me, an unsolved problem. If I *knew* what it was, I presume I could so manage an apiary that *none* of the colonies would swarm. Mr. Aspinwall's non-swarming hive comes as near an answer to Mrs. Frey's question in that line as anything that I know of. I have known Mr. Aspinwall's success with this hive, for a dozen years, or more, but there were drawbacks that have only lately been overcome. With this hive it is possible to do the very thing that Mrs. Frey asks us to do.

I see that Mrs. Frey has trouble with her shook-swarms coming out again in two or three days. I doubt if the raspberry honey flow, or the season, in her locality, has any bearing on her failures. It is easier to say what it is *not*, than to say what it *is*, but I know that others have made a great success of the plan, and I feel sure that Mrs. Frey could if she knew just exactly how to manage. Some one who has tried it says that the bees must be disturbed and led to fill themselves with honey before being shaken off. This seems like a simple or unimportant point, but the one who gave this says it is all important. There may be some such point as this that Mrs. Frey has overlooked. I think I will give shook-swarming a trial next summer, in the raspberry region, just to see how it succeeds with me, if for nothing else.

Then there is the matter of re-queening. I must confess my lack of experience along that line. It is true, that, as a queen breeder, I have taken out many tested queens, and replaced them with young laying queens, but this is not exactly the plan that is asked about. What is wanted is some plan by means of which an apiary, worked for honey, can be requeened in a practical manner each year. The article by Mr. Olmstead is an answer in that direction. Just how practical that plan will prove when worked on a large scale I don't know.

Let's go back a little and ask if requeening is *advisable?* I am willing to admit that a young, vigorous queen in the spring is an advantage, but I question if it does not come under the head of things that *pay*, but not so well as *other things* costing no more time and money. I honestly believe that we can leave the matter of supersedure to the bees. We may not then get quite so many bees to the *comb*, but we can take care of *more combs*.

If the combs below the supers are

new combs, there will be little trouble from travel-stain, but, with old combs, it is necessary to keep the sealed sections away from the proximity of the brood nest. With tiering-up this can be easily managed. Nine-tenths of all of the sections of comb honey that I ever produced were capped over with one or more supers between them and the brood nest, and travel-stain has been practically unknown to my honey.

Mrs. Frey says if I ripen my extracted honey as she ripens her comb honey, I, too, will have swarming. I expect to ripen it on the hive as thoroughly as it is possible, to leave it on until it is all sealed—perhaps longer—but I expect to give more super room than would be found in 64 pound sections of comb honey. Perhaps Mrs. Frey gave more than that amount of room, but that is what I gather from the way in which she writes. I expect that at no time will the bees be left without an abundance of empty comb in which to store honey. I presume that I will have some swarming—not much, but *some*—and I'll tell all about it just as frankly if I do have *much*..—ED. REVIEW.]

Editorial

Size of Hives, as it effects the tendency of the bees to swarm, is well-illustrated by the experience of Mr. C. F. Smith, of Cheboygan, Michigan. He writes that he has bees in 7, 8, 9, 10 and 12-frame hives, respectively, and, of the colonies in the 7-frame hives 95 per cent. swarmed, of the 8-frames 85 per cent. swarmed, of those on 9 frames 70 per cent. swarmed, of the 10-frame style 55 per cent. swarmed, while only 33 per cent. of those on 12 frames cast swarms.

The Hoffman frame receives the respects of Mr. Chapman as follows: "Don't let Mr. Gill get away with you on the Hoffman frame problem. When I go out to plow, the first thing I take hold of is the handles of the plow; and they are good ones, too. When I whittle kindlings, the handle on the knife is pretty nearly the main thing. When we handle frames we want good handles to get hold of, and I would like to know where the handle is to the Hoffman frame."

Encouragement is often needed as much instruction. This is exemplified by the following extract from a subscriber down in Pennsylvania: "In the winter of 1903-4 I lost nearly all of my bees, and became so discouraged that I almost wished that I had never seen a bee, but the Review kept humming away on the 'keep more bees' chord till I got up the courage to go at it again. I had no money, but I kept bees on shares one season, then bought 100 colonies, and these, with their increase, and a few I bought this season, put me up to 265 colonies, thanks to the Review."

A Hunters' and Trappers' Magazine.

There are few industries now without a periodical exponent. Even hunting and trapping has a magazine. It is called the Hunter-Trapper-Trader, and is published monthly, at $1.00 a year, at 326 East Broad St., Columbus, Ohio. I read it with considerable interest, probably because a good share of each autumn in my boyhood's days

was spent in hunting and trapping. Many is the dollar that I earned in this way, and in many parts of the country there is still "good money," in it for boys, or any one with leisure in the fall and winter. Send ten cents for a copy, and it may put you in a way of making some money where you least expected it. No this isn't a paid advertisement; the publisher will probably be the most surprised of the lot when he sees this notice.

EXTRACTED DEPARTMENT.

HONEY CANDYING IN THE COMB.

Is This More Likely to Take Place if the Cells Contain a Little Candied Honey When Given to the Bees.

At the end of the harvest, when the honey has all been extracted, it is the practice of bee-keepers to give the bees access to the combs that they may be cleaned up before being stored away for the winter. If any partly filled sections are left at the end of the season, the honey is usually extracted from them, and the bees allowed to clean up the combs before the combs are put away for winter.

I have followed this practice, simply because I have been taught that that is the proper way to do. I have never tried leaving the combs with a little honey adhering to the sides of the cells. I have been taught that this honey would granulate, and I expect that it would, and I have been told still further, that this granulated honey would be sort of "starter," that would start granulation in the new honey stored in the cells. I have often wondered if this were really true, as I have noticed that the bees always clean out a cell perfectly before storing honey in it, and now comes Mr. Doolittle, in the American Bee Journal, saying that this cleaning out of the combs in the fall is entirely useless. Here is what he says:

I have been censured for thus advising the use of bait-sections (without their having been cleaned the previous fall) the claim being made that if we do thus that the little honey left after extracting will granulate, and from this the "seed" for granulation will be left in the cells, so that the honey in baits thus used will granulate much sooner than would be the case were the sections cleaned by the bees in the fall before the honey had a chance to granulate. But after years of careful observation and experimenting, I can only think my critics are mistaken, for such does not hold true with me. I am confident that the bees always clean all cells in which they deposit honey absolutely *clean* before they store any honey therein, and by their so doing all this supposed "seed" is removed so that there are no granulating "germs" left to start granulating. And, as my experience says that the honey in such extracted sections does not granulate any quicker than that in any of the sections containing baits, cleaned by the bees in the fall, as is often recommended, I must be excused for thinking that the ideas of my critics are not well-founded.

I would be glad to hear from others on this point, especially from those who have had experience. Many times there is no objection to having the combs cleaned up in the fall, but some bee-keepers don't extract all of their honey until late in the fall when the bees are flying very little, or not at all; and others, a few, bring all of the combs to the home-yard to extract, and others are thinking of doing this way, and the question is, if it isn't necessary to have the combs cleaned up the previous autumn, why go to the trouble at a time when their exposure puts the apiary into more or less of a fracas?

SWARMING.

Why it is Objectionable and How it May be Prevented.

R. F. Holtermann, of Ontario, has been keeping bees and writing about them for a great many years. Perhaps friend Holtermann will not regard as a compliment what I am about to say, but, to me, his writings for the last year have seemed of unusual value—perhaps they are the ripened fruit of years of experience. Perhaps my own experience enables me to more fully appreciate them. Be this as it may, his talks at conventions, and his writings, have, of late, seemed to be unusually *good*. He has lately contributed an article to Gleanings on the question of all questions, just now, swarming, what causes it, how to prevent it, etc. I have read the article, and then re-read it, something I seldom do, and I believe it is worthy of careful study by all bee-keeping specialists. Here is what he says:—

For some time I have seen that swarming in the life's history of a colony of bees is a calamity, even if the colony is in the hands of an intelligent producer. Mr. L. A. Aspinwall has still better expressed it, and in language none too strong, by saying, "It is the bane of modern apiculture." Swarming is to the honey crop what rearing of calves is to the cheese and butter crop. This is a fair compariparison, and the two are very closely parallel. To swarming can be traced in ordinary bee-keeping the majority of cases of queenlessness, robbing, weak colonies in the fall and spring, loss of honey crop, and foul brood. It means divided energy, often two to lift two loads when it takes the two to handle one, therefore nothing or little is accomplished. That this has in the past been acted upon without thoughtful recognition in my case and in many others is shown in our admission that large swarms are expected to give us yields of honey when the small oft divided we set no task in that direction. We have sought to prevent swarming, largely as a matter of convenience, by not having to watch them, and sometimes so as not to have the trouble hiving them. This alone makes non-swarming a goal worthy of our effort. When I look upon the many hours and days spent in hot summer weather watching issuing swarms and hiving them, it seems to me I would almost sooner go out of the business than return to these probably antediluvian methods.

While not completely master of the situation, as I am inclined to believe Mr. Aspinwall may be, yet I have got a system of non-swarming very satisfactory to me, and I have very largely worked it out for myself, and consulted no one about it. As stated at the Chicago convention, certain similar lines of thought and certain conclusions, one independent of the other, have been followed out by Mr. Aspinwall and myself. This is to me only added evidence of their correctness. My methods can be of use, and applied to almost any modern hive, the advantages being greater or less—more or less complete in its application. The smaller-hive man can use it to advantage, but not with best results.

Some of us may be accused of being large-hive men, and that we are booming large hives. There is no patent on the size of a hive. I have been compelled to become a large-hive man against my will; and, had I not always sought to be reasonably open to conviction would probably still hold me in the ranks of what we now look upon as baby honey-nuclei. I have sold to my own profit eight-frame Langstroth hives for what I could get for them, afterward replacing them with the twelve-frame. In the non-swarming method I use, we must consider the hive, the bees, their location, and the method of manipulation.

A ditch which I was willing to concede to the enemy of large hives was that the smaller hive was better for comb honey. This, too, has been fought for, and, in my estimation, has, by solid reason, been vanquished and taken. Which builds up more rapidly in the spring—a two-frame nucleus or an eight-frame hive? This is easily answered. To put it as favorably as possible to the small-hive advocate, "Which multiplies in bees the more rapidly—a hive with 3,000 bees or one with 12,000, other things being equal, so long as they are not crowded? The larger number will double first. On the same ground, a colony which never swarmed in 1905 (and filled its twelve-frame brood-chamber in the fall as well as another an eight-frame), winter and other conditions being equal, will build

up faster in the spring I have had lots of colonies in the spring, filling their twelve combs just as well as their eight-frame; in fact, not having swarmed they are more uniform. Strong colonies are what we want every time and all the time providing we give them room. We are told colonies may be too strong; the moderate pull ahead in the end. With a great big magnified laugh people have told me they tried large hives and they were the first to swarm. I grant colonies may be too strong if improperly managed. Room not being given in the brood-chamber, and it being allowed to be honey clogged, the strong colony, when willow, maple, or fruit-bloom comes, will crowd with honey the brood-chamber and curtail the brood-nest, and swarm or fall behind for lack of brood room, when the weaker, not storing surplus, but with enough for stimulation and immediate requirements, gains upon the stronger and outstrips it. For such a condition no allowance need be made in intelligent modern bee-keeping. We may all allow this at times; but the system is not at fault—our management is.

To those who laugh at the early swarms from larger hives, the above applies, in addition, the fact that, having a larger force to begin with, they build up faster, and will swarm unless properly managed. If contraction is practiced, the large hive has no greater need (if as much need) of contraction than the smaller.

There are far more queens able to use a twelve-frame brood-chamber than bee-keepers realize. Because a queen is not keeping an eight-frame brood-chamber full of brood is not always a reason for "pinching her," and is far from proof that she could not fill a twelve if given a chance. It is quite as often proof that the bee-keeper needs pinching. What I mean is that brood-chambers are often allowed to be honey and pollen clogged, and in a condition where there is not proper room. Here lies a foundation truth in successful bee-keeping; and how a more uniform yield per colony could be secured, straight evenly spaced combs, not so old that the bees are waiting for a "rainy day" to chew them down and make them fit for brood. Seeing that there is plenty of honey, but not too much, and that if the colony has been queenless through swarming, or otherwise, and has become honey and pollen clogged, see that the new queen has ample room to lay without the bees making the room at a loss of time to bees and queens. To keep a laying queen in the hive all the time, as can be done when not swarming, is a valuable simple way of gaining some points in the system. Some varieties of bees, especially strains of Italians, are more apt to pack honey about the brood, and must be watched more, and this trait properly directed. Bruise honey so as to bleed; and if there is too much in the brood-chamber, put it elsewhere; either give to colonies not so well provided, or, if strong enough and seasonable, give a super with one or more combs, or remove entirely. I took about fifty combs, for this reason, from the brood-chambers last season. I was too much rushed to attend to them, and the moth destroyed them. That is bad enough, but it paid better than to cut down the capacity of my twelve-frame Langstroth brood-chambers.

There is a great difference in bees as to swarming. I am not prepared to say that, if I ran only one-apiary, it would not be Carniolan bees I would keep. If Mr. Aspinwall's hive proves to be a non-swarmer, it is Carniolans I shall have; but in running out-yards, and with the busy season we have, bees are sometimes allowed to crowd even our large hives, and then the Carniolans resent the restricted energy more than other varieties. I admit they are too much for me in their purity at present; but I aim at having them one-third blood Carniolan. Some strains of Italians doing good work too, but probably not the best, and are easily kept from swarming. Begin with strong stocks in the apiary, and you have a difficulty in preventing swarming that the badly wintered and weak colonies do not give. Have a long flow with but little of break between blossoms, and you have a diffidulty those with short and sharp flows do not experience. The condition of many of my colonies and the conditions under which they are placed are most trying as to swarming, and more is accomplished than many will realize who are not similarly placed. As soon as the brood-chamber is crowded, and the bees require room, supers are put on, a queen excluder, with only a wooden rim and two cross-pieces, is put in place. I grant there may be a greater tendency to swarm with queen-excluders, but not much if the perforations in the metal are obstructed as little as

possible, and *there is drawn comb above.*

In the Holtermann hive there is a ventilator, made of three staples in which slides a piece of galvanized iron. This can be used whenever the bees are likely to be uncomfortable. I keep them pretty well open during the honey-flow, and it gives the bees fresh air in the super. Just now I will simply mention this as a factor in the prevention of swarming.

As the bees multiply and require more room, another super is added. The bees require, in a fair honey-flow, to keep them contented, more super room than a brood-chamber. Less than two when a good honey flow is on for some days will not be able to satisfy them. The field bees live eight weeks or so, and spend the greater part of their life gathering honey; also a certain proportion of young bees keep coming on, and a certain proportion of old bees keep dropping off, and it requires more than one super to strike a balance near enough to satisfy the bees. As soon as a good honey-flow is on, and the weather is warm, the entrance to the hive is enlarged ⅞ in depth. This can be done by means of the S. T. Pettit wedges or a drop bottom. I do not like simply raising the brood-chamber on blocks; the bees can then fly in at all sides—an inconvenience in manipulation, and confusion to the bees when, at the close of the season, the brood-chamber is let down. It is not necessary to resort to this. The double door in my hive can be half raised, and then it affords a fine shade to the front of the hive.

The cover is used as protection against heat and cold. I am quite satisfied, from many years of observation, that, to have the hives shaded by trees which are in leaf as hot weather comes, and that lose their leaves in the fall, is a great preventive of swarming, and, properly trimmed, they are no obstruction.

When all the above has been attended to we watch proceedings and the season and fields. If more room is needed it is given. Properly managed there is no trouble in keeping a hive almost always contented and building them up so strong that, with four supers the same capacity as the brood-chamber, all will be crowded with bees from top to bottom. In swarming honey is often left unripe in the supers. Colonies divide in proportion to suit their sweet whim. Many hives are only partially occupied; the same with combs. Naturally the swarm is running down to a point of less yield, and the old colony is like a bee-keeper getting off a sick-bed at the beginning of the honey-flow, hoping he will be able to gain sufficient strength from day to day to get to a condition before the season closes where he can do a day's work. Broadly speaking, in the one case it is a struggle between man and bee shall the bees run the man (they certainly will at times), or shall the man run the bees with at best a compromise? In the other the man runs the bees.

This article may not be accepted by all. To be frank, however, logical reasoning, sticking to the point at issue, is not feared. Statements without reasoning, and shifting from one point to another when about to be taken, is what I fear. Such discussions are of profit to none.

While agreeing, in the main, with Bro. Holtermann, I think there are cases in which swarming, or *increase*, is advisable. I suppose my friend would not dispute this. It is impossible to cover every little point in one article. Where there is a heavy fall flow, and the bee-keeper has not as many colonies as he can manage, and his territory will support, early increase is advisable. Two colonies in the fall will store more than one that has been kept from swarming.

The illustration of the calves and the cheese and butter crop is a good one, but suppose that the farmer is to remain in the business ten years, and has not as many cows as he can care for and his pastures will support, then it will pay him, in the end, to raise some more cows. When a man has all of the colonies or cows that he can manage profitably, there is no question but the swarms and calves are much alike.

This point of how rapidly a colony will increase, in proportion to its size, is a most excellent one, and worthy of consideration. Of course an eight-comb colony will increase faster than a two-comb nucleus, but it is a question if it will build up *four times*

faster, or more than that. If it will build up four times as fast we are fortunate, as it is cheaper to house bees in large than in small hives, although it is harder work to lift the hives when they are large. Of course, a large colony will build up more rapidly than a small one, but it is evident that if we keep on enlarging the hive, a point is finally reached where the queen and her helpers can't keep up with the hive. A colony must be sufficiently large so that it can work to advantage so that there will be sufficient heat, and food and enough workers to care for the eggs that the queen will ordinarily lay. In other words, a proper balance must be preserved between these various factors As Dickens says: "We must preserve the unities." So many people have argued in favor of a large hive in order that the queen may not be "cramped for room in which to lay." We don't keep bees, nor build hives, simply that the queens may have room to "spread themselves;" what is needed is a hive with the combs full of brood, and of such a size that with it we can accomplish the objects we have in view; one of which is to furnish super room in such proportion, as Mr. Holtermann says, that the wear and tear on the working force will just about equal that of the hatching bees. This is one of the most valuable points in the article.

I doubt if it is possible to say "*this*" is the correct size of hive for everybody. Localities, men and their methods, all differ. Mr. Chapman, in Northern Michigan, makes a success of extracted honey production with an eight-frame Langstroth hive; Mr. Townsend does the very same thing with a ten-frame Langstroth; Brother Holtermann, over in Ontario, accomplishes wonders with a twelve-frame Langstroth.

There is no question that shade and ventilation help to keep down swarming. If anybody wishes to give more ventilation, aside from a generous entrance, it is an easy matter to slide a super along until a crack is opened. In this way the matter can be given a trial.

There is one other point that Mr. Holtermann has been pressing of late, and I wish to say "amen," viz., that of holding the mind in readiness, or willingness, to accept *truth*. So many form a conclusion first, and then bend every argument to fit the conclusion.

ADVANCED
Bee - Culture

Synopsis of Contents.

In a story-paper, when a continued story has been running several weeks, there will often be found, at the beginning of each installment, a "synopsis" of the preceding chapters. By a perusal of this "synopsis," the new subscriber is able to pick up the story at that point, and follow it understandingly. In one sense, the new book, ADVANCED BEE CULTURE, is a "synopsis" of bee culture. It is the cream, or, as one man puts it, the **"butter,"** of what has appeared in the Review during the nearly 20 years of its existence. It gives the best methods, the advanced methods, (hence the name) for managing bees for profit. It tells what is *already known;* then the Review takes up the subject, and discusses what we *don't know*, but are trying to learn.

It first takes up the subject of Bee-Keeping as a Business; then shows the best method of Making a Start in Bee-Keeping; points out the Mistakes in Bee-Keeping; shows the wonderful Influence of Locality; tells what is the Best Stock and how to Secure it; gives points that will enable a bee-keeper to make a wise **Choice of Hive;** shows the necessity and use of Honey

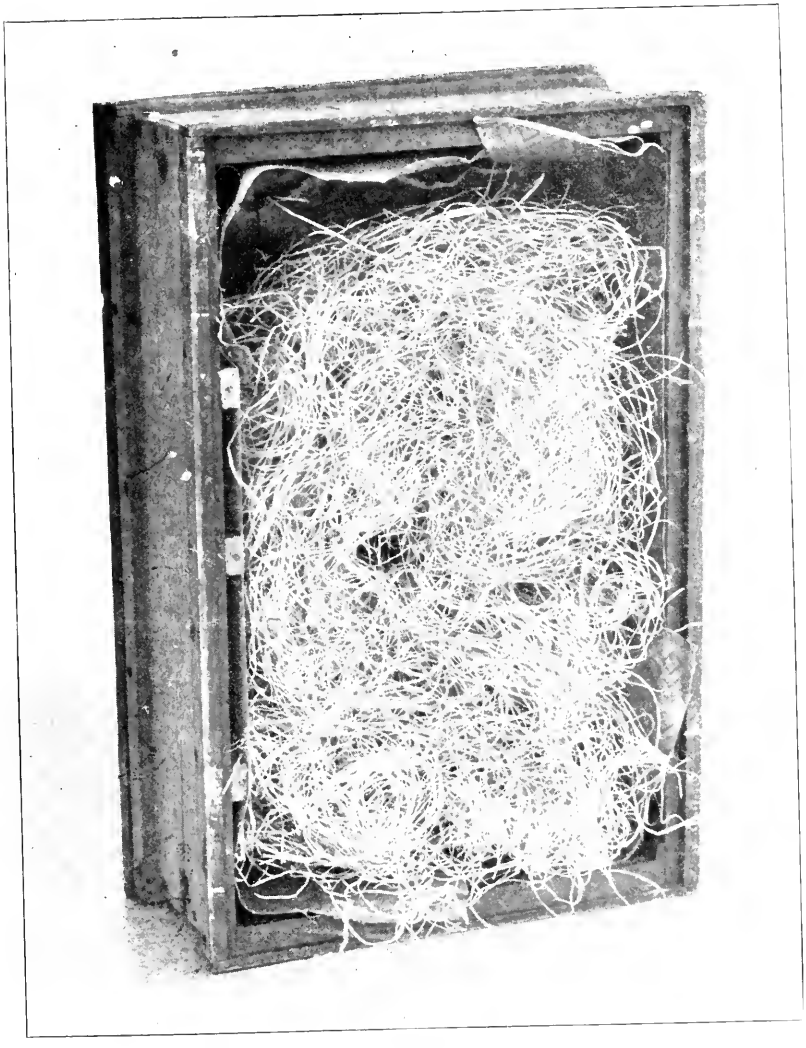
Boards and Queen Excluders, describes the various kinds of Sections and Their Adjustment upon the Hive; has a chapter upon the Arrangement of Hives and Buildings; another on Comforts and Conveniences in the Apiary; tells why, and when, and how, to use Shade for Bees; gives most excellent advice on the Use and Abuse of Comb Foundation; then takes up that most puzzling of questions, Increase, its Management and Control; tells how to best manage the Hiving of Bees; devotes several pages and some beautiful illustrations to Commercial Queen Rearing; follows them up with a chapter on Introducing Queens, giving one plan that **never fails;** then it takes up the Feeding of Bees; following this is a sort of gathering together of the various features already described, showing their relations to one another in the Production of Comb Honey; the reader is next given the **secrets** of Producing Good Extracted Honey at the least possible cost; after the honey is produced, then its Preparation for the Market and Marketing are discussed, then Migratory Bee-Keeping; Out-Apiaries; House-Apiaries; and Apiarian Exhibits at Fairs are each given a chapter; following these are probably the best descriptions and methods of treatment for Foul Brood that have ever been published; after this comes the question of Wintering, which is discussed in all of its phases, The Influence of Food, Temperature, Moisture, Protection, etc.—33 chapters in all.

Price of the book, $1.20, or, with the Review for one year for only $2.00.

Let me ask you to consider, in all seriousness, if, as a bee-keeper, you can spend $2.00 more profitably than to send it and get this book and the Review for *one year!*

W. Z. Hutchinson

Flint, Michigan



Coverdale Five-Cent Feeder.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, MAY 15, 1906. NO. 5

Turning a Super into a Feeder at a Cost of Five Cents.

FRANK COVERDALE.

THE past season was the poorest for honey of any in the past 30 years; hundreds of colonies had to be fed or die; in fact, three-fourths of all the bees in the locality would have perished without feeding.

The common inquiry among bee men was "how shall I feed?" Some fed through feeders bought on the market; and, to get those that would hold enough was expensive. Then, the weather was often rather cool, and the bees a little slow in going up to get the feed. As I was more interested than any one else in this part of the country, it stood me in hand to do some thinking; and the result was certainly very pleasing to both myself and many others.

Oil cloth was bought until enough feeders were made to satisfy the wants of all; and all feeding was done in a hurry, and in apple pie order. This feeder is, I think, the best thing I ever thought of along this line. It is extremely simple; a Dovetailed comb-honey super is lined with oil cloth which costs, here, 12½ cents a yard; and it makes a feeder that will hold about three gallons, and costs only four cents each, or 25 feeders for only one dollar I believe the cloths will last for years. I have fed three times with some of mine, and can see no sign of injury. I have left the cloths in the supers until spring, and, if needed, will just set them on and feed the required amount all at once; then the cloths may be taken out and straightened out, laid away until farther use is found.

FEEDER MAY BE USED EITHER ON TOP THE HIVE OR UNDERNEATH.

These feeders set on top the hive, or the hive may be raised from the bottom board, and the feeder set underneath, after the required amount of syrup has been put into it. Long grass or hay must be thrown in; this is to prevent the bees from getting drowned.

These feeders were used successfully after it began to freeze, by setting them underneath the hives. In two days 25 pounds of feed were all stored away. When the weather is warm they work well on top. If the bees won't go up, just put the feeders underneath, and the bees will soon be on the buzz ripening the feed.

This feeder is adapted to any amount one wishes to feed at once, or a little each day, and will answer the purpose even for stimulating purposes, as bees should not, as a rule, be fed for this purpose until after fruit bloom.

The oil cloth is air-tight, so there is no ventilation going through the cloth.

Then, again, it can just as well be put on the bottom board, and the feed poured down between the frames at one side of the cluster, into the feeder below. In this case no heat would be lost.

Then, again, the oil cloth need not cover the whole bottom of the super, as the follower board can be set in between any where you wish; thus you can have a feeder at one side, and to cover only one or two section holders. This would cost only one cent apiece. Or, if one wishes, the feeders can be set outside, filled with syrup, and a liberal amount of old, dry grass, hay or even green weeds, thrown in to keep the bees from drowning

Every comb honey producer will usually have plenty of empty supers, and it is handy to fix them for this business. These cloths may be used in any super that will support them; even the different apartments of the T supers may be fitted to take them. A shingle may be let down to the tins in one, or all, of the apartments, care being taken to see that the bees always have access to the feed; or if placed underneath, be sure there is an opening in front to allow bees to fly out at all times.

Those who use Dovetailed supers or section holders can key up the supers. When putting in the oil cloth fold the corners so as not to allow any chance for leakage. Push in a little sharp tack at each corner, close to the top edge of the cloth. Do this to keep the cloth sound from holes. Use just enough of these brads to hold it in place.

When using these feeders don't go slopping the syrup all over the bee yard, but be very careful and neat, as the bees become greatly excited and they should not be able to find any scatterings.

The entrance is always arranged behind the follower board, either for bees to fly out when beneath, or for bees to enter when it is set over head. See that all covers are set on tight when on top, leaving no chance for robbers. When set underneath, two days are required to feed three gallons of syrup, or sufficient for winter.

There is no unnecessary amount of untimely brood started with this feeder. It is simple, double-quick, and the syrup may be made thick or thin. We have been experimenting both ways, and will note the difference, if any.

We use the cheap grade of oil cloth, and, so far, have met no obstacle. See that you get *sound* cloth. Hold it up to the light, and if there are any defects they will show. As I have said before, this simple feeder has made us all happy, even though so much feeding had to be done this fall; really, we liked to forget our very poor season.

MAQUOKETA, Iowa, Dec. 28, 1905.

The First Trip to Northern Michigan.

W. Z. HUTCHINSON.

ON the second day of April, my brother Elmer and myself met in Saginaw, and turned our faces northward on a prospecting tour of inspection and selection in the raspberry region of Northern Michigan.

A DAMP CLAY CELLAR HARD ON THE BEES.

Our first stop was at McBain, in Missaukee county, where Mr. Cavanagh, whose bees we are to manage, has three apiaries. We first visited the home-apiary, where 75 colonies were in an out-door cellar, partly under ground, dug in clay, covered with earth, and no roof over it. The temperature was 43, but there was a dampness, a chilliness, a sickening mouldy kind of an odor, that struck me as a foreboding of disaster. However, most of the colonies were alive, only eight being dead, but many were quite weak, while some of them were in very fair condition. We carried them out, scattering them about the yard, and there was very little mixing up.

A DRY CELLAR IN SAND BRINGS THE BEES THROUGH IN FINE CONDITION.

In the afternoon we drove some five or six miles to the south yard, where 60 colonies in chaff hives had wintered well, but nearly consumed their stores. We carried 35 colonies out of a cellar at this yard, and I never saw greater contrast between the wintering of two lots of bees, in cellars, than there was between this lot and those at the home-apiary. The cellar at the south yard was dug in a knoll of light sand, and covered with a roof, and was so dry that the bottom was really dusty. Every colony was just booming—not a dead colony, and very few dead bees. It was a warm afternoon, and when carried out, I tell you the bees did make the welkin ring.

PILE THE HIVES IN SINGLE PILES IN THE CELLAR.

Right here let me protest against the plan of putting bees in a cellar, and stacking up the hives *a la* Boardman; that is, setting them six or eight inches apart in the first row, then piling the next row on top so as to bring the bottom of each hive over the opening left between two hives of the lower row. It is all right so far as the wintering of the bees is concerned, but the trouble comes in when carrying them out. Each hive taken out jars the whole pile, and by the time a dozen hives are carried out, the bees in every hive are aroused and ready for business. Put an empty hive on the cellar bottom; lay across it two pieces of wood 2 x 2 inches square; set the first hive of bees on this, leaving off the bottom board. Put two sticks of wood across the top of this hive, and set on another. Proceed in this manner until the pile reaches the top of the cellar. When carrying out the bees, only the bees in one pile, perhaps four or five hives, are disturbed at one time.

HOW MICE CLOSED THE ENTRANCES.

The hives in the other apiary at McBain were packed in straw, four hives in a box, and had wintered fairly well, but it was fortunate that we appeared on the scene when we did, as the covers had been left off many of the hives, the frames simply being covered with burlap, and the mice had

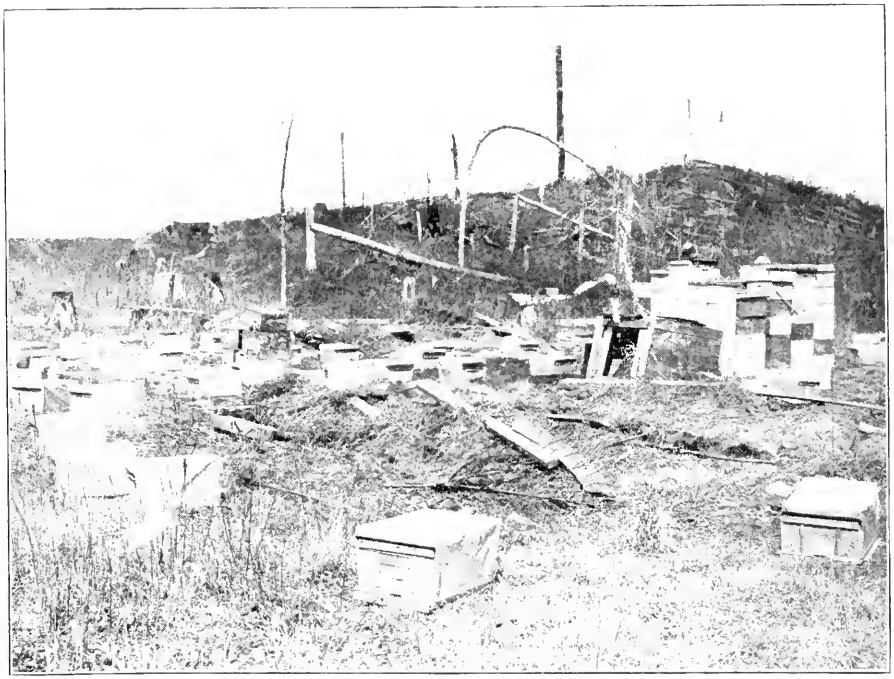
gnawed through the covering, and let the chaff tumble down through the combs, completely blocking the entrance.

BEES WINTERED SUCCESSFULLY BURIED IN CLAMPS.

The next day we went on to Kalkaska, where we spent two days attending the convention of the Northern Michigan Bee-Keepers' Association. We then came back to South Boardman, where Mr. Cavanagh had 55 colonies that he moved up there last August, and, later, buried them in two pits, or clamps. One of these pits was ventilated and one was not, and there was no great difference in the way that the bees had wintered if anything those in the unventilated clamp wintered the best.

HOW TO TAKE BEES FROM A CLAMP.

By the way, we learned of Mr. E. D. Townsend how best to remove bees from a clamp or pit. The difficulty is, if the weather is warm, that as soon as the pit is opened, the bees will begin to fly from all of the hives, thus causing a mix up before they can be placed upon their respective stands. The Townsend plan is to remove *nearly* all of the earth, then wait until dusk, when it is too dark for the bees to fly, and remove the thin coating that remains, together with the straw. By morning the bees will all have cooled down, and, before it is warm enough for them to fly, they can be carried to their stands without a bee leaving the hives.



Fifty Colonies Moved North Last Fall.

They were placed in this location temporarily, and wintered in clamps will be moved three miles to permanent location.

OILED PAPER VERSUS TARRED FELT FOR SPRING PROTECTION.

These bees were dug out, and most of the hives covered with oiled paper. Whether this will prove the equal of tarred felt remains to be seen. The oiled paper is cheaper, and stronger, and more easily put on. Most of the hives at the home-yard and the south yard were papered, or protected, with the tarred felt, and we will have an opportunity to compare the merits of the two kinds of paper.

THERE MUST BE NO FUSSINESS IN OUT-YARDS.

Even with this initial trip at out-apiaries, I can see very clearly that there must be short-cuts, quick work, and, especially, *system*. Methods that might be endured in a home-yard could not be tolerated in an out-apiary.

After papering all of these hives, and feeding the bees in some chaff hives that were short of stores, we were ready for the most important part of our mission, that of finding raspberry districts for the location of the apiaries.

SOME VITAL POINTS IN SELECTING A LOCATION IN NORTHERN MICHIGAN.

Let no one imagine that all of northern Michigan is covered with raspberries, the same as some other portions of the country are covered with clover. This part of Michigan is laid out in "streaks," so far as soil and timber are concerned. Pine barrens form a large share of this northern country, and more desolate, dreary, God-forsaken spots it has never been my lot to behold—nothing left except pine stumps and logs blackened by fire. Occasionally there is an old pinery upon which raspberries grow, but they are short, stunted, and scattering, and of little value as honey producers. After driving for miles through a dreary waste of sand, pine stumps and logs, there will be a change, sometimes within a few rods, to the most magnificent forests of maple, beech, elm, etc., and it is in these hard-timbered belts that we must look for the honey-yielding berries.

When these tracts of hard timber have been lumbered off there springs up a growth of the wild red raspberry that is simply incomparable as a honey producer. It comes into bloom early in June, is a profuse yielder of a delicious white honey, and continues to bloom about six weeks. It is not greatly affected by the weather. The blossoms are inverted; that is, hang down like so many umbrellas; and the rain does not wash away the nectar as it does in clover. Bees will keep right on working in wet weather, unless it rains too hard. We saw a few basswoods, and occasionally a trace of clover, but berries are the "whole thing" here.

Having found such a hard timbered tract, there are still several points to be considered in the selection of a site for an apiary. First, an old, settled, farming country is of no value; unless lumbering is going on in that neighborhood, because the farmers cut the timber slick and clean and plow up the ground. Of course, there will be a fringe of berries around the edges of clearings, along fences, etc., and a few colonies would probably find plenty of honey, but the man who is going to bring in several hundreds of colonies must find some place back away from the cleared land, or, at least, where the hard timber has been lumbered off, and has not yet been sold for farms.

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

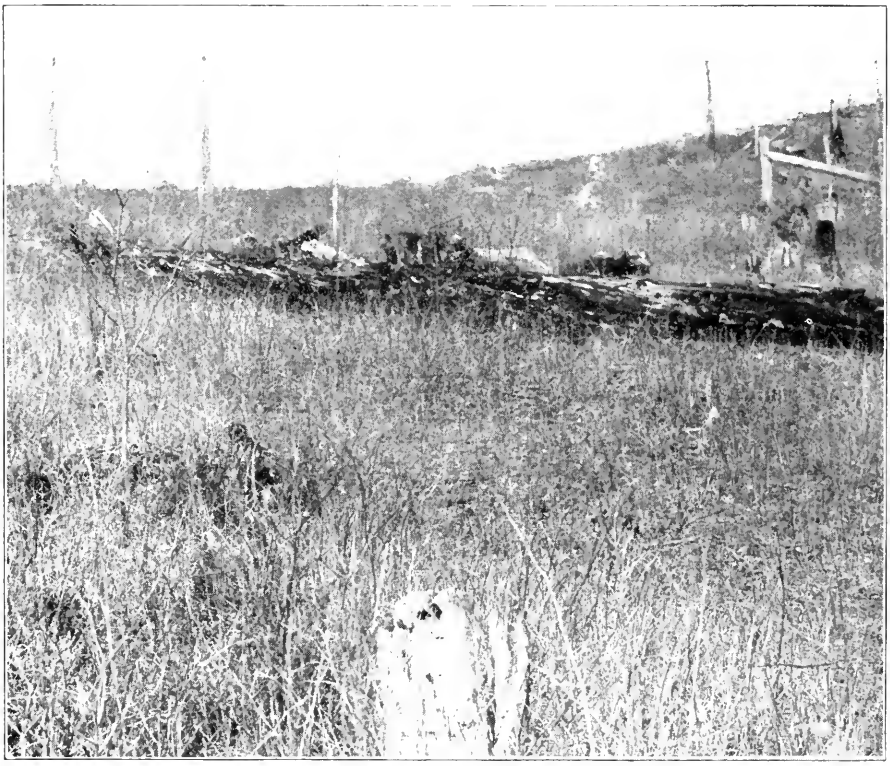
BURNED OVER TRACTS NOT SO DESIRABLE.

If the fire runs through and burns them up, they seldom come in again

and grow so rank as when the brush, tree tops, logs, etc., acted as a sort of mulch. After the saw logs have been cut on a tract, there is more or less of small timber left, and this shades the ground to a great extent, and greatly improves the raspberry pasturage—promotes a more rank growth, and prolongs the time of bloom. In some sections the small and crooked trees are cut off for wood to use in making wood alcohol and charcoal, and the berry bushes here are of less vigorous growth, but they bloom earlier. In such localities, the June grass is more likely to come in and choke out the berries. Let the location be what it may, it is only a question of time when the undergrowth will come up and run out the berries.

RASPBERRIES NOT A PERMANENT PASTURE.

It will be seen that raspberries are not a permanent source of supply, like white clover. A large share of this part of the State is still covered with hard timber, but it is being lumbered off at a great rate, and a man located here would be able, by shifting about, to have apiaries in just the right kind of locations. We saw locations that had passed their prime, others that were right in their "glory," so to speak, and still others were lumbered off only last winter.



Poor Raspberry Pasturage.

Been burned over, and no shade.

In the part of the State that we visited there are two systems of narrow gauge railroads, with numerous branches, in the hard timbered districts, and all along the roads are choppings of different degrees of "ripeness."

BEST LOCATIONS ARE "BACK IN THE WOODS."

But these choppings are back away from civilization, and the only buildings that are available are log shanties at deserted lumber camps, most of which have been robbed of their roofs for the sake of the lumber. The man who goes into northern Michigan to produce raspberry honey, must expect to "rough it," and live in a shanty, unless he buys or builds a good house, and this is something he ought not to do until he has been here a year or two and become familiar with the country, so as to choose wisely in reference to future pasturage.

Mr. E. D Townsend was fortunate enough to find a location where he could set his bees down within a few rods of a railroad, at a point where the cars will stop on signal, but the man who hopes to find another such a spot will probably be disappointed.

LARGE TRACTS OF RASPBERRIES HARD TO FIND.

Again it is not so easy to find a *large* tract of raspberries in one spot; that is, a tract large enough to allow the establishing of a series of yards within three miles of one another. It is not a difficult matter to find a locality suitable for one apiary of say 100 colonies, but to find a large tract of berries is quite difficult. We spent several days driving about without finding any such; and the locations that we have selected are several miles apart—one ten miles from what will probably be the home-yard, and the other about seven miles away—but each of the locations is excellent for the number of bees we expect to place there. Of course, we may make changes later, after we have had a year's experience and observation in this part of the country, but we can't take any chances of overstocking, even if there will be some time spent in driving to the outyards.

LOCATION IS ALL-IMPORTANT.

The foundation of all is the *location*, one with an abundance of berries, and around this must cluster all of the other conditions. The most desirable pasture may not be in the most desirable place to live; but I doubt if there will be any locations so inaccessible that the bee-keeper won't be able to get his honey out if he secures a crop. We were fortunate enough to find locations near good, well-travelled roads, and, at two of them, we secured old lumber shanties that can be repaired and made to answer as honey houses, possibly one of them will be used to live in. At the other location is a set of old shanties, but at this writing the owner is in California, and we must await his return before we can tell positively if we can have the use of the shanties.

THE ONLY WAY TO FIND A LOCATION IS TO "HUNT FOR IT."

There is only one way in which a location can be found, and that is to go into this region and *hunt for it*. Very little can be depended upon what the settlers say, unless they are bee-keepers, as they seem to have no conception of what is needed. To illustrate: One man who had lived in this country several years, told us, with great enthusiasm, of a tract, on the banks of the Manistee, where for miles and miles, there was a perfect sea of raspberries. As it happened, we had that day driven through that *very spot*. The ground had been burned over, and while there was quite a dense growth, it was mostly *black* berries, with occasionally, a little patch of short, scattering raspberries. We were

Excellent Raspberry Pasturage.

Not been burned over, scattering trees furnish shade, and logs and brush act as a mulch.

disappointed so many times, after driving miles to see some promised land, that we ceased to put any dependence whatever upon what somebody told us. As I have said, those men who are not bee-keepers don't understand all the points as I have given them in these pages, and are almost certain to be misled. A resident bee-keeper, thoroughly acquainted all over a county, would be a God-send to a prospective bee-keeper; but, as a rule, men are not acquainted, except in a general way, outside of their own immediate neighborhood; hence, as I have said, the only way to find a location is to hunt for it; and this to a certain extent, is largely luck and chance. A man might blunder upon a good location the first day out, and he might drive a week before he found one.

LOOK BEFORE YOU LEAP.

I would not advise any one to pull up stakes, and leave his present location, and move here, without first coming in person and investigating.

To come here and establish a home and an apiary, or apiaries, will require a lot of enthusiasm and grit, patience and perseverance, and time and money. If I had not had a pretty fair stock of the first two, I should never have attempted it.

BUSY TIMES AHEAD.

We have now taken the first and most important step—we have selected the locations. Next, Elmer will move up there. Then the bees must be moved. Elmer will bring 50 colonies with him. I will bring 100 colonies, by rail, from near Kalamazoo. There are 50 colonies now within three miles of one of the locations. Then there are about 200 colonies to move about 25 miles on wagons. By the time we get them all moved and settled, it will probably be near the beginning of the harvest; then I will have nearly 100 colonies of my own at Flint to look after, so you can see that Elmer and I will have a busy summer of it, but, as I have said, we have lots of enthusiasm, and there is really a charm and a novelty about it that is very enjoyable, and I shall do my best, with pen and camera, to allow my readers to look over my shoulders from start to finish.

FLINT, Mich, April 21, 1906.

Success Comes from Doing Those Things that Pay Best.

E. D. TOWNSEND.

FRIEND HUTCHINSON:—I have been reading ADVANCED BEE CULTURE; and, if you will furnish the space in the Review, I will mention some of the thoughts that presented themselves while reading this valuable work. When I say valuable, I mean from a dollar and cent standpoint. The writing has that "oily, well-ripened, extracted-honey-flavor," that is seldom equaled. The binding, and general make-up of the book is fine; but its chief value lies in the fact that it brings out the dollar and cent or bread and butter idea of bee-keeping as it has never been brought out before.

Then, too, one admires that anti-propolis, loose-hanging-frame, independent, out-spoken, know-one's-own

mind way of writing, so characteristic of the writer.

SPECIALISM.

Specialism, specialism, is the key note from cover to cover. Our piano tuner learned his business in Boston, 30 years ago. We would not dare trust the training of our children's musical ear to a tuner who tunes pianos this year, runs a merchantile business next year, and perhaps a stock ranch the next. *Specialism* is the magic word; and bee-keeping is no exception.

CUT OUT UNPROFITABLE MAIPULATION.

The man who will learn his business thoroughly, in every detail, and then practice good business principles, will soon learn to distinguish between those manipulations that *pay*, and those that do *not* pay. I think we will have to go even a little farther than *that*, by cutting out some manipulations that *pay*, for some that pay a *good deal better*. To illustrate: For many years I had only one bee-yard, and that at home, and it was worked for extracted honey, the same as now, and I used to put a good deal of work upon it; thought I had to be there most of the time, during swarming season, to hive the ten or a dozen swarms that would issue during the season. Then the bee journals told us we ought to feed, to stimulate during spring; and I had to try my hand at spreading the brood, to get large colonies, for the honey flow in June. I now put about the same amount of work on three yards that I used to put on one, and I harvest more than *twice as much honey*. In this way I have doubled my earning power and my income, even after making allowances for the interest on the capital invested in the two extra yards.

AN EXCELLENT PROVERB MISAPPLIED.

One more illustration: Twenty-five years ago, a student at one of our colleges had had some experience with bees, and, desiring more, with the intention of making bee-keeping his business in the future, he applied to an old experienced bee-keeper for a position in the apiary during school vacation. All of the necessary arrangements being made, the student arrived. It so happened that he arrived just as one of those old-time honey showers, such as we used to get, was on. Every upper story was full, and the bees needed more room. The proprietor had to go away the next forenoon (perhaps after storage), and left the student to extract alone until his return. When he came home the student was busy (by the way he was, and is still, a very energetic fellow), and what do you think he was doing? He was very careful to uncap every comb so that it was beautifully smooth and nice, and the wood parts of all the frames were cleaned almost as nice and clean as if they were direct from the factory. When the proprietor remonstrated with him for taking so much time cleaning frames, etc., during the busy season, the student replied by quoting that old proverb "what is worth doing at all is worth doing well." A very excellent quotation misapplied, for his services at just that particular time might have been worth $25.00 a day, if rightly applied, and he was *scraping frames*, something that any inexperienced person could do, out of season, at perhaps $1.00 per day. The moral is, learn to distinguish between the necessary and unnecessary work; and cut out all the work that does not pay. The average bee-keeper will be surprised at how *little pay* he gets for a great share of the work he does in the apiary. Cut out the handling of brood frames; handle *hives* instead. In this way you can handle many more bees with the same labor.

This is not theory. I have had experience in the old, intense bee-keeping of a few years ago (and I am afraid quite a few *still practice* it) and I have also practiced the more modern way,

as laid down in ADVANCED BEE CULTURE, hence I am in a position to compare the two systems, and I do not hesitate a *moment* in recommending the more modern way of starting out-yards, keeping more bees, and doing business in a wholesale way, thus cutting the cost of production to a minimum.

REMUS, Mich., Feb. 19, 1906.

Some Considerations on the Breeding of Bees.

E. F. PHILLIPS.

IF one compares records made by Italian colonies during the seventh decade of the last century with the average of today for the country at large, it must be realized that there has been little, if any, advancement. There has doubtless been much improvement in hive appliances, extractors, forage, and methods of manipulation, but the place where there is the greatest need for improvement is generally neglected by bee-keepers: this is the improvement of the bees themselves. Manipulations and forage are being discussed continually, but one gets very little accurate information on the improvement of bees. This does not now refer to the introduction of new races; for, while that may be an advantage, it certainly will never equal breeding work in importance. It is not because this phase of the subject has not been thought of by the writers on apiculture, for there repeatedly appear articles in the bee-keeping journals on the need of careful selection and the necessity of improvement, but the trouble is in lack of knowledge of breeding principles, and faulty methods of manipulation of breeding stock on the part of the honey-producers.

It has been argued by several speculators on the subject that Nature has for centuries been carrying on a rigid selection by weeding out the weak and unproductive colonies in winter, and that man cannot hope in a few years to do what Nature has not done in so long a time. This may sound all right at first hearing, but examination of the argument may not be out of place. In the first place, natural selection, which is a potent factor in Nature, whether we believe it is to be the method by which species arise or not, cannot do more than fit animals to their natural environment. Artificial selection, on the other hand, aims to modify animals so that they are adapted to the very artificial conditions made by man, and, at the same time, produce something of value to him. Present methods of bee-keeping are, of course, very far removed from "Nature's way" for bees to live, and man wants bees which are not only able to accommodate themselves to these new conditions, but more than that, a thing never *asked for* by natural selection, he wants *surplus honey*. How much has the average output of surplus per colony been increased during the past forty-five years? Natural selection at work for a million years would not necessarily increase the surplus honey, for the reason that it is of no use to the bees; but here man can step in, and, by artificial means of both manipulation and breeding, produce what he wants, as breeders of many

other animals and plants have done with their stock. But much better than theoretical arguments is the *fact* that some persons have actually bred better bees than those in Nature.

That bees can be modified by breeding has been well shown by the production of five-banded Italians. By selecting for color, during a comparatively few generations, the yellow areas of the abdomen have been increased to cover five segments instead of three. Of course, the virtue of additional yellow on the abdomen may be clear only to the breeder of that stock and his amateur customer, but it is of value to the breeder of honey-producing bees also as an *example of what can be done.*

There are a few strains of Italians for which it is claimed that they work on red clover more than ordinary bees, on account of greater length of tongue. The length of tongue seems to be discussed less than it was a few years ago, but we still hear of it. What is the history of such superior stock? Daughters of the superior queens are sold and introduced into honey producing apiaries, but in a generation or two the strain loses its good qualities and they become very ordinary Italian bees, or, more likely, hybrids by mismatings, due to the fact that the honey-producer is not versed in methods of breeding, and not that the original breeder does not have good stock. Even in the hands of professional queen-rearers, there are cases where such stock has deteriorated because of carelessness in allowing drones of poor colonies to fly, and some breeders themselves have privately acknowledged the less value of their stock today.

It will not be denied that the man and his manipulations form a good part of what is necessary in the production of a good crop of honey. However, manipulation is not the whole of bee-keeping, and considerable depends on the bees as honey producers.

In articles in the journals, and in books on apiculture, references are frequently made to the transferring of brood from colonies that are strong to those having a little brood, in other words, queens not sufficiently prolific are helped out, and that colony produces more honey and has more credit given it than the queen is entitled to. I would not criticise this manipulation, except to point out that when it comes to the end of the season, the comparative value of the queens cannot be known, and records are then almost useless in the choosing of breeding stock. Such manipulation makes the yield per colony more uniform, but does not aid the honey producer in bringing his stock up to the standard of the best in the apiary, and probably does not increase the total yield of the yard. Some colonies need less care in the spring than others because the queen is so prolific and the bees so active that the brood will spread as fast as it can be taken care of. Such prolific and vigorous stock is of considerably more value to the honey producer than stock which requires constant attention. It is to be feared that many bee-keepers blind themselves to the true condition of their stock by their skillful manipulation of brood combs.

The two characteristics of the reproduction of animals and plants which make any advancement possible are heredity and variation. Without these two factors the breeders would not be able to make the changes by artificial selection which have been made, and, what is of vastly greater importance, there would not now exist in nature the vast number of kinds of plants and animals were it not for these great forces. They lie at the bottom of all vital phenomena. Since these are the tools of the breeder it may be well to examine them briefly.

Heredity is the name given to that factor in living matter which is manifested by the fact that animals produce

their own kind. Not only do bees produce bees but, more than that, if any character exists which is germinal in origin it tends to reappear in the offspring. Characters which arise during the life time of a parent due to mutilation, injury or environment are not inherited, but only such characters as arise from the sex cell. For example, prolificness is generally considered as capable of inheritance, so that an exceptionally prolific queen bee will tend to produce queens which are also more prolific than the ordinary queen, but if that extra prolificness be due to stimulative feeding or manipulation on the part of the bee-keeper (an external factor) then there is no reason to expect her offspring to have exceptional prolificness. The inheritance of acquired characters may have occurred in time past, I do not know whether it has or not, but this much is sure, it occurs very very rarely, if at all, and there is no reason to believe that it does.

Therefore, the bee-keeper who produces prolificness by manipulation is not producing better breeding stock. This is a case worthy of consideration, and the non-inheritance, or at least the rare inheritance, of acquired characters is too well established to be controverted by a bee-keeper who thinks he has accomplished it on a few bees without any scientific proof. On the other hand, characteristics inherited in the queen or drone may be expected to appear. Although the drone cannot be said to be prolific nor to be a good honey producer, it is nevertheless true that he exercises just as much influence in these respects on the offspring as does the queen, for he brings to the offspring just as many heredity units from his ancestors as does the queen.

Heredity may be called the stable factor in reproduction, but without another factor no change for either good or bad could be expected; to this other factor we give the name variation. It is proverbial that no two members of a family are exactly alike; each has certain individual characteristics. Some of these differences are due to environmental differences, but others are inherited differences, if we may so put it, for the hereditary units received from the parents are not identical even when parentage is identical. To go into the proofs of this would require an elaborate explanation of the microscopic structure and activities of germ cells which is impossible here, but it is well established by observation and experiment.

Organs vary in both directions from the average according to well-known laws—not mere fortuitous differences—but the majority remain rather closely to the average in size and function unless modified by external influences.

These then are the tools of the breeder. By choosing for breeding stock material better than the average which is produced by this variation, he may expect that by constant selection of this kind, the additional value will be fixed by heredity, if the extra good qualities are inherited. If a queen is prolific merely because of spring feeding or other reasons, the breeder need not expect improvement, and for this reason it is wise to use several breeding queens for fear the advantages in one generation are merely acquired and will not appear in succeeding generations.

The greatest error it seems to me which a breeder of queens can make is to allow drones from every colony in a large apiary to fly. I have visited a number of apiaries devoted almost exclusively to queen rearing and have talked to a good many queen rearers, and find that while considerable care is taken in picking out the queen or queens to be used for breeding, there is little selection on the male side. If only a few queens in, say, 400, are good enough to be mothers of the

young queens, surely all of the 400 queens are not good enough to produce drones to mate with them. It is easy enough to make excuses for such methods by saying that mating takes place in the air, and, therefore, large numbers of drones are necessary, but in reply to this it might be asked how many breeders of good stock of any other kind would allow any such procedure and at the same time expect to accomplish anything in breeding. The difficulty is, it seems to me, that on account of the low price asked for queens, the queen-rearer must produce large numbers to make anything, and any product of a queen cell with four or more legs and a few wings sells as a queen; for this reason, careful selection is out of the question, since the breeder has no time to waste on selecting colonies for drone-production.

The majority of queen-rearers and of honey-producers who rear their own queens pick out the queen in the apiary whose colony has made the best record in prolificness, honey production, and other desired points. Now it is well known that in other forms of plant and animal life not all individuals have the ability of handing down their characteristics to their offspring to an equal extent. Because a queen has made a remarkable record it does not necessarily follow that all of her offspring will be equally productive; in fact, if she is a sport the chances are against her. It, therefore, would seem better, all things considered, to choose several breeding queens each year and test them for prepotency in breeding. It will probably be found that the best breeding queens are not the freaks, but those only slightly above the average, but if by breeding, the surplus may be increased five pounds per colony, what an advantage that would be if at the same time the bees require less or no manipulation of brood or spring feeding to stimulate brood rearing. So, to pick out one queen as a breeder to the exclusion of all others seems to me to be almost as grave a fault as the production of drones in all colonies.

Inbreeding is a thing which is as much dreaded among bee-keepers as it seems to be among the rest of mankind, and for the same reason, or lack of reason. There exists a very common prejudice against the breeding of nearly related individuals, but when one tries to find out the cause of the prejudice it is not easy. It is true that in Nature the breeding of closely related individuals does not usually occur, but that should not necessarily influence the breeder who is using artificial, and not natural selection. Breeders of most domesticated plants and animals now practice inbreeding closely and continually; the closer it is practiced the better the results. It tends to uniformity of stock, greater rate of increase in value, and is, therefore, to be commended. It is, of course, a sharp edged tool, and the queen-rearer has no business using it, but when a man becomes a queen-breeder, it is perfectly safe.

In the breeding of most domestic animals there is a popular belief that the male parent is prepotent and has greater influence over the offspring than the mother. More recent investigations have thrown considerable light on the matter of prepotency and dominent and recessive characters. It is by no means true that one parent can be said to have more influence than the other, as a general rule. In particular instances the case may be entirely different. The influence of the two sexes in bees is a subject practically untouched, but until we have evidence to the contrary it is safe to assume that most of the characters which are desired in breeding are such that the offspring is about an equal combination of the similar characters in the two lines of parentage. In view of this, it seems strange that so many persons

should pay no attention to the selection of drones.

It has also been suggested that even if drones are derived from parthenogenetic eggs, yet drones from a mismated queen have some of the characteristics of the male which mated with her. Evidence for such a veiw does not exist, and no work done carefully enough to warrant consideration can be produced. Like too many other things in apiculture, the idea is formed without a basis of fact which would bear scientific scrutiny.

One of the best methods yet found for controlling the drone production in an apiary is to requeen every year. In this way the advantage of using queens only during the most prolific time of life is obtained, and, by allowing only extra fine queens to live for a longer time, no drones will be produced except from selected colonies, since queens rarely produce drones until about a year old under normal circumstances

Up to the present time the use of crosses between races of bees beyond the first cross has not been tried to any extent on a firm basis because of the excessive variability caused by crossing. Certain first crosses have proven desirable in certain localities, but the great disadvantages in the use of them is that no use can be made of them for breeding purposes, except in drone production. That certain combinations might prove extremely valuable in successive crosses seems probable, but the person who attempts anything of the kind should have a very definite idea of what he is after, and know rather definitely how he is going to get it. Any such attempt on the part of one not versed in the principles of breeding would naturally be utter folly.

Some good work has been done by some breeders in producing better stock, beyond doubt, but it is a fallacy to believe that simply because a man raises queen bees for sale that he is therefore in a position to produce better queens than the average honey-producer.

By the careful keeping of records and by selection of only the best queens for breeding purposes, a honey producer can in a few years bring his stock up to greater uniformity and also keep less colonies to obtain the same total annual yield for an apiary, which would mean a saving of considerable time in manipulation By making the queens more uniformly prolific a great deal of the usual brood shifting would be done away with. The work which has been done by honey-producers is a fact which can be proven by actual cases and is not merely a theoretical statement. When the time comes that bee-keepers realize the possibilities in breeding for themselves, some of the very careless queen rearing which now flourishes will close, and men in the business will either produce better stock or go out of business.

WASHINGTON, D. C., Jan. 27, 1900.

Different Practices Gathered up at Bee-Keepers' Conventions.

F. GREINER.

EVERY business man meets with some losses. But if eventually he makes the business pay, notwithstanding these losses, so far, so good. This, however, does not signify that he should content himself with this state of affairs. To the contrary, he should be constantly studying the situation how to avoid even the smallest losses.

I have been running out-apiaries at a

profit. In other words, I have made more money since keeping more bees in this way. But there have been losses which should have been prevented. I have learned how to prevent them in a measure, but not to my entire satisfaction. What troubles me most, is, the occasional absconding of shaken swarms. It is no wonder that a swarm should feel disgusted after receiving that most unmerciful treatment from the apiarist, styled "shaking," "shook," etc. We ourselves would feel that way: Our house all torn to pieces, the furniture gone, the children carried off. What man, under such conditions, would have the courage to start in anew on the same farm? This is identically what we expect the bees to do. Some bee-keepers say they have no trouble in having their bees conform to the new conditions, but, somehow, I cannot find out wherein the difference lies between their method and mine. Some of my shaken swarms abscond, or make the attempt, any how. What can I do to prevent it? I can only tell what I do do; to reduce absconding I have two systems, one based upon the principle of gentleness, the other upon the principle of force. The principle of gentleness prompts me to be as kind as conditions admit; I start each bee off with a load of honey, I leave them a few of their children to take care of, a bit of furniture in the shape of a comb, and make the hive as comfortable for the excited multitude as is possible by giving shade. These measures hold the bees generally. In addition I can now apply a measure of force. I can confine the colony by an entrance guard in such a way that neither drones nor queen can escape. Should the swarm then attempt to leave, the worker bees will have to return to their queen. It is my individual opinion that an entrance guard cannot possibly make a hive attractive to the bees. It would seem to me, it would have the opposite effect. Clipping the queens' wings is nearly as effective as the entrance guard. I prefer it as a safety measure. If it were not for sometimes-several-colonies-coming-out-at-the-same-time, and the abnormal swarming with virgin queens, the clipping of queens would very nearly fill the bill. Who can tell us something better?

When operating out-yards, stimulative feeding is practically an impossibility. The same may be said of other practices, such as spreading of the brood. The busy bee-keeper has no time to spend in this fashion. The bees must be run as much as possible on "the-let-alone-plan."

MAKE-SHIFT HIVES AND SUPERS.

It seems to me an odd way, but one of our successful comb-honey producers places a two-inch section (size of hive) upon all of his strong colonies in the spring. He says the most natural place for the bees to cluster is on top of the frames. Should some honey come in early, more than is used for breeding, and the bees should fill the two-inch chamber, there will be no harm in that, as the honey is usually inferior, commercially, and may be used in the fall to help out light colonies.

A similar low chamber above the brood-frames was an essential feature of Dzierzon's famous twin-hive and was known as the *Wirr-ban*, as such proverbial. Its object was to provide every colony with food always accessible. Of course there were no frames in this chamber. C. A. Olmstead hit on the same device without having knowledge of the other, and believes it to be a good thing.

Olmstead has also discarded the movable frame when using hives for shaken swarms. Just a shallow box with top bars nailed in, made queen excluding, answers all his purposes. At the end of the season the "shooks" are united with their mother colonies,

the combs are broken out and made made into wax. The combs are not broken out clean, but a little is left to give the bees a start, a chance to deposit some pollen, etc. This will keep the pollen out of the sections.

This method met the approval of others in so far as it prevented increase and added to the wax supply, also saved cost of more expensive hives.

The wintering problem always comes in for a share of the bee-keepers' consideration. It is a matter of vital importance in all northern States. The cellar has the preference in New York State. Slight upward ventilation was advocated, leaving bottom boards in position. Olmstead covers the cluster of bees with newspapers leaving a small open marginal space around the outside, then covers all with burlap.

BISULPHIDE OF CARBON.

Many bee-keepers still adhere to the brimstone method to keep down the wax moth; but it is plain to be seen, that bisulphide of carbon is taking the lead now. In sulphuring comb honey, we have to come so near the danger line, (discoloring the combs green) in order to be sure of killing the larvae, that it is unpleasant and risky. It was also hinted at that there was more danger of setting fire when using bisulphide of carbon, than when burning sulphur. The carbon forms a gas.

House-apiaries were generally condemned by bee-keepers as being unhandy to work in. Why bees should not winter well in such houses was not clear to be seen.

MARKETING.

How best to exchange our honey for money is a problem unsolved. A great deal of theorizing is being done, but we are as yet far from any definite plan. What the possibilities are is not clear in my mind, clearer is what I do do. I effect better sales by entering into correspondence with purchasers than by looking them up personally. I make satisfactory sales through commission houses and sell in my home market what I can, but do not, of late, obtain as high prices as through other channels. I am not disposed to deny the commission man the privilege of existence. I think he renders many of us valuable service. I admit that the business of selling on commission is based upon a wrong principle. It does not tend to maintain, much less raise prices. The man who buys, and invests his money in any product is apt to keep up the price. He will have to get his money back and a profit. The commission man can under sell every-time. He is *losing* nothing. The man who sells the lowest does the business and sets the price.

NAPLES, N. Y., Feb. 1, 1906.

Editorial

Don't Attempt a thing unless you are sure of yourself; but don't relinquish it merely because some one *else* isn't sure of you.

"Konsider the Postage Stamp, my Son. Its usefulness Konsists in its ability to stick to one thing until it gets there." —*Josh Billings.*

Ventilation (a generous entrance) is needed, as well as room, to prevent swarming.

To Dampen smoker fuel may seem like strange advice, but it improves the lasting qualities of some kinds of fuel planer shavings, for instance. It may need some dry fuel to get the fire

started, but, when well to going, damp fuel is really an improvement. It does not blaze, it gives more smoke, and it lasts longer. Try it.

Gasoline Cans are sometimes used for the storing of honey, but they must be thoroughly cleaned, and a subscriber would like to know how best to do this cleaning. If any one has had experience, let him speak.

The National Bee-keepers' Association will hold its annual convention, for 1906, November 8, 9 and 10, in San Antonio, Texas; these dates occurring at the time when the Texas Fair is in progress and low rates will be in force, locally, for several hundreds of miles out of San Antonio, and, at the same time, there will be Home-Seekers' rates available from other parts of the country.

EXTRACTED DEPARTMENT.

INCREASE.

How to Make it on the Alexander Plan.

It is not every bee-keeper who wishes increase; but some do. Where a moderate increase is desired, together with a fair crop of honey, a division of the strongest colonies is probably as satisfactory as any. The methods of doing this are almost without number, but I think there are few that are superior to what is called the Alexander plan, described by E. W. Alexander, in Gleanings. Here is the plan:—

After studying this subject for many years, and trying everything I could think of to prevent this loss of brood in in making our increase, and at the same time avoid nuclei, thus keeping every colony in good condition to take advantage of any unexpected harvest that might come, I hit on what I consider the most practical way of making increase of anything I have ever tried or heard of. It is this: When your colonies are nearly full enough to swarm naturally, then begin this management: lift a hive from its stand and put in its place a hive containing frames of combs or foundation, the same as you would put a swarm in, providing it had just swarmed. Now remove the center comb from your empty hive, and put in its place a frame of brood from the center of your full colony, and be sure you find the queen and put her on this frame of brood in the new hive. Look this frame of brood over to see that there are no queen cells on it. If it does contain any cut them off or destroy them. Now put a queen excluding zinc on top of this new hive that contains the queen and frame the brood with their empty combs, then set your full queenless colony on top of the queen excluder on this new hive, put in the empty frame of comb or frame of foundation where you took out the frame of brood and close the upper hive. The bees will now have to go down through the queen excluder to get out. Leave them this way for about five days, then look over the combs carefully to see if any queen cells are started and destroy them, unless they are of a good strain of bees that you wish to breed from. In that case let them complete them. On the 10th or 11th day take off this upper hive and place it on a new stand giving it one of the mature cells. During these ten or eleven days, the queen below will get a fine lot of brood started in the lower hive, and every egg and particle of larvae that was in the old hive on top will have matured, so it will be capped over and saved It will be full of young bees mostly and capped brood and can be left with a capped cell or given a laying qmeen. In this way you have two strong colonies from one, as you have not lost a particle of brood nor checked the laying of your qenen. With me it entirely prevents swarming.

This is the way I have made my increasese for several years, and like it much better than any other way I have tried. In doing so, you keep all your

colonies strong during the whole summer, and it is the strong colonies that count in giving us our surplus. The mere fact of having a large number of colonies does not amount to anything unless they are strong in bees and are well cared for at all times.

In making your increase this way your new swarm on the old stand is in fine shape to receive a super filled with sections when you take the top hive away, as it has a large working force backed up by having its hive nearly full of brood. They will go at once into the sections and have no thought of swarming. The old hive that was on the top will soon have a laying queen and with young bees hatching rapidly the young queen has plenty of room to lay. They can now be given a super of sections and no thought of swarming.

If you have done your duty with your bees as I recommended by feeding a little warm sugar syrup every evening up to the time the main honey flow commences and have kept them covered snug and warm, you will have on June 10th two good strong colonies instead of one, ready to commence work on your clover harvest. From an extensive experience along this line I find I can get nearly twice the amount of surplus by dividing as above stated over any other method.

RUBBER BANDS.

How They May be Used in Transferring Bees.

In transferring bees from box hives, the experienced bee-keeper may well use what Mr. James Heddon calls the modern method, that of driving out the bees and hiving them on sheets of foundation, then three weeks later, driving again, when the old combs are left free from brood, and may be rendered into wax. This work must be done about swarming-time, when the weather is warm and there is a honey-flow. For the novice, or in transferring from one style of movable comb hive to another, the old fashioned method is preferable; when the fastening in of the combs is quite important. Some wind strings around the combs, others tack sticks across the frames, but what seems to me the best way of all was described in Gleanings, last October, by Grant Stanley, of Nisbet, Penn.

Here is what he says:—

In transferring comb from one size frame to another, or from a box to an improved hive, why not throw away the splints and strings used formerly, and use medium strong rubber bands? Stretch a band over each cap; and if the pieces of comb are small, one can be placed in the center of the frame. In the manipulation of the frames after the bees have fastened the comb to the wood, press the blade of a sharp knife on the bands where they cross the top-bar and they will fly out of the way.

Commenting upon the foregoing, Editor Root says:—

Your suggestion of rubber bands is most excellent, and I believe it is ahead of any thing else that has ever been suggested. They are now so cheap that the cost would be practically nothing. After the bees have got the combs fast in the frames it would not even be necessary to remove the frames. Just run a sharp knife over the top-bar through each rubber band and they will fly off the frame quicker than you can say it, down to the bottom-board. The objection to a string is that the bees do not always gnaw it away. Practically, it is necessary to remove the brood-frame, cut the string and then unwind. The suggestion of the rubber band is worth considerable, and I have marked it to be incorporated in our A B C of Bee Culture, providing it proves to be satisfactory in our bee-yards.

"I LIKE MY JOB."

Some Things That Enthusiasm Will Do.

I doubt if it is fully realized that enthusiasm is great force; that it will enable a man to do more work, and stand a greater strain. One of the best illustrations that I have seen along this line is contained in the following clipped from the Ladies' Home Journal.

One of President Roosevelt's friends, seeing him in the midst of a big, busy day's work, asked him how he could stand such a strain.

"Oh, I like my job," replied the President with glistening eye.

What a finer world this would be, what a more contented, happy people we should all be, if we could bring more joy into our work so as to be able to say just that: "I like my job!"

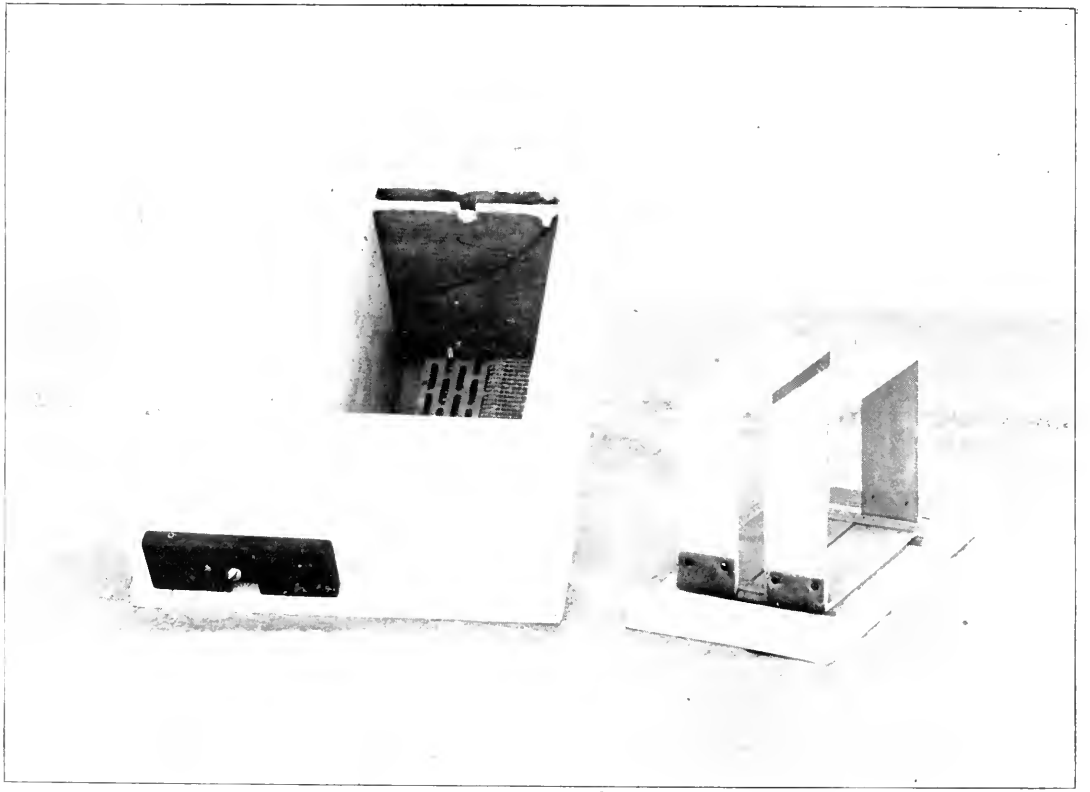
Ask the average man about his work, and in nine cases out of ten he will tell you of the hardness of the struggle; of this difficulty, of that obstacle, and of some other care. It is the rare exception that you find a man so in love with his work as to wish his son to follow in his footsteps. "Any other trade, any other profession than mine for him," he says. But what a difference when a man's eye kindles as he says, "I like my job!" That is the spirit that grapples with difficulties and conquers them; that looks upon an obstacle as simply something to overcome—the conquering spirit of a relish for the "job" in hand, whatever it is; the playing of the game with a zest that makes for the surest success and the biggest, truest happiness.—the man who wins.

That is what we want in our lives, men and women, whatever the work in hand; the spirit that works with a will and says "I like my job"

For nearly 20 years I have gotten out the Review once a month, and only an editor and publisher knows of the hard work, and problems, and the obstacles to be overcome. My wife sometimes says that she hopes the time will come when I won't have to work so hard, and have so much on my mind, but I doubt if even she, who has worked with me hand in hand, all these years, can fully realize how thoroughly "I like my job." I am proud of the profession in which I have found my life-work.

In this matter of establishing out-apiaries in Northern Michigan, I well-knew there would be some serious obstacles to overcome, that there would be a lot of hard work, both mental and physical, but then, "I like my job," and it is simply a pleasure to meet and overcome obstacles.

Reader, do you "like your job?" If you don't and can't learn to like it, better quit it and get some job you can like. Without this love of business, this ambition to succeed, man soon drifts back into the rear.



The Ferris Twin-Nucleus.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, JUNE 15, 1906. NO. 6

Some Advantages of the Twin Baby-Nucleus System.

A. K. FERRIS.

THIS subject has been discussed quite a bit of late, and I see some have had success and some failures; so I will add my mite of testimony.

In practicing this method we should consider that the same rules will not apply to an ounce or less of bees that will apply to one or more pounds.

IMPORTANCE OF WIDE SPACING OF SMALL COMBS WITH SMALL LOTS OF BEES.

In constructing nucleus hives, the less the number of combs, the greater should be the room in which to cluster. For instance, a single comb, three by five inches, should have two and one-half inches of space in width; two combs, four inches, and three combs five and one-half inches, etc. This allows a three-fourths inch space on each side of the comb for the bees to cluster and keep the little spot of brood warm.

I had between fifty and two hundred and fifty of these in operation all through last season, and I found they reared brood all through September, and that brood hatched, every cell of it.

If a person wishes to simply mate his queens, and not keep them in the nuclei more than two weeks, these little three by five inch single comb nuclei work very well, even in the north. But where a more permanent form is desired, more comb surface will be required; for a three by five inch comb does not contain sufficient honey to last them long, and they become too uneasy to make it profitable to fuss with them.

Where a more permanent form of nucleus is desired, two or three, four by five by one and three eights plain sections make a good sized space for each queen.

I shall use both two and three frames in the single form, and also in the twin form as seen in the frontispiece.

ADVANTAGES OF THE TWIN NUCLEUS.

I like this twin form for many reasons. It is quick of operation, gives the bees comfort at all times, has a feeder that is easily made and will not leak or drown the bees, and last, but not least, the queen has a contrasting mark in returning from her mating

trip; which is a point worth noting, for I found that queens that had a mark contrasting from other surroundings rarely were lost, while those that had nothing but green grass or weeds frequently were.

IMPROVED VENTILATION AND ENTRANCES.

You notice this black slide is so constructed as to control three entrances. When it is shoved to the extreme left, as the nucleus box faces you, it opens a hole letting air into a screened department one and one half by five and one-half inches. This screen excludes the bees but permits perfect *ventilation* while they are confined, be it two hours or two days. When the nucleus is where you wish it, simply slide the entrance block to the extreme right and both queen and bees can fly. After the queen is mated, shove the entrance block to the center, and you have a department one and one half inches by five and one-half inches screened by queen excluding zinc, so that while the bees have perfect passage, the queen is confined. I find bees pass *up* and *down* through an excluder more readily than *sideways*, and the more comfortable the nuclei the more contented they will be.

These one and one-half by five and one-half inch departments are strong screen and queen excluder raised upon strips of one-fourth by three-eighths by five and one-half inches and opening so as to match their entrance in the side of the box.

By coupling two of these two-frame nuclei together in one, we have a box six and seven-eighths inches by nine inches long, by five inches deep with partition, top, bottom, and one side made of three-eighths inch lumber, and one side which is made of seven-eighths inch lumbe , is passed down over a nine-inch c le saw of one-half inch gauge to the depth of two and one-half or three inches.

A CHEAP, SIMPLE AND EFFICIENT FEEDER.

By slipping into the saw kerf a piece of one-half by three-eighths strip of wood to the depth of the saw kerf, you have a double feeder that is rough inside so that the bees will not slip on it, and does not have to be paraffined in order to keep it from leaking.

This idea of a feeder I obtained from Mr. Root. To the two covers are attached each a pair of plain sections four by five by one and three-eighths inches, so that they may be slipped in and out at will, thus giving easy manipulation of either nucleus separate from and without disturbing the other.

These sections can be reinforced with tin corners if desired.

This makes a strong, well-made box that excludes rain quite readily, is practical in all details, and costs, at present prices of material, twenty-five cents each to construct, where one hundred or more are made at once providing proper machinery is used.

MADISON, Wis., Jan. 8, 1906

Controlling Increase Where the Harvest Comes Early.

J. E. CRANE.

THE best method of controlling increase has become a most important question with a large and increasing number of bee-keepers. It might be put in another way: How shall we control increase so as to secure the largest amount of surplus honey?

Controlling increase is not a simple question, and is closely connected with the securing of surplus honey, so that

the best method is undoubtedly that way, by which we may secure the largest amount of surplus in marketable shape. Swarming appears to be a strong natural instinct that manifests itself under certain favorable conditions. There are three principle conditions, usually present in natural swarming, viz:

1. An abundance of honey in the hive, and nectar in the fields.
2. A populous colony with a queen.
3. An abundance of brood.

There are also minor conditions that tend to promote swarming, such as, superseding a queen; small brood chamber; lack of ventilation; etc. There are also minor conditions that tend to *check* swarming; such as a large brood chamber, shade, etc. These minor conditions cannot of themselves be depended upon, either to produce swarming or prevent it.

CONTROLLING CONDITIONS.

But if we can control one or more of the *principal* conditions, we have the matter largely in our own hands. Thus, if we could remove all honey from the hive, and check the flow of nectar in the flowers, all swarming would cease. But, of course, we can not do all this: but we *can* remove most of the honey from the hive, with an extractor, and return the empty combs, and this alone will often check, and, sometimes, wholly prevent swarming.

However, for securing section honey, this method is quite impractical.

Of the second principal condition, it may be said, that we can remove a large part of the mature bees by moving the hive to a new location, the old bees returning to the old place, and this will check, or wholly prevent, swarming, for a time, or until the hive is again populous and honey comes is freely. But this checks the *storing of honey*, both in supers and the brood chamber.

Again, we may remove the queen alone from the colony preparing to swarm, and all swarming will cease, as soon as she is missed, until a young queen has hatched and is strong enough to fly. This way necessitates looking up the old queen, and removing all sealed queen cells when the old queen is removed, and, again eight days later; as well as the introduction of a queen still later, or the colony will be ruined. If we fail to remove every queen cell when the old queen is removed, and, again, eight days later, our plans will be very liable to be upset.

This looking up of a queen, and the cutting out of queen cells, often consumes a good deal of time when we can ill afford to spare it. But this way is of value in removing old and worthless queens, or for using the queen for starting nuclei, early in the season. Early in the season the removal of one or two combs of brood from strong colonies, every few days, will, for a time, keep the swarming instinct under control; while the colony will remain strong and able to do good work.

The removal of the queen is another way for removing or reducing the amount of brood in a hive. As, after her removal, no more eggs are laid, and in two weeks two-thirds or more of all brood in the hive will have hatched. There being now only a small amount of sealed brood, with no eggs or larvae, we find the swarming instinct becomes very feeble; a queen may be given them with little or no danger of swarming. I have found it easier to introduce young virigin queens, at this time, than is the case with old laying queens, and on some accounts much to be preferred. Colonies so treated will not, as a rule, while queenless, work as well as new swarms.

Another way of manipulating brood so as to control this provoking instinct, is to remove all brood from a hive as soon as any sure indication of swarming appears, or even before, replacing all combs of brood with broodless

combs with or without honey as most convenient; or, if no such combs are at hand with foundation.

This way has the advantage that colonies so manipulated quickly get over the swarming fever, and work on with renewed energy; and, if the brood chamber is not too large, continue work in supers almost as though nothing had happened. This method has the disadvantage, however, that unless honey is abundant in the fields, the population soon dwindles or is worn out, and it becomes too weak to do the best work. This can be remedied by giving them young bees, or, better, by giving them combs of maturing brood a little later.

NO HARD AND FAST METHODS.

As a matter of fact, I am following no *one* method very closely; but rather try to so manage as to keep all colonies, so far as possible, busily at work in the supers, and yet get sufficient increase to keep my yards well stocked.

If you wish to know how I manage, just come into one my yards in the midst of the swarming season, and see for yourself. I visit each yard every eighth or ninth day, and hold a bee convention as we go from hive to hive, although there are but two of us, my helper and myself. You would soon see that I have no royal road to success in controlling increase, and, not unfrequently, meet with failure by leaving some colonies too long to their own sweet way, or from the peculiarity of some colony.

To be brief, I have, for many years, depended very largely upon the removal of the queen and all maturing queen cells, or of combs of brood, either few or many, as circumstances seemed to require, replacing such with old combs with or without honey as most convenient, or, if the supply of combs has been exhausted, with frames of foundation. Would prefer newly drawn combs from foundation. If a third full of good honey it is no disadvantage, but rather a help.

Of course where a colony is queenless for two weeks, a queen must be introduced. For this I use virgin queens, believing, as a rule, where a colony is expecting a virgin queen they will accept of one more readily than a laying queen. Such has been my experience. I run them right in at the entrance without my ceremony or formality. Occasionally one will be lost, and then I give the colony two or three combs of brood, and let the bees raise one for themselves.

As I have noticed, for the last few years, that strong colonies from which I have taken their brood, and replaced with broodless combs, have given me rather better results in surplus than colonies under other treatment; or even those that have made no preparation for swarming.

Colonies not very populous, (and there is quite a difference even in those preparing to swarm) we better manage by reducing the size of the brood chamber to not more than six dry combs, and, a week later, giving them two combs of sealed, just-hatching brood. There will then be little interruption of work in supers.

An ideal way, perhaps, would be to stimulate all colonies by judicious feeding from early May till clover opens, and then make half as many nuclei as there are old colonies, making them from the strongest colonies and then, when swarming begins, build them up into strong colonies with brood taken from colonies preparing to swarm early in the season. Even then, some colonies whose brood you have taken away and replaced with dry combs will be liable to swarm later; and some of the nuclei you have built up into strong colonies will manifest the swarming instinct to your disgust.

So I know of no other way except to examine once in from seven to nine

days, and keep the finger right on them, and keep them in line and bring them to time.

Our seasons here in Vermont are very short, and we must so manage as to make the most of them by holding the swarming instinct down to the most productive point. By manipulation of the principal conditions that produce swarming rather than depending on those minor conditions which, hereabouts, at least are very uncertain.

And these conditions should be so manipulated as to check the storing of surplus as little as possible, but rather stimulate them to do their best.

MIDDLEBURY, Vt., Jan. 23, 1906.

Moving 400 Colonies to the Raspberry Regions of Michigan.

W. Z. HUTCHINSON.

AT the last meeting of the National in Chicago, Mr. F. F. Holtermann, in speaking of migratory beekeeping, said that the management of one apiary at home was "play" as compared with moving bees about on the migratory plan—during the last three weeks this expression has come to me a great many times. The fastening of bees into hives, some of which are poorly adapted to that purpose, the lifting, loading and unloading of heavy hives, the work at night, that will come sometimes in spite of everything, in order to carry out plans that can't well be changed, the "leaking" of bees from some crack or crevice that has been overlooked—well, I think that "strenuous" is the right word to use in describing the life a man leads who does much moving about of bees.

I first went to Plainwell, the home of Mr. W. E. Forbes. Here I had a pretty easy time. The supers had all been prepared ready to fasten on top of the hives, when, as soon as this was done and the entrance closed the bees were ready for shipment. Four or five combs had been placed in each super, and fastened, by tacking strips across, so that they could not move. Crosswise of the combs, on top of them, was fastened a strip of wood an inch and one-half in thickness, and rounded off at each end, so that it resembled an inverted cradle rocker. Over all was fastened a sheet of wire cloth. A super thus prepared was fastened over each hive by tacking strips of lath on at each corner of the hive. When the bees had stopped flying at night the entrances were closed by tacking a strip of wood over each entrance, a lantern being needed to finish this part of the work. The next morning the bees (100 colonies) were hauled to the car on hay racks with bolster springs under them. As the distance was short, there was no attempt at taking a big load by tiering up the hives, simply setting one tier of hives all over the hay rack.

HOW TO LOAD BEES IN A CAR.

A stock car was used, and to load the bees, a row of hives was set down in one end, the combs parallel with the track. Six hives nearly completed the row, and a super, or covers, or something of this sort, was crowded in to fill out the row. Two strips of board, an inch and one-half in width, were then laid on top of the hives, length-

wise of the row, and nailed fast to the tops of the hive, and to the bars of wood forming the side of the car. On top of these strips of wood another row of hives was set and nailed fast. Next, another row of hives was set down upon the floor of the car, in front

Loading a Stock-Car with the Forbes Bees—100 Colonies.

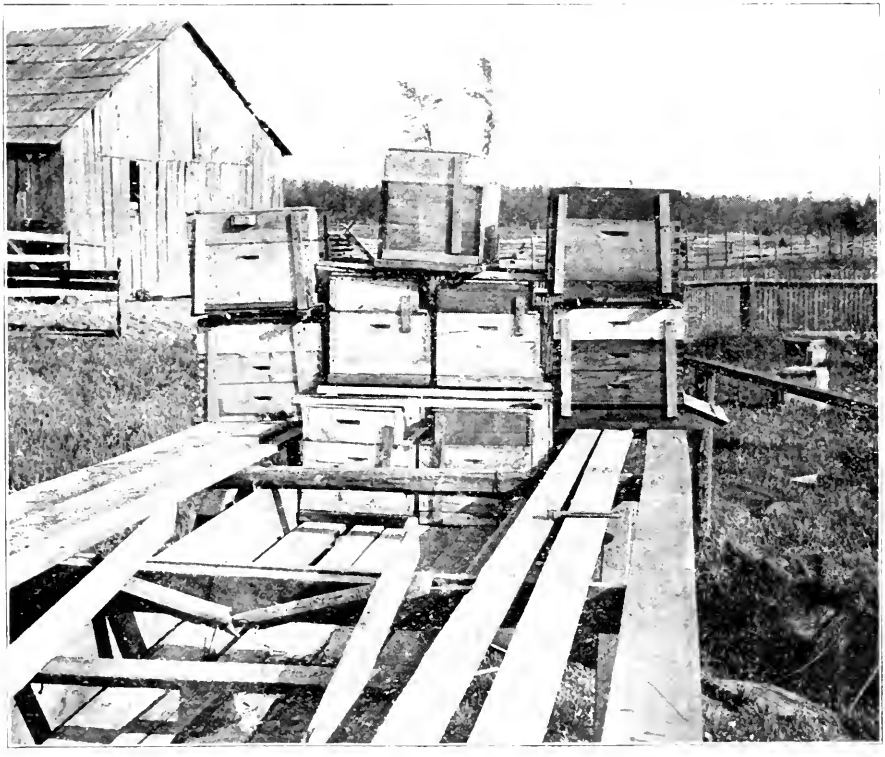
of the row first put in, and strips of board put over their tops, and another row of hives put on top of the first tier. Rows of hives, two tiers high, were thus continued until the car was half full, when boards were put up in front of them and firmly fastened, with cleats, to the sides of car. The opposite end of the car was filled with empty hives, supers, covers, honey boards, hive stands, etc. The car was one night and one day on the road, and I think not a hive changed its position in the car to the extent of half an inch. Perhaps I took unnecessary pains in loading and fastening the hives, but better take a little extra trouble, than have things of this nature come loose and tumble around. Earlier in the season, I expect that an ordinary box car would be better to use in shipping bees, but when the weather is liable to be hot the open car gives much better ventilation

WATER MUST BE GIVEN IF BEES ARE LONG CONFINED.

Mr. O. H. Townsend loaded a car of 175 colonies, at Plainwell, the same day that I loaded mine, and we both went on the same train as far as Reed City. The Townsend bees were for the Manley Bros., at Sanilac Center, Sanilac County, Mich. Mr. Townsend loaded his bees in much the same way as I did mine, except that the upper tier of hives was raised, on a platform, several inches above the lower tier, and he left an aisle down through the center of the car, which allowed him access to every colony, that he might be able to supply them with water if they needed it, as they were likely to be on the car three or four days.

We left Plainwell about four o'clock in the afternoon, reaching Grand Rapids about midnight. This was the end of a division, and we had to lay

over until a new train for the north was made up. Fortunately, the time was not very long, but the train was; at least Mr. Townsend and myself thought so when we went back to find the caboose at the end of the train. We were told which string of cars to follow back, and started out, he carrying my grip, and I my camera, and we stumbled along in the dark, down between the rows of cars, until we felt *sure* that no train was ever so long as that. Once or twice we were on the point of giving up and turning back, upon the cushioned benches that ran along the sides of the caboose, and pretended to sleep until daylight appeared. Mr. Townsend had commenced work at half past four in the morning of the *second* day previous, worked all day and all night, and all the next day, then banged around in the caboose all night, and, as he sat up and rubbed his eyes and back and legs, and tried to walk, he looked, and said, that he "felt as though he had been run through a threshing machine." Not much "play" about it.



The Beginning of a big Load of Bees on a Hay Rack.

feeling sure there must be some mistake, when, at last, the green lights of the caboose beamed a kindly welcome. Never before did I realize the immense power there must be in one of those large freight engines to be able to haul such a string of ca-. We laid down At Reed City I went on north, while his car was switched to the Pere Marquette to go to Sanilac Center, via. Saginaw and Port Huron.

I reached the end of another division, Cadillac, a little before noon, and here was another wait of several hours be-

fore there was another train made up for the north. Travel on a freight train is slow, not so much because the train runs slowly, but of the long waits at stations while the engine is switching cars, and the longer waits at the ends of divisions. At four o'clock I went on, reaching South Boardman, Kalkaska County, about 7:00 p. m.

Unloading the Forbes Bees, and Starting an Apiary, Near South Boardman.

GETTING A BIG LOAD OF BEES ON A HAY RACK.

Next came the moving of the bees to the location selected for the apiary, near the ruins of an old saw mill, where had been sawed into lumber the timber of the surrounding country, thus creating the raspberry pasturage to which we were bringing the busy little harvesters. The distance was four miles, and some of the roads none too smooth, hence the problem of loading was all-important. I used an ordinary hay rack; two hives were first set down side by side in the bottom of the rack; two strips of boards, an inch and one-half in width, were laid on top of the hives, crosswise of the wagon, nailed fast to the hives, then two more hives set on top of these strips and nailed fast to the strips. Two more strips were then laid on top of the top hives, nailed fast, and one hive set on top of the strips and nailed fast to them. A hive was then set out on each "wing" of the rack, letting the inner ends rest against the hives already in place, and these hives nailed fast to the rack upon which they sat. Strips of wood were then laid across the tops of the hives last put in place, nailed fast, and another hive set on top of each, letting the inner ends rest against the hives piled in the center, and nailing them fast to the strips of wood upon which they rested. This formed a sort of pyramid containing nine hives, and, with eight-fram

hives, and a 16-foot rack, it is an easy matter to put on 90 hives. I put on only 60 on one load, and 40 on the other. I did this because the team was not heavy enough to haul a heavier load over the roads we had to travel, and, besides, there were supers and empty hives, light, but bulky, with which to fill out the loads, and this stuff had to be moved.

It required a day to unload the car and move the bees and supplies to the apiary, hence, it was three days from the time the bees were shut in before they could be liberated, but they bore the journey without serious loss. In the strongest colonies was from a handful to a pint of dead bees. The day that we moved the bees in, was quite warm, perhaps 80 in the shade.

Next came the moving of about 50 colonies, some three miles, to this same spot. These 50 colonies were brought up here last fall by Mr. Cavanagh, and wintered by burying them in clamps. This accomplished, I turned my face southward, to meet my brother Elmer at McBain, where we were to move about 200 colonies, scattered in three apiaries, to Pioneer, some 25 miles north of McBain. Here at Pioneer is where Elmer lives, in some old lumber shanties that he has patched up, and here will be headquarters for this summer, at least.

CHAFF HIVES TOO BULKY FOR PROFITABLE MOVING.

The hives in the home apiary, at McBain, were eight- and ten-frame Langstroth. At what was called the "Cuba" yard, five miles south, there were about 30 colonies in single-walled Langstroth hives, and between 50 and 60 in Hilton chaff hives. The man who practices migratory bee-keeping certainly does not wish for chaff hives; 44 hives were all we could put on two loads. To load these, one row of hives was set down in the bottom of the hay rack, two strips of boards laid on, lengthwise the wagon, and nailed fast to the hives, then another row of hives set on top of that

Two Loads of Cavanagh Bees, in Chaff Hives, enroute for the Raspberry Regions.

and nailed fast to the boards. A row of hives was then set upon each "wing" of the rack, nailed fast, and a sort of band of boards put around the whole load, the boards being nailed together at the corners of the load.

SOME OF THE ESSENTIALS OF SUCCESSFUL MOVING OF BEES.

You will notice that I almost always say that a hive is "nailed fast." With ordinary loads, and good roads, this would probably not be necessary for short hauls, but with long hauls, large loads, and rough roads, the only safe plan is to fasten each hive so that it can't move; if this is done, and the bees given plenty of ventilation, space above the combs in which to cluster, there is not much danger of loss unless the weather is unusually hot. So far as I know, not even one comb has been broken down in moving all of those colonies. I might mention, however, that Mr. Cavanagh lost 15 colonies in moving two loads last August; but the colonies were more populous, and the weather warmer, and, if I understood him correctly, he left the combs in the upper stories that he put on, which I think was a mistake, as much of the ventilation is thereby shut off, besides, when the bees are excited and hot, their first thought is to *get off the combs*, and, if the upper and lower story both are filled with combs, thep can't do it, and it worries them. In hot weather it is well to have wire cloth and space both above and below the combs.

FLINT, MICH., June 11, 1906.

Utilizing the Swarming - Energy Without Increase.

C. W. DAYTON.

IN the spring I keep right straight ahead, building the colonies up as strong as possible, without turning aside to clip queens, tear down cells or shake swarms. Of course, where one colony is weak, but has a good queen, and another colony is so strong as to be in advance of the season, I sometimes exchange combs of brood, but where the colonies go into winter with young, vigorous queens there is seldom much of this to do. Yet there is considerable attention required to get all the combs solidly filled with brood. Over abundance of stores of honey in the brood nest, a solid comb of pollen, or an old or moldy comb that the bees are tearing down, may be in such position as to retard the depositing of eggs by the queen.

The first swarm which issues is hailed with delight; and with many colonies of equal strength there will be more soon to follow. Upon the proper treatment of these swarms and the old colonies from which the swarms issue, depends a large share of our success.

The requisite amount of surplus receptacles and clustering space should be on the hives, and the swarms should be placed back where they come from. If the swarm issues, say, at eight or nine o'clock in the forenoon, I shake the bees from the limb into an empty hive-body having the entrance closed and a screen over the entire top to give plenty of ventilation while the bees are confined in it. The caged bees should be set in a shady place. After being in this box an hour or so, or long

enough to become clustered, I can usually raise the screen without many bees taking wing and cage the old queen. Take the queen away entirely. This will make them very uneasy. Late in the afternoon, or after they have been in this uneasy state five or six hours, I raise one edge of the screen slightly to allow the bees to get out slowly and return to their old hive of their own accord, but *queenless*. After this short season of confinement and queenlessness they will resume work with the energy of a natural swarm, and that is the kind of work we want. If the old queen is returned with them they will sulk and swarm again and the queen would not lay enough eggs to amount to anything if she were preserved.

GETTING SECOND SWARMS OF ENORMOUS SIZE.

Seven days later the issuing of second swarms may be expected. I begin a record of the swarming colonies so as to distinguish between the first and second swarms. Second swarms are allowed to issue as unrestricted as firsts. Their energy is wanted also. Second swarms are of large size as they comprise all the bees which issued with the first swarm and those which hatched during the intervening seven days. If first swarms having old laying queens issue and both kinds cluster together it facilitates the work, as the bees will soon ball all strange queens. And all queens will be strange. The queens can easily be picked out of the balls and caged or destroyed. Though we will have a somewhat merry time considerable of the day, still we can devote our time quite steadily to other work, as it requires only an hour or so to take care of ten to twenty swarms

Second swarms are caught in screened hive-bodies the same as first swarms. They will bring out virgin queens. These mixed swarms are released the same as before, except that a wood-zinc queen excluder is substituted in place of the screen to retain any remaining queen should there be one which I did not find by search. The bees usually get back into their respective hives the same evening or early the next morning and go to work as industriously as if nothing had happened.

After the second swarm is all out, and while the bees are looking for a suitable bush to cluster on, I go to the hive and destroy every queen cell. Four or five days without a queen, or any larvae from which to rear one, divests them of all desire to swarm. Then I introduce a young laying queen or insert a ripe queen cell, and the colony is in condition to proceed to the end of the harvest.

OLD QUEENS OF LITTLE WORTH AFTER THEIR COLONIES HAVE SWARMED.

Extra hives and supers are not needed. We have only old colonies, all full of bees and all at work in the supers all the time, except for a few hours, and that few hours of idleness a real advantage. There are eleven days during which the swarmed colonies must remain queenless. There can be *no* system with which the queen must not slacken her egg-laying speed for several days. If the colonies are caused to rear an equivalent of eight well-filled combs of brood before swarming, the fertility of the queen is so much exhausted that she is of little account for the rest of the season. Hived with a swarm she is only able to maintain a colony sufficient to utilize a brood-chamber. True, work progresses briskly when the swarm is first hived but that is the energy of the bees, not of the queen. This work of the bees is of more account in the hive from which they came than anywhere else. The advancement becomes less and less as the old bees of the swarm die of old age. Some old queens when first hived will get up a considerable amount of brood, but that is what I choose to call a dying effort; later there

will be less brood and the colony will hardly be worth wintering. We might as well try to get a good second crop of peas on old vines, or make hens lay in August, as try to get a profitable colony with a queen which has once reached the height of her laying capacity. If she does much after hiving, it is nearly always because her laying was restricted before swarming.

If the honey harvest lasts two months or more, or comes late, as in the buckwheat localities of New York, it may give time to increase the colonies and get all in good shape for the harvest. But even in such locations it will require only a short time until the number of colonies reaches the extreme limit the locations will support.

When increase by hiving swarms is desired, the queens of first swarms are caged and the cage left with the confined bees, and the queen-excluder is put on in place of the screen as previously. If the queen still retains good laying ability the bees will stay, but if the queen is not of much account most of the bees will return to the old hive. Such swarms are not worthy the use of a hive. If they stay, leave them until they begin to construct several pieces of comb. Then put in the frames of starters or foundation, but compel the bees to use the excluder as a hive entrance for two or three days more, or they may play the trick of coming out and going to the woods.

That the lower story may be entirely occupied with brood, a half-depth story is used over the brood chambers to hold the stores of honey. At the beginning of the harvest these are extracted, and, on account of their containing a quantity of old honey, the product is somewhat off color.

HOW TO DETECT SWARMING BY THE USE OF THE MEGAPHONE.

Instead of watching for swarms by eyesight I depend upon hearing nearly all the time, using home-made amplifying horns which increases the ordinary hum of the apiary to the roar of a railway train at a distance of 40 rods. Swarms are distiuguished by *pitch* rather than by the volume of sound. Out of sight and hearing of the bees, a cheaply constructed telephone line is necessary, with receiving horns arranged at the outlying points of the bee yard.

(I was interested in what Mr. Dayton said about discovering the issuing of swarms by the use of a megaphone, and wrote him for more particulars. Here is his reply.—ED. REVIEW.)

As to those horns and telephones would say that I have only a few makeshifts in that line. Yet they seem to answer the purpose. One horn is an old retort I got at a eucalyptus oil factory that was destroyed by fire. It is about eight feet long and four feet across at the large end and eight inches at the small end. With the small end extending into the extracting house I can readily distinguish a swarm that is too far away to be seen with the eyes, simply by listening before it. The swarm is detected from that of the other flying bees by their peculiar roar. When a swarm has been clustered on a bush, and begins to rise up to go to the woods I know what their intentions are just as soon as the first few bees begin to leave the cluster, and I suppose many apiarists do. I enclose a picture of another horn I bought at a junk store for 50 cents. It went there for the brass it contained. I cut the little end off up to two inches in diameter, or large enough to take in a person's ear. It is 30 inches long, and 16 wide at large end. Then I have a small horn. Between every two combs I uncapped I turned an ear to a horn.

In order to make sound travel over a wire it is necessary to solder in a sounding board or what would correspond to the drum of the human ear. Plainly described in a common school

physiology. The wire is attached to the drum and travels to another drum to which it is attached and the horn at the receiving end prevents the sound from scattering in all directions except to proceed out at the open end. The horn I used on this receiving end was a tomato can with one end open. If I couldn't get anything better I should use an ordinary funnel. Even that would increase the sound several times. But then, if a person has not an ear for music and has had some practice, a cart load of horns may be of no account where there is 200 or 300 colonies. Learn to tune a violin. "How far from the apiary?" Well, now, how far away do you place your camera when you take a picture and want the hives to show as plainly as possible? That is about it. A horn can take in about as much horizon as a camera—hear about everything the camera can see. I expect you are expecting to write editorials, set type and watch the bees all at once, and that will be beedom boiled down pretty thick.

CHATSWORTH, CALIF., Dec. 16, 1905.

Editorial

Waiting for cuts to go with the article on moving bees makes this issue late.

****

Tearing a colony all to pieces, so to speak, by extracting the honey, really has a tendency to produce swarming, so says R. F. Holtermann, of Ontario.

****

Queens, to the number of 3,000 were sold last year by J. P. Moore, of Morgan, Ky., and he was not able to supply the demand. He is now making a large addition to his queen rearing apiary.

****

Harry Lathrop writes: "The article of S. D. Chapman, in the March Review, and your reply to the same, constitute, I think, the best bee literature I ever read—but, from my point of view, Mr. Chapman has the best of it."

****

The Rural Bee-keeper for May comes out with its cover printed in two colors. By the way, Bro. Putnam called at the Review office recently, but the editor was in Northern Michigan and missed the pleasure of a fraternal visit.

Mr. J. C. Acklin, of St. Paul, Manager for the A. I. Root Co., while delivering some bees in Highwood, a suburb of St. Paul, was stricken with apoplexy from which he died the following morning, May 26th. Mrs. H. G. Acklin, who in former years was in active management of the agency, resumes charge again, and the business will be continued as usual. An able assistant who has for years done a large share of the work, is still in service, and orders will be promptly cared for.

****

Swarming and its prevention was discussed last fall at the Ontario convention, and Mr. R. F. Holtermann said that he prevented it largely by using large hives, giving abundant super room, a generous entrance, and shading the hives. In addition, he ventilated the supers, which he considered very important. Mr. Saunders practiced taking three combs of brood from a colony found starting queen cells, replacing them with two sheets of foundation and one drawn comb, the removed combs of brood being used in building up increase.

The Progressive Bee-Keeper and its editor, R. B. Leahy, are no more. Mr. Leahy was only 48 years old, but he had been in poor health for more than a year, and he passed away April 14. The Progressive has been sold to H. B Wright, of Topeka, Kansas, who will combine it with a journal called the Helpful Hen.

F. M. Wessels, Wooler, Ontario, has an apiary across the road from an evaporator, and in the fall thousands of his bees are destroyed in the peelings—one basket of peelings being dumped upon the bees where they are at work upon the last emptied basketful. He also considers the juice that the bees bring home as detrimental in the wintering of the bees. He wishes to know if he can compel the owner of the evaporator to build a shed in which to dump the peelings. I am not a lawyer, but I doubt if he can. Would be glad to hear from any one who can speak with some authority.

The Advanced Bee Veil, sold by A. G. Woodman & Co., of Grand Rapids, Mich., is something that I have worn with great comfort during the last two weeks. It is really the same thing as was described in the Review years ago, the invention of Mr. Porter of bee escape fame. The peculiar feature of the veil is that its edge is held firmly down upon the shoulders, *away from the neck*. With a veil tucked inside the collar, angry bees always seem to have the unhappy faculty of stinging the neck where it comes in contact with the veil—with the Advanced Bee Veil this is entirely avoided, as the veil does not come in contact with the neck. We also avoid that hot, suffocating feeling that comes from having the veil tucked close around the neck, inside the collar—such a relief!

...ining Help for the management of large numbers of bees is certainly most important. Harry Lathrop and the editor of Gleanings discuss this point in a recent issue of that journal, and both agree that the securing of proper help is the hardest problem in managing bees in large numbers. I think all who have tried managing several apiaries have found the "help" problem the hardest to solve. At the last meeting of the Northern Michigan Association, at Kalkaska, some one was criticising some of the methods employed by Mr. E. D Townsend, and his reply was very significant. He admitted that other methods might be better for the man who was doing his own work, or could oversee it, but he (Townsend) was developing a system that could be *turned over to ordinary hired help*.

M. A. Gill, of Colorado, writes an excellent article (the kind he always writes) and sends it to Gleanings, in which he advocates plain Langstroth (Dovetailed) hives and *Hoffman* frames. Down at the St. Louis convention, last fall, Mr. W. L. Coggshall, of New York, was bantering me over some idea of mine with which he did not exactly agree, but he wound up his harangue with "but you are all sound on the frame question." Now here are two men, good men, owning and managing hundreds of colonies, yet one condemns the Hoffman style of frames, and the other approves it. One lives in New York and produces extracted honey, the other in Colorado, and is a comb honey man. Most of the 400 colonies in Northern Michigan are on Hoffman frames, and I'll probably have an opportunity to think more (or less) of them before the season is over.

The Changeableness of Honey Resources.

Very few of the honey resources remain the same, for a long term of years, in the same locality. Probably white clover comes as near doing this

as any of the honey plants. The sages that grow in the mountain canyons of California have furnished honey for many years, and probably will continue to do so, as the steepness of the mountain sides prevents their being plowed up. The same might be said of the clover upon the hillsides of old Vermont; but, in many sections of the country, the sources of the honey supply are continually shifting. For instance, in some parts of northern Michigan the basswoods once furnished bountiful harvests of honey; then came the lumberman's axe and cut them away. In their wake came the raspberry which furnishes a larger and surer harvest; but it is only a question of time when the farmers' plow will root out the berries, and their place will be taken by the clover that even now comes creeping in.

In some parts of New York buckwheat is now the main source of honey supply—what it was years ago I don't know—possibly basswood and clover.

In many parts of the West, irrigation was followed by the cultivation of immense fields of alfalfa, from which the bee-keeper has reaped a bounteous crop; but the tendency, of late, on the part of the farmer, to cut the alfalfa early, is lessening the yield of honey, and the outcome is somewhat uncertain.

A new, or timbered, country always furnishes different sources of honey than abound after the country is cleared. Civilization brings the fruit bloom, the alsike and white clover, the buckwheat, the sweet clover, etc.

The bee-keeper who expects to succeed must study all of these things and govern his action accordingly. Don't buy land, and put up expensive, special building, cellars, etc., in a locality where the pasturage is likely to pass away in a few years.

EXTRACTED DEPARTMENT.

SHOOK SWARMING.

How to Avoid Swarming-Out and Some Other Difficulties.

The season is now here when shook swarming is put into practice, and it is well to consider some of the difficulties to be overcome. One is that of swarming-out. Mr. Stachelhausen, of Texas, is the pioneer and introducer of this plan into America, and probably understands all of the ins and outs of the proceeding better than any one else in this country, hence, it is with much gratification that I copy from Gleanings an article of his on this subject. Mr. Stachelhausen says:

By reading different bee-journals I find that a few things in making these artificial swarms are not properly understood by some bee-keepers. For this reason it will not be out of place to say a few words more.

1. There is no agreement about the time when a shaken swarm shall be made. Some say it can be made as soon as the colony is strong enough; others advise waiting till queen-cells are started; and the editor, page 527, even thinks the absconding, which sometimes happens with such swarms, may be caused by shaking a colony when there was no indication or desire to swarm in the old colony. Whether we shall wait for queen cells or not depends on circumstances. If we have a strong colony in a large hive, there is no reason why a shaken swarm could not be shaken successfully, queen cells or none. I have made hundreds of such swarms without waiting for queen-cells. If we work for extracted honey, and want some increase,

the swarm can be made as soon as the colony is strong enough. But suppose we work for comb honey and keep our colonies in small hives (eight-frame Langstroth). We have given a section super, and probably the bees have already commenced to work in the sections. At such times we should probably get more section honey from this colony if it would not swarm at all. For this reason the proper way will be to wait till the colony makes preparation to swarm, and as we do not want natural swarms we make one artificially because a natural swarm would come out a few days afterward anyhow.

But in my opinion it is better to use a larger brood-chamber in the spring, because we will raise a much stronger colony in it with less work than in these small hives. When the honey-flow commences we make the shaken swarm, no matter whether queen-cells are started or not, and hive it in a small brood-nest (six-frame Langstroth size), and give the section supers to this swarm. Generally these colonies in large hives are not inclined to swarm, consequently it is out of the question to wait for queen-cells. The shaking of the bees here is not for the purpose of anticipating swarming, as in the former case, but to force the bees into the sections by a contracted brood-nest without combs. This leads us to another question.

2. Shall the shaken swarm be hived on drawn combs, full sheets of foundation, or on starters?

About 18 years ago W. Z. Hutchinson published a little book in which he described his experiments in hiving swarms on combs, foundation, or starters if worked for comb honey, and at that time this little book settled the question that it is more profitable to hive swarms on starters only in a contracted brood-chamber than in any other way, and the reason was given why it is so. As this is true now just as well as eighteen years ago, and just as well for artificial swarms as for natural ones, it seems there could be no doubt if comb honey is to be produced. Nevertheless, there is room for a question. By the use of starters in the brood-nest a small amount more of section honey may be secured than by the use of full sheets of foundation; but in the later case nicer all-worker combs can be secured without any loss of time and labor. For this reason, at certain times it may be more profitable to use full sheets of foundation in the brosd-nest. Every bee-keeper has to decide this question for himself. The use of drone combs is always a loss except, perhaps, when extracted honey is produced, and even then I would not allow it.

The use of empty combs or full sheets of foundation has no influence on the fact that sometimes natural or shaken swarms come out and abscond

3. This swarming-out of shaken swarms on one of the following days, or of starting queen-cells on a comb of brood given to them, is the most frequently raised objection to these shaken swarms.

If we shake or brush all the bees of a colony with the queen into a hive and set it on a *new* stand the old bees will return to the parent hive on the old stand; and as such a swarm, containing young bees only, will never think of swarming out or starting queen-cells, we can give to this swarm capped or uncapped brood. If the same swarm is set on the *old* stand, and the parent colony on the the new one, the bees act differently. The old bees returning from the field, and finding a nearly empty brood-chamber, are very uneasy; and if the swarming impulse is already incited they will very probably swarm out or make preparation to swarm. Some of the old bees may enter neighboring hives and unite with them; even the queen may be killed in the general disturbance. To avoid this, at least one frame of mostly unsealed brood should be given to the swarm. This will keep the colony together.

Whether this frame of brood can remain with the swarm depends on circumstances. Some races or strains of bees are more inclined to swarm than others. In some localities the bees swarm considerably more than in others. Some years are more favorable for swarming than others. Last, but not least, if the colonies are always kept in small hives they are more inclined to swarm than if large hives are used during development of the colony and during swarming time. At such times, which are favorable for swarming, a large part of the shaken swarms, if we let them alone, will swarm out or will make preparations to swarm, and refuse to do much work. If, besides the brood, some honey is given to the shaken swarm the probability of swarming out is still greater; and if the old colony has already

started queen-cells the shaken swarm is nearly sure to swarm out. To avoid all this the brood-comb must be removed the next morning after making the swarm, and then we shall have no more trouble.

At other times, if the bees are not inclined to swarm, the brood-comb can be left with the swarm; but the swarm should be examined the following day. If some cells are built of the worker size, everything will go all right; but if the swarm did not build at all, or made some drone combs, the brood must be removed at once or the colony will swarm out soon.

4. Sometimes the reason for swarming out is that the hive is too small for the swarm, and is overheated by the uneasiness of the bees. This may be so if we give a contracted brood-nest, and over a queen-excluder a section-super. For this reason we should give a full-sized brood-nest at first, and contract it afterward when the bees have commenced to build combs. If divisible brood chambers are used we should at first have an empty story under the one which the swarm will have permanently, and this empty story should be removed the next day, when the bees have settled down to business.

5. It is said that, by shaking the bees in front of the hive, they crawl in the grass and up one's trowsers legs, resulting in more or less stings and inconveniences.

This can easily be avoided if we shake and brush the bees directly into the hive. We set the hive with the frames on its stand, and on top of it an empty hive-body. Into this we shake or brush the bees, and not in front of the hive. It is not necessary that a single bee fall outside of this hive.

6. If we make a number of shaken swarms in one of our yards we avoid shaking two colonies close together. If this should be necessary we work, after shaking the first colony, in another part of the apiary till the first-made swarm has quieted down somewhat.

I think I have explained everything which could cause a failure in making shaken swarms. I have had much general success with these swarms for 25 years, and have described the way I make them as plain as I was able to do, so that I can't understand why others report failures with this kind of swarms.

SWARMING AND INCREASE.

A Method That is Easily Followed in the Home Apiary.

Since I have commenced the establishing of out-apiaries, how differently some of the instructions and methods strike me. As I read some article, how often the thought comes, "That's all right in a home yard, but it is 'no good' in an out-apiary." However, as an editor, I must remember that most of the apiaries are home-apiaries, and methods appropriate for use in such apiaries are of interest to the majority. Just at present, swarming and control of increase are of special interest, and, if bees are allowed to swarm, as in many cases they are, a most excellent plan is that given by Mr. E. A. Morgan, of South Dakota. In the Farmer, of last November, he gives the plan which is as follows:

I have never been an advocate of the non-swarming methods. In my book (Bee-Keeping for Profit) page 16, it reads, "I consider swarming an advantage and it should be encouraged rather than discouraged. The secret is in hiving in such a manner that storing goes on during the whole honey-gathering season."

During swarming is the proper time to select choice queens. When a swarm starts, they have in the hive from six to twelve queen cells built and capped over. These are large and long, and being built in a strong colony preparing to swarm, they have an abundant supply of royal jelly inside which gives strength and long life to the queens that hatch from them. Queens hatched from these cells have greater vigor, strength and endurance than those built in nuclei with few bees, containing only a scant amount of royal jelly in the cells. Often chilled before hatching, the queens are weak and short lived.

To save the former I allow [illegible] remain until the swarm issues, then while the bees are in the air I set the hive off the stand and place it [illegible]

hive where it stood, placing the queen at the entrance. The bees will soon find her and return. When perhaps one quarter have entered the new hive, I release the queen and let her run in and soon the whole swarm is back in the new hive on the old stand.

I have now not only the swarm that issued in this hive, but I have all the flying bees from the old hive which I carry to a new location, and within twelve hours most of the old bees have left it and returned to the old location. They have the old queen and virtually all the working force of the two swarms, and are in shape to do big work. They have gained that impetus for work acquired only by swarming out.

Now we return to the old hive; we find the honey and brood and those choice queen cells with enough young and hatching bees to keep them warm. We leave them in eight days, in which time the mature brood is hatching rapidly. On the eighth day divide this old colony up into five nuclei, giving each two frames of brood and honey, with one of these big queen cells. Place them in regular sized hives, close up to one side with division board, and place on separate stands. These queens will hatch and be laying in ten days. Build them up as fast as other hives swarm by giving combs of brood from them, and treating the swarm same as above mentioned.

By using judgment in saving choice cells from the best honey gatherers, making nuclei enough to receive the combs of brood from undesirable stocks, we can double our stocks each season and still produce as large a honey crop as in the no-increase system. We will have also a choice lot of young queens, many of which having a full set of frames of hatching brood given them, will, if made early, be ready to fill a super or a set of frames for extracting.

For those wishing no increase of stocks, I would still practice this plan of hiving, but instead of making nuclei, I would pile up the hive bodies of brood five high, until a queen was laying. Then remove four of the upper ones, leaving the queen, and returning bees to the lower one, giving the others one each on top of extracting hives to have the combs filled with honey as fast as clear of brood.

It is always best to rear a few dozen young queens each season to be used in the apiary, as old and worthless ones can be superseded in the fall to advantage.

ENTHUSIASM.

Can an Old Man Retain It?

In the last few years I have found myself watching men who are my senior, and wondering if I would ever fall into the listless, placid, non-progressive state. The same kind of clothes, the same style of collar, the same kind of a "hair cut," or (the lack of it) the same routine day after day, with no heed or care for the wonderful *new* things that are springing up on every hand. Enthusiasm dead. To me the picture bordered upon the sad and sorrowful. I felt as though I must retain the enthusinsm of my youth, or life would lose its chiefest charm. I felt that it was not necessary to thus drop back into the chimney corner, and one illustration of the correctness of my belief always come to me in the person of Dr. C. C. Miller, hence it was with unusual pleasure that I read the following in his "Stray Straws" in Gleaning:

"Is it not a fact that, the older we grow, the less inclined we are to adopt new devices?" So ye editor, p. 579, Y e s, as a general rule. As years advance, interest gradually fades in all directions. The cooking of today is not up to what mother's cooking used to be. Old ways are better, and any deviation from the old ways is looked upon with suspicion. But are not bee-keepers an exception to the general rule? Today I was out looking at the bees busy on the dandelions and plum blossoms. I think I watched them with just as keen interest as I did 45 years ago. I think I take just as keen interest now in studying up something new as I did then. My assistant complains bitterly at my wanting to try so many new things that may interfere with the honey crop. A queen-cage that a certain old fogyish editor still retains I have cast aside for something new, and many a half-hour is spent studying over some new plan. No, it is hardly a fact that

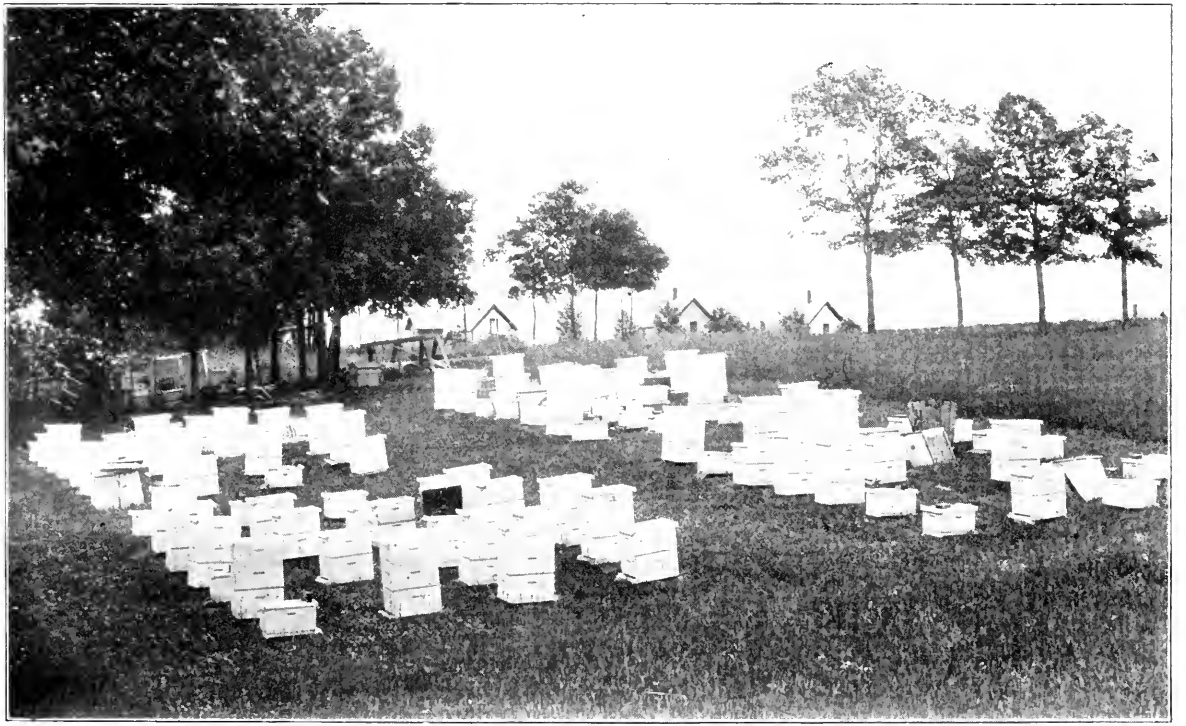
the older he grows, the less inclined the genuine bee-keeper is to adopt new devices.

Commenting upon the foregoing editor Root says:

"I began active bee-keeping in our yards, and to study bee-journals, when I was 14. I am now nearly 44. During these 30 years I have had an opportunity to study bee-keepers both at Medina and those in various parts of the country, coming into face-to-face contact with them, and if I am any judge your last sentence is hardly in harmony with the facts. Bee-keeping is not so much different from any other profession or business that it will change the natural tendency in human nature to grow conservative with years. This is a proposition that we can hardly gainsay. I am not an old man by considerable; but I find myself becoming more and more skeptical in regard to the value of new things. You may not think it; but if you could see the number of things I turn down, and the way some of my friends complain of how I pour cold water on some of their inventions that never see the printed page, you would begin to think that, from their standpoint at least, I was getting to be an old fogy. The time was, perhaps, when I was ready to nibble at nearly every bait that came along; but I hope I am not quite so easy as that now. So you see I can't help judging you by myself; and, honest, now, don't you find yourself clinging to the old true and tried more than you once did? Peer again into the archives of memory.

I agree with Editor Root that we are more inclined to turn down new inventions as we grow older, but I attribute that to the increase of wisdom, and not to a lack of enthusiasm. I know that I am following bee-keeping now with an enthusiasm equal to that of 30 years ago, and I feel that enthusiasm will last 30 years more should I last that long.

A man is always just as old as he *thinks* he is. If he thinks bright, happy, cheerful, enthusiastic thoughts, he will remain young. We are creatures of habit, and if we get into the habit of feeling old, and acting old, and losing interest in things, we will *be* old before we know it.



Review Apiary at Flint, Michigan—105 Colonies.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, JULY 15, 1906. NO. 7

Work at the Review Apiary For Half a Year.

W. Z. HUTCHINSON.

THERE are two reasons for giving the Northern Michigan apiaries the "go by" this month: One is that to develop plates, get cuts made, and give an account of a trip in the same month in which it is made, delays that issue of the Review. Another reason is that I have several interesting things that I wish to tell about the apiary here at Flint.

There were about 100 colonies in the cellar, and the wintering was perfect. Some of the colonies were light in stores, but none starved, and there was not a trace of dysentery. Every colony came out alive.

BEES OUGHT TO BE FED IN THE FALL, IF NECESSARY, ENOUGH TO CARRY THEM TO THE NEXT HONEY FLOW.

I knew last fall that some of them were short of stores. They all had enough to carry them through the winter. I knew that; and I also knew that feeding would be needed to bring them through to the harvest. I decided to wait and feed in the spring. Ordinarily, this would have been all right, but, as it turned out, it was something of a mistake, and *might* have turned out very disastriously. The reason will appear as the story develops.

TROUBLE FROM THE BEES "DRIFTING" OR MIXING WHEN SET OUT IN THE SPRING.

The bees were carried out of the cellar in the night, the hives placed in rows, but quite a distance apart. The next day was not very warm, but the bees flew some. I watched them from the window, but there was no "drifting" or mixing up. I had been sick, and was not very strong, but, just at dark, I bundled up and managed to go from hive to hive and lift the covers. All were clean and healthy, clustered nicely, and about the same number of bees in each hive. The next day was warm, and, for a while, the air was fairly black with bees over the hives. Along about noon they seemed to be gathering at one corner of yard. The fronts of the hives in that part of the apiary became black with bees,

finally the sides and tops of the hives were covered with bees. Every bee that left a hive seemed in duty bound to join the whirling "circus" of bees at that particular part of the apiary. Only a few bees could be seen flying at other parts of the yard. When night came, and I went out again and lifted the covers, I found mere handfuls of bees in some of the hives—bees between only two or three combs. Twenty or thirty of the hives at the corner where the bees had congregated were jammed full of bees—some were filled to overflowing.

I had read, and been told, that if bees were set out in the night, the start for a flight would be started gradually, and there would be none of this mixing or drifting. There was this time. Always before I have carried the bees out in the day time, on a warm day, scattering the hives as carried out, and had no trouble with their mixing. There is only one precaution that I neglected, and it is possible that it might have saved this trouble, and that is, I didn't contract the entrances. If the entrance is contracted so that only one or two bees can pass, a strong colony can make no more of a demonstration than a weak one. But I had heard so many times that carrying the bees out in the night would do away with this difficulty that I pinned my faith to it.

EVENING UP COLONIES BY CHANGING PLACES BETWEEN THE STRONG AND WEAK.

What did I do? Well, for a week or ten days, I was unable to even go out in the yard, and the bees had it all their own way. When at last I was able to again take things in hand, I found some six or seven colonies had been robbed; the reason, of course, being that they been so reduced in numbers by losing their flying bees. As soon as I was able I began changing places with weak and strong colonies. It seemed like a risky, desperate thing to do, and I feared the loss of queens, but although I must have changed places with nearly 50 colonies, there was no fighting, and I don't know as I lost one queen as the result. It is true that I afterwards found two or three queenless colonies, but I am not certain that the loss came from the changing about of colonies—these colonies might have been queenless in the first place. Of course, the robbing was not a dead loss. The loss in bees was very slight. I had just about as many bees, and just as much honey, but they were in fewer hives, and I was put to the trouble of equalization. By repeated changes, however, I finally brought the colonies all out pretty fairly equal in numbers. That the bees were all pure Italians, had something to do, I think, with my success in changing places with colonies.

When all were evened up, and fruit bloom opened, I had 90 colonies left. At the close of fruit bloom I sold 20 colonies, so I opened up the season, at the home yard, with 70 colonies.

TROUBLE FROM LACK OF STORES.

Then there was the lack of stores to contend with. By going twice over the entire apiary and equalizing stores, they pulled through to fruit bloom, which gave a fair yield. I don't like to feed early in the spring. Weak colonies are very loth to send bees out to a feeder in cool weather. Strong colonies may visit a feeder, but I don't care for the stimulating effect of feeding until I am sure of settled warm weather. I have suffered too severely from late freezes coming after ambitious colonies had extended brood rearing beyond their ability to protect it. We did have a cold spell with the mercury down to 38 for several days, and I was thankful that there was no more brood than there was to cover. I think Mr. M. A. Gill hit the nail on the head when he said that most bee-keepers "begun feeding too soon and stopped too soon."

THE FOUNDATION OF A HONEY CROP BUILT ON TWO BARRELS OF SUGAR.

Just as soon as the flow from fruit bloom began to slacken, I began to feed sugar syrup. I had 50 of the Alexander feeders in use, and 20 of the Coverdale, made by lining supers with oil cloth. I prefer the Alexander feeder. It is handier and the bees in a very weak colony will go down and take the feed, when they will not go up into the Coverdale feeder. To feed I filled a ten-gallon can two thirds full of water, then stirred in granulated sugar until it would no longer dissolve. About a pint of this syrup was given each day to each colony. It had the same effect as a honey flow. In this locality there is a dearth of honey (about three weeks) between fruit bloom and clover. The bees slack up brood rearing, and sometimes kill off their drones. When the clover comes on the combs are, to a large extent, empty of brood and honey. When white clover opened this year, the combs in my hives were jammed full of brood and food, and the hives overflowing with bees—they were ready, *at once*, to go into the supers. It would not be far from the truth to say that the foundation for all of these three-story ten frame hives, now nearly filled with honey, as shown in the frontispiece, was built on two barrels of sugar costing about $35.00. Of course there are other factors. For instance, the bees wintered perfectly and came through with their vitality unimpaired. To be sure they became somewhat mixed up, but I straightened out that. But I am satisfied that, without the feeding, there would now have been one less 10-frame super on each hive, and that means about 50 pounds more honey for each colony.

GETTING FOUNDATION DRAWN INTO STORE COMBS.

Like the apiaries in the north, this home-apiary is to be devoted to the production of extracted honey. I had no surplus of drawn combs for use in the supers and the first step was to secure such combs by the use of sheets of comb foundation. During the winter, Mrs. Hartshorn, one of my daughters who lives near, nailed up and wired 1,500 frames and filled them with foundation. As soon as honey began to come in freely from clover, an upper story was placed on each colony, one-half of the combs in the lower story being raised to the upper story, their places being filled with the sheets of foundation already prepared. Frames of foundation and combs of brood and honey were alternated in both stories. As the combs were all filled with brood or sealed honey the sheets of foundation were drawn out nicely with the cells the proper length. No queen excluders were used, and some of the new combs were filled with brood and some with honey. About June 20th, a queen excluder was placed between the two stories. A week later an examination was made and the queens put below the queen excluders. It was not necessary to hunt up the queens; simply look for eggs. If none were found in the upper story, why the queen was below, and *vice versa*. By the way, only two queens were found in the lower story. At this time a third story was added, as most of the new combs were nearly completed. That is, were filled with honey or brood, but only partly sealed over. It would not answer to alternate such combs with foundation, as the bees would keep on lengthening the cells of such unfinished combs instead of drawing out the foundation, or, at least, they would be very slow in beginning work on the foundations, and the result would be some very thick, and some very thin combs. I wrote to Mr. E. D. Townsend and asked him to suggest some plan for arranging matters when adding another story of 10 frames of foundation. He suggested

two or three, but the one I followed is as follows: Take out two outside combs, on each side of the upper story, putting foundation in their places, and being careful to see that an old sealed or brood comb was placed next to the foundation on each side. Then put the four old combs, that were removed, in the upper (third) story, placing two on each side, at the outside, with six sheets of foundation hanging between them. Care was taken that the side of the comb that came next the foundation was sealed, or filled with brood. This plan worked to perfection, getting the sheets of foundation drawn true and even with cells of the proper depth.

There has been very little swarming—not more than eight or ten swarms. When the first few colonies swarmed, the old colonies were divided up into nuclei, each nucleus being given a cell; then, as fast as a colony swarmed, its combs of brood were used to build up these nuclei. The most of these newly formed colonies now average ten combs apiece. It is a plan that I like extremely well.

PREVENTING THE LOSS OF YOUNG QUEENS BY THE USE OF LANDMARKS.

In the view given of the apiary there will be noticed some barrels, boxes, hive covers, etc., scattered about promiscuously; these are to aid the young queens in finding their homes. Although the hives are in straight rows, both ways, there has been a loss of only two young queens out of 30.

FLINT, Mich., June 30, 1906.

Some Pertinent Criticisms on The March Review.

F. GREINER.

FRIEND Chapman's article in the March Review interested me very much. It is good, every bit of it, and a good deal may be learned from it. I am running for comb honey, and I am not able to run an out-yard without frequent visits; how I *might* get along if I were running for extracted I cannot guess. I have often thought of producing liquid honey, only because it is evident that such may be produced much easier, *three* to *one* here in my locality, but there is an obstacle, *the finding of a market* for it, even at a low price. I have learned to sell comb honey, but I fail to find an outlet for the extracted, except in a very limited quantity, and the Review might well make it an object to show us what to do with the extracted honey. [See Townsend's articles in the Review for 1905.—Ed. Review.]

HORIZONTAL WIRING DOES NOT PREVENT SAGGING.

Friend Atwater also makes some good points in his article. My own experience as regards shallow brood frames versus deep ones corroborates his. More pollen is found in section honey over a shallow frame brood-nest, although the deep frames may not present more comb surface. On wiring frames I do not fully agree with him. With me and my 10-inch-deep frame (10 in the clear) sagging is not prevented by horizontal wires when using medium brood foundation, no matter *how many* wires are used. The best and most serviceable combs I ob-

tain are built without comb foundation. Sagged combs are just as good in the extracting super, but *no good* in the brood chamber. Horizontal wiring is all right for extracting combs. The wires answer two purposes, viz: to give strength to the comb, and keep the foundation in the frame where it belongs. The very fact that horizontal wires do not prevent sagging is found in the bulging of the combs where the wires are put in and drawn very tight. It is usually recommended to put them in loosely to prevent buckling. If put in thus, then the foundation is *expected* to sag and *does* sag. If the wires were expected to hold the foundation *up* then they ought to be put in tight and not otherwise. The fact is the wires don't do the business, now do they?

A HONEY ROOM OUGHT TO BE FREE FROM DUST.

Your honey-house and workshop scheme interests me I don't like the idea of building "cheap." It does not cost much more to build good and will surely pay in the end. There is one thing further to be borne in mind. Workshop and honey-house with extracting room do not go well together, although many bee-keepers, self included, do have it so Hives should be made in a separate room from where honey is extracted. The machinery used in the shop is properly located in the workshop; the honey may be brought to the same place for scraping and crating, but the storing of the honey and the extracting belongs to an apartment as free from dust as possible. I have of late years admired the honey house of my brother G. C. G., in LaSalle, N. Y. Everything in same is scrupulously clean. Not a particle of accumulated dust or chips, etc., anywhere. He should be an object lesson to many of us. But the hives are made up in another room, just so the supers are fixed and shipping cases made up. In fact, no work is done in the honey house which produces dust.

CO-OPERATION AND BEE-KEEPERS' ASSOCIATIONS.

You are hitting a very sensitive spot with that word "*co-operation.*" Yes, we need to *co-operate*. What we need is a co-operation of *honey-producers* only. Supply manufacturers and dealers, also editors of bee journals, should be carefully excluded. Their interests do not run parallel with ours. How unreasonable, how unbusinesslike, to organize a bee-keepers' association with supply dealers and editors to dominate their business. What can be expected? Is it any wonder that contracts made by the business manager, who may have the interests of honey producers at heart, are revoked almost as soon as made. No, no! Brother Hutchinson, the National Bee Keepers' Association and the Honey Producers' League are conducted on false principles, and do not serve the interests of the honey producing masses. The honey producers must cut loose from such bodies and they will. We must learn to manage our own affairs. We will then be able to accomplish what you intimate in your editorial.

The masses of the honey producers are as yet blind, and are satisfied that the business of the National is run in the interests of a few, when the interests of theirs clash with those of ours; but some begin to see and don't you forget it.

NAPLES, N. Y., Mar. 10.

[I have always used four horizontal wires drawn *tight*. I have never seen any sense in putting in wires to prevent sagging, and then leaving them loose so that the foundations *could* sag. I use medium brood foundation, both the Root and Dittmer make, and, although I have used 1,500 such frames this season, and about half that number last year, there has been *absolutely* no sagging. I ask for nothing better. There must be some factor in my management that does not appear in that of Bro. Greiner, or *vice versa*.

I must come right out square and flat-footed and say I do not agree with my good friend, Greiner, in thinking that the National Association is dominated by, and run in the interests of the few, and those few dealers and editors. Ninety-nine hundredths of the members are producers, pure and simple, and, of its 16 officers, three-fourths are producers; and the three or four who are dealers or editors (as well as *producers*) can easily step down and out if their present position is a bar to progress; although some of them have labored long and unselfishly for the good of the Association.]—ED. REVIEW.

The Size and Shape of Hives and Their Influence.

H. A. SMITH.

AFTER a young man has fairly launched into bee-keeping, almost the first thing he does is to invent a hive, which to his mind, conforms to the needs of the bees and himself better than any other hive.

If his business expands, however, unless he possesses the necessary machinery, he has to buy factory-made hives, when, much to his chagrin, but often to his *advantage*, he is obliged to give up his odd-sized hobby-hive, and adopt the standard. I say often to his advantage, because I know that the standard Langstroth hive is by no means the worst hive a man can use. But is it the *best* for all purposes?

The first hives I used were too small to get good results in surplus, as there was not sufficient room for brood, and consequently bees, unless two bodies were used for a brood nest, which made the hive *too* large. I found, however, that the bees wintered excellently in these little hives after they were contracted to one body in the fall. The hive was almost a perfect cube, but its capacity was equal to only 6½ Langstroth frames. I soon adopted the eight-frame Langstroth hive and I found that, although I get better results in surplus, the bees in them did not winter nearly so well as in the former hive. In a warmer climate than that of Ontario I have no doubt the Langstroth would be an ideal hive.

But I winter my bees out of doors, and I find that in a cold winter the hive that keeps the bulk of the honey over or near the cluster at all times is the hive that winters. I have found colonies dead in Langstroth hives with plenty of honey in the hive but practically out of reach.

Now, you will observe that the hive I first used was an ideal winterer, but inferior in regard to surplus getting. I have found the Langstroth hive a poor winterer, but when taken care of in the spring, and brood rearing helped by careful feeding, it is an ideal surplus hive. The thing for me to do was to build a hive which would strike a kind of medium, and I did it, and I am as pleased with my hive as any beginner could be over his first venture at building a bee hive.

I decided first to build a nine-frame hive, but I found that by making a ten-frame hive it would be perfectly square. It measures 14⅞ each way and is about 3 inches deeper than the Langstroth hive. It preserves the correct capacity for both brood rearing and securing surplus, and I find that colonies winter in them perfectly, and I believe with less honey, as what they have is mostly over the cluster, or very

close to one side. As the hive is perfectly square it can be placed on the bottom with the frames running either way of the entrance. Personally, I do not consider this an important point, but it can at least be tried to the satisfaction of the user without building a special hive to experiment with. I believe that shape and capacity are two factors which must be blended when building a hive to obtain the best results. The first hive I mentioned was built without regard to proper capacity, and I believe the Langstroth hive is built without sufficient regard to its shape. Perhaps I had better modify the last remark and say it is not the best shape in a cold climate when bees are wintered out doors.

The section supers of my hives are made ⅛ of an inch larger and accommodate 28, 3⅝ x 5½ inch sections with section holders and fence separators.

Perhaps some one may suggest that the hive is too deep to obtain good results in surplus. Remember the capacity is equal to about eight L. frames, and I believe from my observations, that the proper capacity has more to do with surplus getting than shape of hive. I also think that proper shape has more to do than capacity for successful wintering.

PALERMO, Ont., Mar. 5, 1906.

[Let me suggest to Bro. Smith and to all who think the Langstroth frame is too shallow for winter use, those who want a taller frame that the stores may be above the bees, that they stand their Langstroth hive on *end* in winter—then they will have deep frames.—ED. REVIEW.]

Cheap and Durable Hive-Stands Made of Cement.

D. E. LHOMMEDIEU.

WE bee-keepers like a little pepper and salt sprinkled in among so many out-yards; just to give a little seasoning, I guess, so today, it will be on the subject of hive stands.

My hive stands, for nearly 30 years, have been a round stick of stove wood, as long as the hive is wide, and split in two, making two pieces of each round of stick, the bearing surface of the hive bottom resting on the *round* side of the sticks, leaves a comparatively small surface for the retention of rain and dampness to stay to rot the hive bottom.

My brother made stands by cutting 2x4, and 2x6, and 2x1 inch pieces the right length for the width of the hives, and I objected some at the time, and by using them a few years they nearly rotted out the hive bottoms.

Four bricks, or four stakes have so much bearing surface that it amounts to much the same thing in holding more or less dampness.

To use tile is not exactly the thing, in every way, and the half-round sticks finally rot out, so I am going to try a cement stand, and I would like the opinion of the Review and its readers. Here is the way to make them:

Imagine a little pig trough as long as the hive is wide, V-shaped, and as deep as you want the stand block. Now fill this with good, stiff mortar, one part best cement, and two parts sharp sand. A few strokes of the trowel and it is ready to dry. When

dry it looks like the letter A, and the bearing surface *is* very small—no rot. Three galvanized wires might be laid in the mortar a little ways from each of the three edges, then they would be *never breakable*. They can be made in a V-shaped wooden eave trough, the trough marked the right length to cut with trowel into right lengths; or several little troughs could be all nailed together with two end pieces.

The high up stand has several objections, and hives set directly on the ground don't last long.

Dear reader if you try the cement stand surely report some good day.

COLO, Iowa, Jan. 6, 1906.

A Socialist and His Bee Hive, By a Socialist.

IN the very nature of things, a socialist must be a sociologist. A socialist believes that the material rewards should be paid to those who are useful, that social service should be the measure of success and be paid for accordingly. He considers that the present form of society is most unfair to the worker, and is consequently desirous of making radical changes in its structure. He is thus forced to study closely all forms of society that have been upon this earth, are now, and is then led to prophecy what will be. Thus he becomes a student of society, a sociologist.

The bee-hive has long been an object of study to sociologists; therefore I, as a socialist, had become interested in the social economy of the bee long before I ever possessed a colony, and was fairly familiar with its philosophy before I ever touched a frame or clipped the wing of a queen bee

As a social organization, a colony of bees has no superior; possibly it may have its equal in a nest of ants, but not having studied these little creatures I am unable to express an opinion. In human affairs, more especially in the last century, there is continual change. Life, it is now admitted, is an eternal adaptation to environment; bee keepers call it locality, and I frequently think they do not fully realize all that is covered by the one word they use so frequently. Man differs materially from other forms of life in this, that he makes tremendous changes in his surroundings; that is, modifies his environment, and then has to make strenuous efforts to accommodate himself to the new conditions that he himself created. Curiously enough, he rather rebels against the self-compelled, structural alterations in his social fabric. The reason being that he considers self interest the governing factor, and, therefore, objects to any change that is not evidently for his own betterment, even though it may be for the good of the human race as a whole. So, there are stress and strain continuously in the social organism, with immorality continuously flaunted in our faces, of a necessary condition of human society.

To the socialist, morality does not mean certain actions that one must not do. He views the question in a very much broader light. He realizes the struggle for existence, the keen competition between individuals, and to him morality means the shifting of the struggle from a lower to a higher plane. In simple savagery, the competition is purely physical; and there the man of powerful build satisfies his desires at

the expense of those who are less fortunate in the development of bone and brawn. In civilization we forbid the use of physical force in the contest, and, as a consequence, the strife is now on the *mental* plane; so the rewards go to the man who is mentally acute, even if the brain development be of the predatory type. The end is not yet, and the predominant thought of civilization, today, is how to restrain the strong man mentally as our ancestors curbed the strong man physically, and thus shift the struggle to another, and, we hope, a higher plane; that is, the moral one.

The purpose of morality, this long array of don'ts, we thus see, is to restrain the strong man in his might that he may give his weaker fellows not merely a chance to live—but to enjoy living Any man, therefore, who acts up to the limits of his power, whether physical or mental, and attains success at the expense of his fellows, is immoral, and his success consequently becomes the measure of his immorality. The socialist complains that the ethics of today are not moral, they are merely non-immoral, that is to say, they consist of so many don'ts when he considers that they ought to be dos. He holds that the reward, whether in money or in fame, should go to the individual who works for the good of the human race, not to the one who thinks only of self, limiting his energy only by what public opinion forbids him to do.

In the light of these ideas, let us examine a bee hive, and I think we will find in it a very interesting series of contrasts. First, we will find that bees have evidently solved the great problem of adapting themselves to natural conditions, or, to put it plainly, they have attained stable equilibrium with their environment. To them, as with us, the food-supply is all important. The human race frequently outruns it, and then famine lays its awful grip on mankind, and wipes millions out of existence. Bees display greater wisdom, and very, very, rarely do they bring into existence more individuals than can be comfortably fed. To attain this highly desirable condition, restriction of conduct has been enforced upon them in the process of evolution, the most noticeable being the emphatic difference in the sexual relationship that characterizes them as compared with most forms of life on this earth. Whatever may have been the originating cause, we now know that sexual immorality has been banished from a bee hive, and, as a consequence, life has become more sure to the individuals by a greater certainty of food supply to each. I need not enlarge upon the purposeful restriction of the numbers during times of dearth, as that is well known to every bee keeper.

Bees may or may not be intelligent, a discussion of the pros and cons on this point would take up too much time and space, but I think it will be admitted that the sterile workers are of a higher nervous temperament than are the queen and drones. It seems to be a law of life that the less developed the individual is in its nervous system, the more prolific it is in reproduction; and the converse is also true. We see it with human beings. The rush of modern society, the fierce mental competition, make a terrible strain on the human nervous system, and, as a consequence, we have the cry of race suicide. It would seem that a race is as old as its nervous system; and when this becomes frazzled the stock is doomed to extinction. Reproduction is therefore confined in the bee hive to the stupid queens and drones while the active, energetic worker is sterile.

So far I have been discussing what I have seen fit to call non-immorality, but the predominant note in a bee hive, it seems to me, is active morality. The form of society, it would appear, is

both communistic and anarchistic, that is to say, each produces according to her ability, and receives according to her needs; but, on the other hand, there is evidently no direction as to the work each shall do. As Dr. Watts put it

"Each seems to know both where to go
And what it has to do."

Each worker seemingly works with tremendous energy, not for the good of self, but for the good of all; that is, she is actively moral; yet each would appear to select, by some unknown instinct, the one work that ought to be done by her. Since all are equal producers of the food supply, all are entitled equally to a share and get it, thus there can be no theft in a bee hive. I might in turn take up the other virtues and consider them in detail, but the result, I think, will always be the same, and demonstrate that in a bee hive there is no immorality, but a great amount of active morality. In this respect their social organism is infinitely superior to that of human beings.

Man's ethics calls for the support of the crowd, or community, of which he is a member, as against all others. While we demand the punishment of all violators of law, we would at the same time, condemn the members of a family who did not stand by one of their number who had perpetrated even an atrocious crime. This is a relic of primitive ethics. On a larger scale we demand that a citizen of any country shall fight for his own nation no matter the cause. "My country, right or wrong." All nations hold their territory only so long as they can resist the invader; and thus powerful nations expand into empires at the expense of other fellow creatures. I regret to say that the morality of bees stops short at their own door, and, like men, they never hesitate to rob the members of another community of their all.

From bees to bee-keepers is but a step, and I would like, with all gentleness to say a word about them. I notice in the bee journals a great many of the contributors are men of a decidedly religious bent of mind, who seldom miss an opportunity of inculcating their beliefs, on the side. One such bee-keeper informed me that he considered the cause of this attitude was due to the fact that their occupation forced upon them the opinion that here was an effect which must have been caused by a great cause or creator. The real reason is different. All students of sociology know that each form of society evolves a special form of religion suited to the needs of that particular time. The methods by which men produce and exchange the necessities of life determine the structure of society, its laws, its morals, its religion, and even its public opinion. All the great religions in existence in the world today took their origin in the pastoral period of humanity, when men herded sheep and cattle. There were other religions that preceded them which have now vanished into oblivion. Bee-keeping is one of man's earliest occupations. Canann was said to be a land flowing with milk and honey. Agriculture had not yet developed, therefore, there was no other product but milk and honey, with an occasional mutton chop or beef steak. Bee-keeping then is an industry of the pastoral period, and bee-keepers necessarily fall into the mental attitude of sheep herders and cattle grazers. The religion of a pastoral period will therefore most naturally appeal to them.

As an owner of a colony of bees I am a capitalist. I provide the workers with the factory and the necessary tools of their trade. For my reward on my investment and management of the concern, I take all the workers produce, leaving only what is essential for the workers to live on and perpetu-

ate the species. In this respect I am like any other capitalist, and like him, I would go *still further* and *take every drop of honey* did I not know that by so doing I would deprive myself of *all future gain*.

Somewhere, recently, I read of an old Scotch Presbyterian, in the State of Illinois, who spent years trying to find some principle that would justify him in taking honey from his bees, and at last, he salved his conscience by this form of reasoning; "The Lord intended bees to be industrious, but, if, in one season, they stored up enough honey to last more than one year, the bees would loaf the next summer, therefore, to compel obedience to the Lord's will, he deprived them of all surplus stores." The gratifying of his own palate was merely incidental. My reason for taking honey from my bees is because I like it. Might is right the universe over. Sometimes the might is embodied in an individual by virtue of qualities attached to him when he was born. In civilization, the might lies in the opinion of the majority of the people living at any particular time. My physical and mental might gives me control of lower organisms, and whenever I can use that might to my advantage I do so.

Let me conclude by referring to the greatest tragedy in bee life. Nature is red in tooth and claw, and knows not what justice is. No more industrious creature than the honey bee lives on earth. From dawn to dawn she hustles for food, and from dark to dawn prepares it and stores it by for the future. Human justice would reward her by satisfying her hunger until the moment of her death, but Nature in gross injustice dooms her to die of starvation far from her home. Nature is lavish in all that concerns reproduction, niggardly in what pertains to substinance. The drone is provided with powerful wings for an occasional flight, the worker wears out those that are more fragile, in active industry, and while laden with her sweet burden, intended to provide against the future, drops wearily to the earth, and there lingers, suffering the pangs of hunger until death brings her relief

Inducing Bees to Give up Swarming and Destroy Queen Cells.

D. CHALMERS.

EDITOR REVIEW: I have read with no little degree of interest your editorial in the November issue on "The Control of Increase;" and I notice that you invite discussion on the subject. I observe, too, that while so doing, you expect us also to give our plan of manipulation, towards that end, if such a scheme we have.

I don't know that there is anything in particular to discuss in your valuable article, except the feasibility of that peep-hole of R. F. Holtermann's. It is usually hard enough on the back, stooping over colony after colony, examining the combs after being taken from the hive, without stooping further to peer through a hole near the bottom of the back end of the brood chamber. And when we get there, what is presented to our vision? "The edge of a comb," as you say, Mr. Editor; and

the chances are, none of the cells the hunter is in quest of. So far as a peep-hole is concerned, I cannot see that what is hoped to be seen through it will be within sight.

It occurs to me, too, that F. H. Cyrenius, of New York, has no small job on hand if he is going to hook one or two supers on to a brood chamber, and tilt the whole thing sufficiently to enable him to hunt for and destroy all the queen cells. With parting the cases of the Heddon hive, as that "prominent Canadian" does, there is a great chance of the bulk of the queen cells being exposed, but, in either case, neither of these gentlemen can leave the hive feeling assured that all the cells have been destroyed, although such no doubt was their intention. I might just say, that it is not every hive that will admit of tilting; as some use frames with top bars short enough to allow a bee-space at each end, and, in such cases, the frames would slip to the lower end, thereby killing many bees, and they could not be got in place again without opening the hive from the top.

I remember trying Mr. Cyrenius's plan in 1904, on a hive of combs which could not be lifted from their place; yes, tried it more than once, when a swarm had just issued from it, and didn't find all of the queen cells, as they swarmed and swarmed until satisfied.

But why all this fuss hunting for and destroying queen cells when there is a possibility of managing the bees so as to have them do that job themselves, and, if that can be accomplished, it will be done far more efficiently than by the hand of man, for, occasionally, we overlook a queen cell even when examining each comb separately.

In the year 1903 I was short of comb foundation, and, as a result, a couple of colonies built their combs across the frames, and couldn't be handled any more than bees in an old-time box-hive. I purposed getting them out of those hives in 1904, but didn't get my intention carried out; however, my plan was put into execution this past summer, and worked admirably, so much so that it led me to do some experimenting along the line of swarm controlling, going about it in this fashion: The honey boards were removed from those to be treated, and a hive containing old brood combs set on each of them which was an inducement for a queen to lay. In a couple of days I found the queen, in both instances, in the upper case. The comb on which the queen was found was set aside until the upper hive could be lifted off the one with the crooked combs, the comb having the queen was then replaced, a queen excluder placed on top of the hive and said hive set on the crooked combed hive stand, the latter then set on top of the one containing the queen and her fresh start; or, in other words, the position of the two brood chambers was exchanged.

In the course of a week or ten days this hive of crooked combs was lifted a story higher, and a hive of empty extracting combs placed in its stead. At the end of three weeks from the time the queen went upstairs, the hive of crooked comb was removed, the brood then having had ample time for maturity.

My scheme worked successfully in both of those instances, and I went on putting other strong colonies through the same ordeal, colonies that could be opened and their condition ascertained. It was a success on colonies which had queen cells within two days of being sealed over. As surely as the queen starts to laying in the new brood chamber, just so surely will the bees destroy all the queen cells regardless of the age of their larvae.

It is almost needless for me to dictate to intelligent bee-keepers as to what is best to be done with the hive of ... ing brood, as when once it takes

the place of the second story, two courses are open. In a week or ten days, either set it on a new stand to form a separate colony, when a queen or queen cell must be given it, or the bees can be shook off, and the combs of brood divided among weak colonies. Such combs would make a good attraction in other strong colonies to get the queen up, or they could be lifted bodily to the third story, as in the case of my crooked comb. Have the honey extracted at the end of three weeks from the time the queen left them, and you have a fine set of brood combs which can be used for such purposes as replacing the whitest combs in brood chambers, etc.

I might just add that my hive contains scarcely 2,000 cubic inches; and I think when filled with honey, is heavy enough for a man to lift high, and almost too much for the weaker sex bee-keepers.

POOLE, Ont., Dec. 1st, 1905.

[I did not understand that Messrs. Holterman and Cyrenius had any idea of preventing swarming by cutting out queen cells; their desire, as I understand it, was to learn if the bees were making preparations to swarm, and, if so, they would swarm them artificially, probably "shake" them. None of them expected to prevent swarming simply by cutting out queen cells.—Ed. Review.]

Editorial

The Rural Bee Keeper has been reduced in price to fifty cents a year.

The American Bee Journal has come out with some very neat, departmental headings.

The Editorial work of this issue of the Review has nearly all been done with the roar of honey laden bees in my ears.

A Magnet is the thing with which to pick up small iron nails if you spill them in the grass, says J. A. Green in Gleanings.

The Honey Producers' League, or, the m[illegible]y of its members, to be exact, has voted to turn over to the National the balance of the funds on hand, a trifle over $1,400, the National to use it for the same purposes that it was raised by the League.

Waller Harmer, of Manistee Ligan, prefers flat board cover[illegible]s is the case with a lot of sensib[illegible] and then he paints one side white to use turned up in summer, and the other side dark red to turn up in winter or spring. He discarded quilts and oil oil cloths years ago.

One Thousand bee-keepers, or something in that neighborhood, were present at the Bee-Keepers' Field Day, a recent gathering at Jenkintown, a suburb of Philadelphia. I should dearly loved to have been present, but there were too many irons in the fire to allow of my going.

Downwardly Projecting Cleats on the ends of hive-covers are objected to by Dr. C. C. Miller, in Gleanings, as he says that they make the cover unnecessarily long, and are more difficult to put on without killing bees. I see no objection to an increase of two or three inches in the length of a cover, and, if the cover *is* made long enough there is no trouble about killing bees when putting it on.

Control of Increase brought out a large number of most excellent articles, but, as the season of swarming and increase has now passed, it seems to me it will be better to wait until next spring before publishing any more on the subject. This will explain to some why their articles do not appear.

In Northern Michigan, is where I am at present, (July 16) and have been for the past week, helping to rig up honey houses and tents, extracting honey, etc., and I may remain here another week. My brother Elmer and one of his boys is now at the Morey yard extracting, and one boy and his mother are at home extracting, while another boy and myself are at the Boardman yard extracting. I'll tell you more about it next month.

Getting Queen Cells built by the superseding of the queen, because one of her legs has been cut off, has been practiced and recommended by Mr. Thos. Broderick, of New York. This plan does not seem to be infallible, but Mr. E. F. Atwater, of Idaho, writes me that it succeeds with him six times out of seven. He gets the cells started by using the Pratt swarm-box and wood-cells; then, in from 18 to 24 hours he gives from 10 to 16 of these cells to a superseding colony, and gets fine results.

Cement Hive Stands are mentioned in this issue of the Review, and I might add that C. A. Olmstead, of New York, has also written in their favor, but I think he has a different style than has Mr. Lhommedieu, as he says that for five cents he can make a stand 24x36 inches, and he mentions the advantage that they keep down the grass By the way, Mr. Olmstead objects to having more than one colony on a single stand *a la* Townsend. The work with one colony annoys the others. Some colonies don't seem to mind it, but others boil out and make life miserable for the operator.

Protests appear frequently in the bee journals against depending upon the Alexander plan of treatment for curing foul brood. The treatment is simply that of removing the queen allowing the bees to rear another. The vital point is that it allows all the brood to hatch, and that the bees clean out the cells most completely in anticipation of the laying of the young queen. By the way, Mr. Alexander has never said that it would cure the old fashioned or American foul brood, but others, especially Mr. Simmins of England, assert that a cure may thus be effected. So long as there are cells of infected honey in the hive, it seems to me that it would be impossible to get rid of the disease.

The Arrangements for extracting at the two apiaries where there are honey houses, are as follows: A platform about three feet high is built for the extractor, and this platform is large enough to allow room for the operator to stand, also for two or three hives of combs. On a platform a little lower stands a tub of galvanized iron with a honey gate at the bottom, and the top covered with cheese cloth for straining the honey. By the way this cheese cloth must be fastened very firmly, or the weight of the honey will pull it down. Ordinary twine won't answer. A small rope is needed, and this must be drawn tight by putting on a stick and twisting up the top. The honey runs from the extractor into the tub, passing through the strainer on its way, then below the tub, on a pair of scales, stands the can to be filled, the scales being set at the right weight to just fill the can. Then there is the electrical alarm attachment to give notice when the scale-beam rises up, as explained in another place.

We uncap into a cracker barrel having six-inch legs attached, and standing over a tub of galvanized iron. Three or four holes are bored in the bottom of the barrel. The cappings can stand and drain for weeks, and when we are ready to render them into wax it will be necessary only to cut the hoops, and pull off the staves, and there will stand the big cake of cappings all ready to break up and render into wax.

Would Cellar Wintering be an Advantage in Warm Climates?

B. A. Hadsell of Arizona, suggests that cellar wintering might be an advantage even in those locations, like his own, where bees can fly frequently during the winter. He says that this very activity causes late breeding a great consumption of stores, and he is inclined to believe that this would be a great saving in stores if the bees were put into a cellar in the fall, just the same as they are here in the North.

Of course only actual experience would settle this point, but I should doubt the advisability of putting bees into a cellar until they had at least stopped breeding; and there are some of us here in the North who would gladly allow the extra consumption of stores for the surety of safe wintering that comes from frequent winter flights.

Let the Truth Regarding the Crop be Published.

The bee journals and some of their correspondents have been severely critizised for publishing the reports of big crops of honey. It is said that the dealers get hold of these reports and use them to bear down the price. While there may be some truth in this, I think no harm would result if the poor yields were also given. Some producers seem to think that it would be a nice thing to conceal the fact of a large crop until it could be unloaded upon the dealers. Such a course would surely result in harm in the end, even if it could be brought about. Long experience has made dealers wary. They won't "load up," except at a very low price, until they are satisfied what the crop has been. Let me give just one illustration: A grocer in our town met me on the street last fall and said: "How is the honey crop, Hutchinson? You ought to know if any man does. I had a 1,000 pounds of nice comb honey offered me last week at a shilling a pound, but I didn't dare to buy it, even at that figure, for I didn't know anything what the crop had been. I offered the man ten cents for it. That was all I dared to give." I told him that the crop, as a whole, all over the country, was very light. It was fair here in Michigan, but much of it would be shipped out, and he would be perfectly safe in paying a shilling a pound for nice comb honey. "Well," he said, "if the man comes in again, I'll buy it, but, not knowing what the crop was, I was afraid of paying too much." You see, lack of knowledge, on the part of the dealer, regarding what the harvest has been, tends to depress the market. If all parties know *exactly*, truthfully, what the crop has been, it is an advantage to all concerned

One Instance Where Long-Range Bee-Keeping Fell Behind.

We have already had one illustration of what may happen when bees are left for a long time to care for themselves. When the bees were dug out of the clamps where Mr. Cavanagh, or his man, buried them last fall at South Boardman, we discovered that some of them were short of stores, and, about two weeks later, they were fed 100 ponnds of sugar, which we thought would be sufficient to carry them through. I had a sick spell which kept me at home for a month, and Elmer was busy picking up and mov-

ing, and we did not see these bees again for five or six weeks, when I went to move them to their permanent location, when I found that some five or six colonies had starved, and twice as many more were very short of stores, and had little brood as the result. Perhaps half of the colonies were in pretty fair condition. My own bees, at home, were short of stores, and I knew they were, but by going over them twice and equalizing the stores, then by feeding after apple bloom until the opening of white clover, they were brought up to the harvest with hives full of bees and brood—the best, I think, that I ever saw bees at that time of the year.

There are a great many things that a man can do for his bees, or with them, if they are constantly under his care, that are impossible with out-apiaries, or "long-range" bee-keeping. If a man is going to have an out-apiary that is visited only at intervals, he must do one of three things: leave sufficient stores in the hives, at the end of the season, to carry the bees through to another season; or feed them in the fall until they have sufficient; or else he must save out combs of honey in the fall to give them in the spring, which is the most satisfactory way of feeding bees in the spring, especially in an out-apiary.

I might say, in self-defense, that these bees ought to have been fed the previous autumn. They *were* fed *some*, but not enough—the feeding was delayed until it was too late. It will be seen, however, that this point could have been remedied had the bees been under constant supervision. If bees are managed on the "long-range" plan, such breaks as this must be guarded against.

Of course, I need not have told of this, but, apiculturally, I expect to live in a glass house the coming season, and if I make mistakes, or meet with reverses, they will be seen.

An Electrical Alarm When a Vessel is Full of Honey.

One of the most exasperating of things that can happen to a bee-keeper is to have the vessel that he is filling become full to overflowing, and the honey stand around on the floor in great puddles. Unless some precaution is taken, this is almost certain to happen when filling 60-lb cans. One plan is to have a float in the can, with a light standard attached that will reach up through the opening, when a glance at the float will show how full the can has been filled. If this glance is neglected or forgotten a little too long there is disaster. It will not answer to attempt to do some other work, and depend upon "remembering" to watch the cans.

The only way that I know of whereby a man can fill cans and still work at something else near by, is to have an electric alarm, an arrangement that will ring an alarm bell when the can is full. I am using such an arrangement this season with great satisfaction. Perhaps others have had a similar arrangement, but I do not remember seeing a description, and the plan was certainly original with myself.

Almost every one is familiar with the electric bell, that rings when a current of electricity is sent through its mechanism. The electric door bell is a familiar example. When the button in the door is pressed, an electric circuit is completed, and, as a result the door bell rings out in the kitchen or where ever it is placed. If the complete filling of a can or barrel with honey could be made to complete an electric circuit within which was an electric bell, then an alarm would be given. I solved the problem by so arranging matters that the raising of the brass beam on a pair of platform scales closed the circuit.

I used an ordinary door electric bell, and dry battery, such as can be bought at almost any hardware for half a dollar. Or it can be bought of Montgomery Ward & Co., or other mail order houses. Connect the battery and the bell by the insulated wire that comes with the bell, then cut one of the wires in two, scrape off the covering for a distance of two or three inches from each end, wind one end around the upright iron standard of the scales, and support the other end just slightly above the brass beam when it is down. Put your tin can on the scales, set them to the desired weight, turn on the honey, and go about your business, if the business is not out of sound of the bell. As soon as the requisite amount of honey has run in, the beam will rise and touch the wire, thus completing the circuit and ringing the bell.

The scales may be set a pound or two short, and then set at the correct weight after the alarm has been given, and the filling completed.

My honey is strained as fast as extracted, and run directly into the cans, and, by use of this alarm, it is an easy matter for those who are extracting to fill the cans at the same time with no danger whatever of those overflowing accidents.

****

The Honey Producers' League Turns Over Its Funds to the National—Just How Shall the Money Be Used?

The Honey Producers' League was organized with the idea in view of advertising honey, counteracting misrepresentations regarding its purity, and using all possible means of increasing its sale. For several reasons it did not meet with the success that its promoters had hoped would come. Beekeepers did not rally and come forward with their money and support as it was expec ed that they would. Many believed that the League was started in opposition to the National, and this roused a feeling of resentment. To quiet all of this feeling, the Directors proposed, at their last meeting, to turn over to the National the funds in the possession of the League, providing that the members of the League were willing, and, further, that the National would use the money for the same purposes for which it was originally contributed. It was also suggested that the National, in case it accepted the money, should appoint a committee to decide in *exactly* what way the money should be used to advance the sale of honey. The Directors of the National voted to accept the money ($1,408.27 and the chairman of the board, Mr. R L. Taylor, has appointed, as this committee, the General Manager of the National, Mr. N. E. France, and the Secretary of the League, your humble servant, W. Z. Hutchinson.

As a member of that committee, I would be very thankful for suggestions. I will suggest something first, and that may set others to thinking The first thing that comes to me, in this line, is the publication of short articles in the patent "insides" of papers—in what has been termed "boiler plate" matter. Most people are aware that in a large number of newspapers, only one half of the paper is printed at home. In Chicago, and some of the other large cities, are publishing houses the sole business of which is the preparing and printing of these "patent insides," for newspapers. The general news, and miscellaneous matter is printed upon one side of thousands and thousands of sheets, and these sheets are sold to newspapers all over the country, and the home news is then printed upon the other side There are, of course, different sized sheets made up, and the matter is not the same on all of them, and two papers in the same town, or near each other, are not furnished the same "inside."

In the first place, the Board of Directors should employ the very best talent, that the money will allow, to write short, readable articles, adapted to the public taste, and these articles should have as their main object (although that need not appear on the surface) the healthfulness and deliciousness of honey. Incidentally, the canards about artificial comb honey should be combated with good sound arguments.

Suppose we had 25 or 30 articles of this kind prepared by our very best men, paying them liberally, so that they could take pains to get the matter into the very best shape, then let some man like Ernest Root or Dr. Miller or Bro. York be sent to these "boiler plate" houses, with the articles on hand, and make arrangements for their publication. It is not likely that there would be much, if any, charge, for their publication, as they would be really good, readable matter, such as these houses are glad to get.

It might be well, also, to have half a dozen magazine articles prepared, illustrating them with good photos., and into these articles weave the same ideas in regard to the healthfulness and purity of honey, and the folly of the so-called Wiley lie.

It would not cost very much to carry out this scheme, and, it seems to me, for the amount of money that we have to spend, we would get more out of it than in any other way. Suppose we start that way and see how it pans out.

****

Have a Colony on the Scales.

This year, for the first time, have I had a colony on the scales, and it is well worth the cost simply for the satisfaction of knowing *exactly*, each day what the harvest has been. And this knowledge is sometimes of real, practical value. The demonstration that bees make, the flying about, in and out of their hives, is not always, I have found, a sure indication of the amount of honey being gathered. Sometimes they are working steadily, in a quiet sort of way, yet they are bringing in big loads of honey. Of course, an experienced man gives a close guess, when working in the apiary, as to the amount of honey coming in, but the use of scales shows that at least one man can be badly fooled.

If you have given all of the colonies super room, and the flow continues light, say, only two or three pounds per day, you will know, without even opening a hive, that no more room is needed. If the yield runs up to seven or eight pounds, and continues two or three days, it is a sure indication that more room will be needed on some of the colonies. A colony on the scales allows the operator to "feel the pulse" of the apiary, so to speak.

A colony is always from one to two pounds lighter in the morning than in the evening, caused, I suppose, from the evaporation of the nectar during the night. Then, after the bees go out to work, and are in full flight, the weight drops to another two or three pounds. If the yield is good, the scales will begin to balance again about noon.

The largest yield that I have had in one day was 9¼ pounds—the smallest two pounds. One day it was cold and the wind blew hard, and there was a loss of two pounds.

By the way, I have noticed that the wind is a very serions obstacle to the gathering of honey. Possibly it has some effect upon the secretion of honey. It certainly hinders the bees in their flight. There has been no good yield on a windy day.

If you haven't a hive on the scales, put one there. You can get a pair of platform scales for only $3.00, and it is worth the cost, simply in the pleasure and satisfaction of knowing each night, exactly how much honey has been brought in.

BLACK BROOD.

It Appears to Be Spreading in Different Parts of the Country.

New York bee-keepers have certainly had a serious time in the past few years with what has been called black brood, but what the scientists now declare is the *real* foul brood, caused by *Bacillus Alvei*; while they declare that what we Americans have been contending with and calling foul brood is not the disease caused by *Bacillus Alvei*. The real, or what might be called European foul brood, or what we have been calling black brood, seems to be really more virulent and destructive than the old fashioned foul brood. Foul brood, as we have known it, is often quite slow in its work, attacking a cell here and there, at first, and often requiring two years to destroy a colony. When black brood attacks a colony, great masses of brood are killed at once, as though a giant with poisoned breath had breathed into the hive, and the colony is gone in a few weeks.

For two years this European foul brood, or black brood, has been lurking in Southwestern Michigan, and it now seems to be making its appearance in other parts of the country, as will be gathered from the following that appears in the last issue of Gleanings:

Anywhere from one to half a dozen specimens of affected brood are being sent us every week during the summer. I have been fearful for some time that, in addition to the regular foul brood so named in this country, we have been getting specimens of black brood, or what the United States and Cornell bacteriologists call the European foul brood. During the last thirty days we have been handing in several suspicious samples to Dr. E. F. Phillips, of the Department of Agriculture, Washington, who in turn handed them over to the government Bacteriologist. The reports that I got back were somewhat alarming. One specimen of brood from Illinois, three from Pennsylvania, were pronounced to be black brood. I feared as much when I forwarded the specimens to Washington. Other specimens have been found in Caliafornia.

I have just examined two specimens sent from Michigan which I think are black brood without question.

When I first received this report from Washington I was a little uncertain what to do; but the more I thought of it the more I became convinced that I ought to inform the bee-keepers of those States that the insidious disease is lurking in their borders.

When it is remembered that black brood came very near wiping out bee-keeping in New York, and that it was only by the most strenuous efforts on the part of four of the best inspectors in the country that it was brought under control, the bee-keepers of these other States may well pause and ponder.

I would respectfully urge every bee-keeper to keep a tab on the brood in his yard. When he sees any unsealed dark-colored brood, especially if it be of a coffee color, yellow or brown, and finds further that it is accompanied by a sickening or foul odor, he had better send a sample of the brood *without any honey* at once either to Washington or Medina. But in any case send it in a *stout wooden or tin box, the whole wrapped in heavy manila paper.* Besides using a strong box, wrap the brood itself in parafined or oiled paper. It is not necessary to have a large sample of brood; but hunt up a small wooden or tin box and cut the brood to fit, so it will go in without crowding after it has been wrapped in parafined paper.

Remember to send *brood only* and *no honey* with it, for the honey introduces an element of danger to the recipient. *Brood samples put up in paper or paper boxes we shall not examine, but burn them before unwrapping; so don't send them.*

When sending samples be sure to put on your own name and address. About half a dozen of the samples sent us were not marked. As we are getting a good many every week, absolute identification of each sample is rendered difficult if not impossible.

It has been suggested that this black brood has been in various parts of the country for a long time, and perhaps more generally distributed than has been supposed, and its presence has

now been detected because of the work of the inspectors. Possible there is something in this view of the matter, but I know that I never saw anything like this until I saw it two years ago at Mr. Heddon's and in an apiary near his.

As I understand it, the treatment is the same as for our old fashioned foul brood; that is, shaking off the bees and allowing them to build new combs. Every bee-keeper should be on the watch for this foe, and be ready to stamp it out as soon as it is found.

In conclusion, let me once more caution queen buyers to burn up the bees and cage accompanying any queens they may buy. The food in the cage, and the bees that have consumed it, may be full of the germs of disease.

CLEANING UP EXTRACTING COMBS:

Some Reasons Why This Should Be Done at the End of the Season.

Some months ago I published in the Review an extract from the writings of Mr. G. M. Doolittle, wherein he rather opposed the practice of having the bees clean up the extracting combs at the end of the season—at least, he saw no necessity for so doing. The objection usually made to leaving them wet with honey is that the honey granulates, and the inference has been that this granulated honey, even though small in quantity, was likely to start granulation in the new honey stored in the cells. Mr. Doolittle called attention to the fact that bees clean out the cells before storing any honey in them, hence there would be no trouble from this source.

Now comes Mr. C. P. Dadant, in the American Bee Journal, and tells us, well, here is what he says:

If the crop is still on, at the time of extracting, we return supers as fast as extracted. If there is no harvest, returning the super would cause too much of an uproar, and we pile them up in the honey-house till the end of the day, when all hands turn out and in less than a half-hour all the supers are put back on the hives. The excitement is great, for a while, but as night approaches it soon subsides, and by morning everything is again quiet, for the honey has all been licked up and the cells in many cases have already assumed their clean appearance. The bees are indeed industrious little creatures, and never lose a minute to get things in ship-shape.

Some of the Swiss apiarists do not return the combs to the bees at the end of the last extracting, but prefer to keep them until spring, when, they say, it gives the bees some encouragement to receive the supers still sticky with honey. I do not like this method. The supers are apt to leak more or less, owing to the few drops of honey left about the edges of the combs. Then, the moisture during rainy weather renders the honey watery and causes it to run. Sometimes, during the warm days of fall, the honey that remains gathers moisture ferments and sours. There is great danger of some of this honey being retained and mixed with the honey of the new crop the following summer, and causing its fermentation. None of these accidents are to be feared if we return the combs to the bees immediately after extracting. The bees will at once gather up everything, and what honey is left will be put into compact shape so that there is no danger of its becoming watery and fermenting.

ADVERTISING HONEY AT FAIRS

And Making a Big Profit on the Honey That is Sold.

The season of fairs will soon be here, and I wish to say, with emphasis, that many a bee-keeper could greatly increase the demand for honey, and, at the same time, sell his own crop at a big price, by taking advantage of the crowds that gather at these annual autumnal outings. There are different methods of managing the business.

You last fall how successful the the Canadians were, and gave you their methods.

Mr. Poots, of Medina, Ohio, took up another plan, that of giving exhibitions with live bees, in a wire cloth

cage. This drew immense crowds, so much so that I believe the managers of the speed department objected to it on the ground that it drew the crowds away from the race track. Immense quantities of honey were sold at fancy prices.

There are still other ways of solving this problem and a most excellent one is very graphically described by Arthur C. Miller, in the American Bee-Keeper. Mr. Miller tells the story as follows:

If one may be permitted to judge by the pictures of honey exhibits, the evident aim of the exhibitors was to see how fantastic a block house they could construct from sections and bottles of honey and beeswax. The policy of the managers of the average agricultural and similar fairs or exhibitions is largely responsible for such exhibits, as their premium lists call for best or largest display, etc., and rarely is the exhibitor permitted to sell his merchandise.

A few far-sighted managers permit exhibitors to sell and deliver goods, provided their display for prizes is not disturbed. The object of these societies is to encourage the industries, and the selling of such merchandise as honey at such places is the best way to introduce it to new consumers; in other words, to encourage them by enabling the bee-keepers to find a market for their produce. Some energetic bee-men buy space with selling privileges at fairs and shows and make a profit on the transaction besides getting hold of a lot of permanent customers.

I propose here to tell the experience and methods of two men who are in the business. At the beginning I wish to impress upon the reader that these men and their clerks were total strangers to the public whose trade they were soliciting. Their first step was to hire about twenty feet of counter space at a large fair, paying $2 00 per lineal foot. Against the wall they had shelves for exhibits, and part of the counter was used for the same purpose. The exhibits were designed especially to arrest attention. Modern and old style hives were displayed, a [illegible] honey extractor and a nucleus of bees in a glass hive. Comb honey was displayed in cases made to take but one row of sections. This gave the display and took up small space. Enough loose sections were kept about for ready sale, the reserve supply being stacked under the counter.

Extracted honey was shown in bottles, but only a limited number of full bottles (jars) were shipped to the fair, just enough to make the initial display. Cases of washed jars were sent, and honey in cans ready to pour into jars, and each day before the opening of the fair the clerks filled enough jars for the day's trade. All this was to save in cost of packing, transportation and risk of breakage.

Little is new thus far, but now comes the vital part of their whole campaign. On the counter were two glass dishes of extracted honey, in each of which rested a long-handled, small-bowled spoon, such as is used at soda fountains. Also two plates with combs of honey, a dish of granulated honey, a plate of long narrow rolls, fresh and light, and a dish of crackers. The kind of crackers is of the utmost importance. They must be crisp, large enough to handle easily and small enough and of such shape as to be put into the mouth whole. Furthermore, these crackers must be very slightly salt, because such saltness brings out the flavor of the honey and overcomes the excessive sweetness which so cloys the palate of many persons. A cracker known to the trade as the "Longfellow" possesses these qualities to a nicety, and one cracker broken across the middle makes two pieces of just the proper size.

The use of small sticks or toothpicks to sample honey with were abominations these people would not tolerate. Not only would such sticks litter the floor when thrown away after use, but the mere suggestion of a toothpick in connection with a honey sample was repulsive. If the reader doubts this, just try the toothpick way and the cracker way; five people will refuse the stick to one who will refuse a cracker.

Everything was kept exquisitely clean. No dust was allowed to accumulate, no stickiness permitted anywhere, and whenever a dish of honey began to look untidy by reason of honey getting on the edges, a clean one was substituted. Clear, uncolored glass and white plates were used. Clean white cloth was used for wiping up any stickiness, wiping dishes, etc., and whenever a cloth began to look soiled it was thrown away. If a customer's fingers got sticky a clean, damp cloth was offered. In other words, every-

thing possible was done to make and keep things attractive to the most fastidious.

Two bright, alert and neat women were in charge, and when a person paused before them a taste of honey was offered. If accepted one of the women daintily picked up a cracker and with the long-handled spoon put a little honey on it and passed it out. By a little deftness the right amount of honey is readily guaged and neither customer or clerk get any on their fingers. The way people who "don't like honey" or for whom it is "too sweet," suddenly change their mind under such persuasion is surprising. Very frequently a sale follows the tasting.

The rolls are used for "honey sandwiches." They are split with a keen knife and either a slice of comb honey or else extracted or granulated honey put in it, at the option of the purchaser. The price was five cents and the sale was beyond all expectations. And the way it enlightened many regarding granulated honey was most gratifying. Only fresh delicate rolls were ever used.

The stream of questions was incessant, and the women were kept busy answering. Not being expert bee-keepers they were sometimes puzzled, but a cheerful reply was always ready. Strictly technical matters beyond their ken were referred to the two men, one or the other of whom were there at intervals. Artificial comb honey, fed syrups and adulterations, were the burden of the stories, and right here comes in the showing of the practical value of giving the public the whole truth. Copies of the January number of the American Bee Keeper were displayed, showing the illustration of artificial comb. In reply to the questions came the replies, Oh, yes, it can be made, but it does not pay, bee labor is the cheapest." And the honey sold and sold. The returns not only paid all expenses of wages, board of help, transportation, space rent, etc., but yielded a splendid profit on the honey sold. It is wonderful how many 5-cent sandwiches a pound of honey will make. It is hard to realize until the cash drawer is consulted.

Here are the methods epitomized:

An attention-arresting exhibit.

Alert, bright, quick-witted help.

Free samples served in a fastidious and appetizing way.

The best grade of honey.

A frank, straight story and a square deal.

Immaculate cleanliness at all times.

All are indispensible and each is of more importance than the other.

THE OLMSTEAD HIVE AND SYSTEM.

If every reader of the Review knew, as well as I know, what can be done with the new hive, and what a pleasure it is to do it, I believe they would not allow this season to pass without at least giving it a fair trial. Think of what it means to be able to examine one of the central combs without disturbing the bees to any extent. It is usually a tell tale of all the conditions in the hive. As I offer the hive it has, aside from the valuable features as described in the Review, many others that I believe will be appreciated by all who have to move bees. It has a plain solid bottom with a blizzard proof entrance for out-door wintering The cover is of the telescopic style. Over the sections, or combs, are three, ¼-inch air spaces, two ⅜-inch boards, and a sheet of galvanized iron. I do not NOW use the VanDeusen clasp, yet one can prepare it for moving, with an upper story, if desired, over the frames, and 50 square inches of screen at the bottom, besides a ⅛-inch crack beeween the super and the hive, in ONE MINUTE, without nails, lath or hammer.

The frames are Langstroth size, plain, yet at once rigid or loose, as described.

I am offering the hive complete, as described here and elsewhere in the Review, at $2.00 each, during April and May.

C. A. OLMSTEAD,

EAST BLOOMFIELD, N. Y

About Half the Apiary and the "Shanties" at the Pioneer Yard.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, AUG. 15, 1906. NO. 8

Reaping the Honey Harvest in Northern Michigan.

W. Z. HUTCHINSON.

I LOVE Northern Michigan. I love her bracing atmosphere and cool, refreshing nights. I love her pure water that bubbles up in springs and goes babbling away in little brooks with pebbly bottoms. I love her grand old forests of beech and maple. I love her wild berries—the red ones, the blossoms of which furnish such delicious honey, the black berries with their glossy black sides, that ripen in great clusters, and have that spicy flavor when they grow in the shade; and the huckleberries that make purple the surface of great desolate plains. I love her innumerable old, grass-grown lumber roads, that wind hither and thither, and are banked on either hand with the vines of wild berries, or canopied over with the branches of trees. I love her *newness* and *wildness*—and the two weeks that I have just spent in that region have passed like one long, bright holiday.

I first went up to help Elmer build a honey house at one of the yards, but when we reached the Boardman apiary we found every super full of honey, and the raspberry flow at its height. We set up the extractor in the shanty that is made to answer for a honey house, and went to extracting from the combs that were capped, or nearly so. We threw out about 1,600 pounds, enough to give temporary relief.

EXTRACTING IN A TENT IS AN UNCOMFORTABLE MAKE-SHIFT.

We next went to the Morey yard, where we had expected to build the honey house, and found everything full of honey there. There was no time to build a honey house, and the only possible way out was to set up a tent and extract in that. A tent is a make-shift at best. It is a last resort. If the weather is cool, or if the bees are gathering honey so that the tent can be left open, or if it can be set up in the shade, it is not so bad as it might be, but, if the weather is hot, especially if the sun shines, and the tent must be kept closed to keep out robber bees, it is one of the most insufferable places in which a man ever worked. It is not only hot, but it is close—suffocating.

Some one in our ranks, seems to me it was Bro. Doolittle, reported putting a setting hen under an empty bee hive, leaving the hive standing in the sun—forgetting all about it for some hours, only to find the hen dead. Working in a closed tent, standing in the sun, will make you think of this unfortunate hen.

The Morey Apiary.

There is also a glimpse of Mitchell Bros. narrow-gauge logging road.

HOW TO MAKE THE BEST OF A TENT.

To rig up a tent for extracting, I made a platform in one corner for the extractor by driving down four stakes, nailing boards across, and then laying boards upon the cross-pieces, and nailing them down. The platform was ot such a height that a pail could be set under the honey gate of the extractor. The tent was not high enough to allow the extractor to be placed at such a height that the honey could be run into a tub with a cheese cloth cover, and then from the tub into a can set upon scales, as was the arrangnment at the honey houses. An extractor placed at such a height would bring the head of the operator bumping up against the canvas roof of the tent. As it was, we had to draw off the honey into a pail and pour it into the strainer on the tub that was set up on some empty hives at such a height that the honey could be run into a can set upon the scales. As I have already said, a tent and all of its arrangements are of the make-shift order.

ENJOYING THE WILD WOODS.

The Morey yard, where the tent is set up, is about six miles from the home-yard, and the drive to it is nearly all of the way through the woods, along old winding lumber roads, with a "woodsy" odor in the air; and, after a hard day's work, how delightful such

a drive! At one place the road passed through several acres of willow herb that was just beginning to show its first purple blossoms, and Elmer said he should bring a few colonies here to see what would be the result. Then I must not forget the dinner eaten under the shade of the hemlock, and washed down with water from a spring brook that rushed and tumbled within sound of our ears. I have heard of grandmothers making stockings for their grandchildren, and knitting *love* into every stitch, and I wish that those who eat the honey that we are producing could also see the blue sky and fleecy clouds that were overhead, hear the song of the brook and the birds, and inhale the sweet *wild* aroma that loaded the air; I wish that all of these delights that thrilled me through and through could be stored up in the honey.

TRANSFORMING A LOG SHANTY INTO A NEAT, RUSTIC HONEY HOUSE.

We worked in this yard one day, extracting from the colonies that were the worst crowded for room, then Elmer went to Lake City after cans and three pairs of platform scales one for each apiary while two of his boys and myself went to work to rig up an old log shanty for a honey house at the home yard Pioneer. It was a log shanty, the roof leaked, and the floor was partly gone, and the planks broken, and it had no door hung, nor any windows in the window holes. First we covered the roof with tarred felt. Then we took everything out, and pulled up the floor and carried that out, and smoothed off the surface with a hoe, then wheeled in several loads of clean, white sand, and covered

A Glimpse of the Manistee River.

This is the most famous trout stream in the world, and we drive along its high banks in going to the South Boardman yard.

the earth with that. It looked and felt clean. We covered the window holes with wire cloth, and hung a door. Then a platform was built for the extractor, and one for the strainer-tub, and all of the extra hives, supers, and what not brought in and piled up systematically—it really was a transformation. Talk about going to theaters, and places of amusement, I don't know when I have enjoyed myself as I did changing that old, leaky shanty into a clean, orderly servicable honey house. There are some beautiful elms in front of it (see the frontispiece) and, really, it has an attractive, rustic appearance. Just to the right of this stands the shanty where Elmer lives, and just back of the shanty, not more than two or three rods, is one of those little tumbling, babbling brooks for which this part of Michigan is famous.

HOW A LATE, HARD FREEZE KILLED THE HUCKLEBERRY BLOOM, AND INJURED THE RED RASPBERRIES.

The next day Elmer took me back over to the Boardman yard. Some of this drive is over dreary looking plains, where the huckleberries grow, and some of the way the road winds along the high banks of the Manistee river—the most famous trout stream in the world. Just a word about the huckleberries. This year there are no berries, the blossoms being killed by a hard freeze that came about the middle of May. Elmer said he was out the evening before admiring the bloom, which made the plains look as though a light snow storm had passed over them—the next morning they were *black*. One can now travel miles without seeing one ripe berry. Ordinarily huckleberries are one of the most important crops of this part of Michigan. I have been told that $100,000 went into Missaukee County last year to pay for huckleberries. This may be an exaggeration, but I know it is no uncommon thing for a family to pick and sell $150 worth of berries during the season. Buyers come out on the plains to buy berries, and people come with tents and camp out and can berries. The freeze that did the damage this year was very severe—the most that has occurred in many years. Elmer said that some water standing in a wash dish out of doors was frozen solid. In some places farther north it destroyed the raspberry buds, and I know that the honey harvest here will be materially lessened on account of the freeze.

THREE CREWS AT WORK AT ONE TIME.

After bringing me to the Broadman yard, Elmer left me and his oldest boy, Frank, to extract some more honey, while he went back to take another boy, John, and continue the extracting at the Morey yard, while the youngest boy, Charley, and his mother were to extract at the home-yard; thus you see, for the last three days there has been an extracting crew at work at each yard.

HONEY BREAKING DOWN THE FLOOR.

Frank and I slept on the floor at one end of the honey house while the cans of honey were stacked up at the other end. I was awakened one night by a sharp cracking noise that sounded to me like timbers giving away. I lighted a match and investigated, but everything seemed normal, so I "turned in" again. Half an hour later, just as I was dozing off again, came the unmistakable *crack* of breaking lumber. I tumbled out and lighted the lantern, and then I could see that the floor had settled where the honey was standing. I hustled and moved about half the cans to another part of the room, and, afterwards, I piled the cases of honey out in the wood shed on the solid earth.

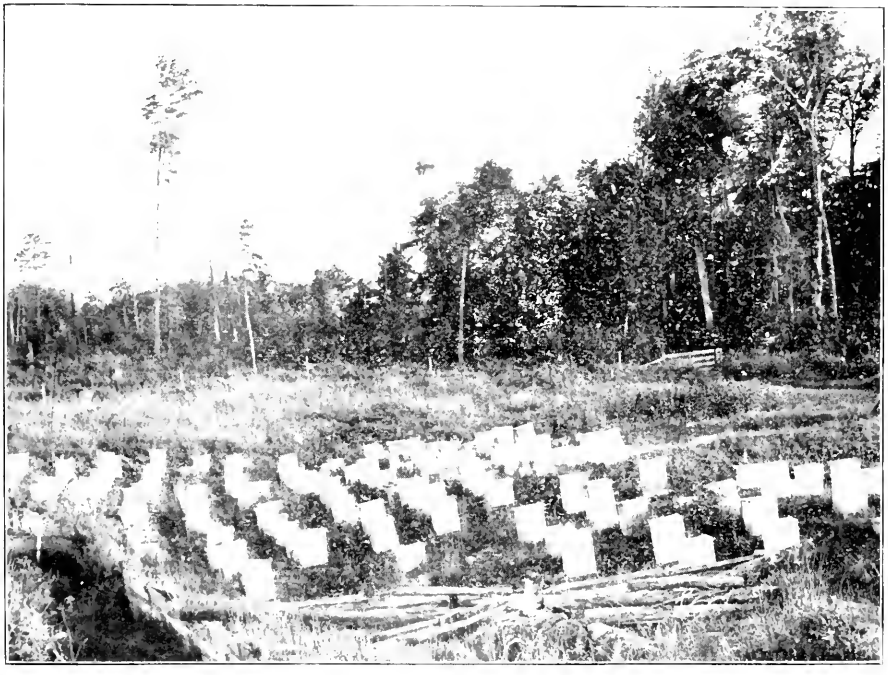
THE HONEY CROP IN NORTHERN MICHIGAN VERY LIGHT.

It might seem from the foregoing that we were getting an *enormous* crop—enough to break down floors. Not so,

there were only about two tons in the pile, but some of these old shanties are built none too solid, and there is no knowing how long this one may have stood here. I may as well say, first as last, that the honey crop in Northern Michigan came as near being a failure this year as I have ever known it to be. I expect that the freeze that I have already mentioned was the cause of it. The following extract from a letter just received from Mr. S. D. Chapman explains the situation as perfectly as it is possible. Among other things, Mr. Chapman says:—

On May 20th it was just 20 degrees above zero at my place. One-half of the raspberry was killed so that it never leaved out, and is perfectly dead today. North of here is even worse - and this is what is the matter with our honey crop. I will have about one-third of a crop- 9,000 pounds when I ought to have had 25,000 or 30,000. Bartlett has one-fourth of a crop; D. S. Kitson, of Charlevoix, only one-fifth of a crop; Mr. Martin has about one-third of a crop; and others one-fourth.

Our honey is not yet all off the hives, but I doubt if the average yield goes above 25 or 30 pounds to the colony, while 100 pounds to the colony is not unusual in this vicinity. One apiary is located where there is a large acreage of buckwheat sown, and, as one man who has kept a few colonies there for four years told me there had been a yield from buckwheat each year, there may be something of an addition to the crop from that source.



The South Boardman Apiary.

In the background are the choppings that furnish the raspberry bloom.

HOW SPRING FEEDING MIGHT HAVE HELPED.

Notwithstanding the damage from the freeze, I am quite sure that the crop might have been doubled, perhaps trebled, by judicious feeding during

the two or three weeks preceeding the opening of berries. The berries were late in opening, perhaps two weeks late, and some of the colonies not only consumed some of their stores, but greatly restricted breeding. It took a good share of the flow from berries to again put them in proper condition. Why did we allow this? We were too busy moving bees until it was too late to remedy the trouble. There is quite a lesson to be learned right here. I have before referred to the matter, viz., that the man who is to practice long range bee-keeping must have large hives and plenty of stores. Then, again, success can come only when the locality is thoroughly understood. For instance, here in Southern Michigan we usually have a flow from fruit bloom that gives the bees a big lift. In many parts of Northern Michigan there is no fruit bloom, and the bees gather little, or nothing, until berries bloom in June. It will thus be seen that there must be a large quantity of honey left in the hive in the fall, or else there must be spring feeding.

A MISTAKE WITH QUEEN EXCLUDERS.

I think there was also one other mistake made. Queen-excluding honey boards were placed upon eight-frame hives at the opening of the harvest, then supers put on above the honey boards. In a short time almost every colony was building queen cells and preparing to swarm. A comb of brood was then taken from each colony, the combs being used in making up new colonies. The honey boards were then removed. The queens at once invaded the upper story, but the swarming fever was cured—probably not more than one colony in ten swarmed. I think it would have been better to have left off the queen excluders at first, and then put them on later, after the harvest was well under way. An examination a week later will tell where the queen is, and that without hunting her up, when she can be put in the lower story, if not already there. As the brood hatches out in the upper story the combs will be filled with honey. In this way we get a large working force early in the season, and restrain the swarming fever. This is the plan I followed at the home-apiary, and it worked to perfection. When extracting the honey at this Northern Michigan yard, the queen excluders were put on again, and the only bad result of the putting of them on, and taking them off again, will be the rearing of a lot of workers that come on the stage of action after the berry harvest is past. However, this apiary is in the buckwheat region, and these workers may yet be of some use.

FLINT, Mich., July 26, 1906.

Old Combs Versus Starters When Hiving Swarms.

J. E. CRANE.

MY DEAR Mr. Hutchinson—Advanced Bee Culture came a day or two since; and isn't it a dandy? I was not prepared to see so large and comprehensive a work. And the half-tone illustrations, are fine. But the print is coarse enough me, that isn't the word, for there is nothing *coarse* about it, it is *large* enough to make the reading of it a pleasure for us who are getting a little along in years. I haven't had time to read it all, but have read and re-read the chapter on "The Use and Abuse of Comb Founda-

tion." Now, I like to agree with my friends and neighbors, but how *can* I think as you do on this subject, especially on the use of old combs for new swarms? I used to read, thirty-five years ago, or more, of the danger of honey clogged hives, but remember very few such in my forty years of experience.

When I shake a swarm upon old combs, and in eight days find the brood chamber of eight Langstroth combs two-thirds or three-fourths full of brood, and some of it already sealed, it doesn't look as though the bees had waited very long to polish the cells before the queen began to lay. I prefer to have the combs one-third or more full of honey, or, still better, perhaps two or three combs of solid honey, and the rest empty. I like them better than wooden dummies. I have even filled a brood chamber with old combs filled literally solid with honey, old honey, with only a few empty cells in the hive, putting a swarm on them, as an experiment, and all went well. Enough honey was carried above to the supers to make room for brood.

When a queen is removed during a good flow of honey, the combs are usually filled solid with honey; the lower third (more in the center than on the outside) is left unsealed, but as soon as the young queen begins to lay, the honey quickly goes "*up stairs*," as we say, and there is plenty of room for brood. I have tried (after reading about its virtues) hiving on starters, only to regret my blunder, as it seemed to me.

We usually have a fair flow of honey during clover, and sometimes basswood, and then a great dearth of honey, and I sometimes find colonies starving to death before I can get round to feed them—some that were in fair condition when the honey season closed.

Colonies shaken upon old combs, unless the queen is defective, rarely lack for brood, and frequently are starting queen cells and preparing to swarm again in two weeks, or less, and comb building and starting in supers seems to go on just as well, or even better, than in swarms that have not prepared to swarm at all. Perhaps by reducing the brood chamber to five combs as you suggest it might be a success. But I prefer to reduce to six frames, where I use foundation, but, by using a full set of old combs we have some, yes, more honey, stored for late summer and winter use.

Well, I will admit, in closing that I have sometimes thought that bees put on old combs have not done as well as I thought they *ought* to do; and perhaps I have not experimented along this line as much as I ought to have done—I shall try it over again the coming season if I can.

I wish I might think as you do, but must be true to my convictions Should further experiments prove that I have been wrong in my conclusions for this section, I shall take great pleasure in telling you so. I am not yet too old to learn.

MIDDLEBURY, Vt., Jan. 23, 1906.

[It is evident that there is some factor in my method of management that does not appear in that of Bro. Crane's, or *vice versa*. I did not mind so much the small amount of brood that resulted when hiving swarms on drawn combs, as I did the lessened amount of honey that went into the sections. Very little honey was stored in the sections until the brood nest was full, and then work was commenced *very slowly*. The first flush the *vim* of the swarming energy had been used to fill the brood chamber, and the work in the supers was done in a half hearted manner.

With starters only in the brood frames, the bees go into the sections with a rush, doing fully as good work as though they had not swarmed. It may seem paradoxical, but I should expect better work in the sections if a

swarm were hived upon solid combs of honey than I would if the combs were empty. In the latter case, the work is, of necessity, begun in the sections, the same as when starters only are used in the brood frames, and where bees *begin* storing their surplus, there they are inclined to continue.

Year after year did I continue to hive a few swarms on drawn combs, using the scales as a test of results, and the use of the combs resulted in a loss as compared with starters or full sheets of foundation.—ED. REVIEW.]

Editorial

Ohio now has not only a foul brood law but an inspector of apiaries, Mr. Henry Shafer. Bees are now taxed one cent per colony in Ohio to pay for inspection. Editor Root says that this will supply $1,000 a year.

****

The Strainer of cheese cloth that I have used this season was fastened on over the tub by means of a small rope twisted up with a stick, as was mentioned in the last Review, but Mr. Walter Harmer writes me that a better way is to sew the cloth to a hoop that is a trifle larger than the tub. This can be laid over the the top of the tub. There is no danger of its coming loose, yet it can be removed instantly for washing.

****

Cross Bees are an unpleasant feature of many bee yards. A year ago last spring, some of my bees were hybrids, and they would come to meet me rods away from the yard, and a swarm of them would dance around my head as long as I remained in the yard. Pure Italian queens were introduced, and as soon as the Italians took the place of the hybrids, I could work peaceably even without a veil. J. A. Green suggests in Gleanings that often it is only one or two colonies that furnish all of the cross bees in a yard, and by changing the queens in these colonies, peace may again reign.

Orange Blossom honey has been regarded by many as more or less a myth, but Mr. Frank McNay, of Redlands, California, tells, in Gleanings, how and why he sometimes gets it by the car load. He says that it yields very little in the cool regions near the coast, but farther inland, where the temperature is higher, and there is little fog, orange blossoms yield a fair crop four years out of five. With the exception of 1904, Mr. McNay has been able to ship one or more car loads of pure orange-blossom honey each year. He says he has seen the nectar so abundant as to daub the clothing of pruners and pickers, and even the backs of horses while cultivating. A man who visited California this last spring told me that they put blankets upon the horses to keep the orange bloom honey off their backs, and I—well, I kept my thoughts to myself.

****

Caucasians have been tried, to a slight extent, by my neighbor, Mr. August Koeppen, of this place. He finds them good workers, and excellent comb builders. He showed me, the other day, some well-filled sections that were "put up" by a colony of Caucasians. Mr. A. D. D. Wood, of Lansing, Michigan, writes me that he got his first Caucasians this year, in June; they coming direct from the Caucasian mountains. As reported he finds them extremely gentle he having yet to receive his first sting. They cap

heir honey snowy white, and have, so far, proved the equal of the Italians. Mr. Wood expects to stock 100 colonies with Caucasians this fall. I give these items, as I am willing that both sides of the story shall be told regarding the Caucasians.

Italian bees are, I believe, more peaceably inclined to their fellows, as well as to man, than is the case with hybrids, so-called. There is no colony more difficult to introduce a queen to than is a hybrid colony, and Dr. C. C. Miller tells in Gleanings of his experience in placing a weak colony over a strong one last spring, and the weak colony, queen and all, was slaughtered. Then, very pertinently, he asks "was it the hybrid blood?" Editor Root says "yes," and I am inclined to agree with him. As a rule, Italian colonies can be united with very little quarreling, which is not usually the case with hybrids. I tried uniting two hybrid colonies in an out-apiary this spring, and the result was a loss by fighting that equaled one of the colonies. In the home-yard, where all are Italians, I exchanged places with at least 50 colonies, putting weak colonies in the place of strong ones, to even them up, and there was not a particle of fighting, and not a queen was killed.

Tin Rabbets are something for which I could never see the slightest use, and Mr. J. E. Crane says, in Gleanings, that he finds the space back of them so filled with propolis as to make of them a nuisance. Dr. Miller agrees, but says that with the right kind of a tool it does not take long to clean out the little troughs, and, until they are filled, the frames are much easier to handle on account of the tin rests. I will admit that, with tin rests the frames are more easily pried loose, but here is the point: After frames have been in use a few months, they must be pried loose before they can be handled, regardless of how they are supported, but the *amount* of strength needed to loosen them is not very great. It requires no more time, and no more *appreciable* effort, to loosen frames supported upon plain wooden rabbets than it does those on tin rabbets, hence, I see no gain in using the latter. To me, tin rabbets are in the same catagory with, dovetailed corners, Hoffman frames, self-spaced frames, and all such useless paraphanalia that costs money and brings nothing in return.

The Michigan State Association.

Join the Association now, and it will help you sell your honey. The Association issues, annually, a booklet giving the names and addresses of the members, and the amount and kind of honey that they have for sale. This report is mailed to honey dealers and consumers all over the country. This booklet is to be issued now very soon; join now, and your name will appear in the coming issue. The Association holds an annual convention, usually in February, where you can meet bee-keepers of State and National reputation. The purpose of the Association is to forward the interests of its members in every possible manner. Send one dollar to Elmore M. Hunt, Bell Branch, Mich., and it will make you a member for one year.

How Shall we Build a Cheap Cellar?

My brother and myself will have three bee cellars to build this fall in Northern Michigan, and any hints as to their construction will be more than welcome.

At each apiary there is a sandy hillside nearby, which will allow the building of a cellar in such a manner that no stairs will be necessary—so that the bottom of the cellar will be level with the outside ground at one end of the cellar.

With team and scraper it will be an easy matter to scoop out most of the earth for the excavation. So far, so good. Now, of what material, and how shall the walls and roof be built? If we knew, positively, that we were going to occupy the same locations for 15 or 20 years, it might be advisable to build walls of stone or cement, but most of the bees that we are managing in this region belong to other people. In two or three years the owners may decide to sell out, or to run their own bees; or we may find other locations that are more desirable. There are various reasons why we wish to build these cellars with the least possible expense, so that the loss will not be great should it become desirable to abandon them.

Years ago, when living at Rogersville, I built such a cellar, and sided it up with logs—built a regular log house, and laid large, well-seasoned, oak rails across, put on some straw, and covered the whole with two or three feet of earth. No roof was put on over the earth, and the water trickled down through in wet times. I think there ought to be a roof over a cellar like this, although bees wintered perfectly in this one. It lasted some seven or eight years, then the rails and timbers rotted, and it caved in. I might build such a cellar up here, but, even in this wooden country logs have a most decided cash value; besides, there is considerable labor attached to the cutting, hauling and putting of them in place. People in this part of the country no longer build log houses. Lumber is cheaper.

Mr. Cavanagh had one cellar the walls of which were composed of cedar posts set on end, and the roof was of the same material covered with straw and earth, with a roof over all. This would be quite desirable, but it was quite a little work to build it.

I had the right of setting up cedar posts around a [illegible] perhaps four feet apart, and boarding up with hemlock lumber, which is quite cheap in this region. I would have "plates" laid along on top of the posts, also a "ridge pole" in the center supported with posts, and lay cedar fence posts from the plates to the ridge pole, covering the poles with straw, then with earth, and putting on a roof over all. If there is a better way, tell me.

****

Black Brood and Foul Brood.

Perhaps we may as well begin to learn to call the latter American foul brood, and the former European foul brood, as this seems to be the decision of a majority of the inspectors.

I have spent several days in the Southwestern part of Michigan, where foul brood of the European variety, the so-called black brood, has gotten quite a foot-hold. During two of these days, Mr. N. E. France was with me, taking observations, that he might be able to recognize the pest should it appear in his State. One day, Dr. E. F. Phillips, of Washington, D. C., was with us. By the way, Dr. Phillips has been out during most of the working season of the present year, observing and studying these two types of foul brood. Much of the time has been spent with the inspectors of New York, and it is doubtful if there is anyone more thoroughly informed on this subject than is Dr. Phillips.

There are wide differences between these two types of the disease, and it would be difficult to say which was the more destructive or difficult to cope with. Black brood, or European foul brood, is certainly more virulent than is the old fashioned or American foul brood, when it first appears in a locality, but, after which, in two or three years, it often loses its virulence in a large degree. Two years ago, when I first found the disease near Dowagiac, it would wipe out full col-

onies in a few weeks. I could find whole combs filled with dead brood—only a few living larvae in a comb. Now it would be difficult to find 50 dead larvae in the worst infected comb. One year ago I helped Mr. Heddon find and kill 20 queens, there not being enough bees left in the 20 hives to make one good colony. Mr. Heddon now has a dozen strong colonies, part of them with no trace of the disease, and none of them with more than a few cells of diseased brood; and the strange part of it is that he has done absolutely *nothing* in the way of treatment. I would not like to say anything that will make men careless or neglectful, or to raise hopes that the disease will pass away or "cure itself," as this has not been the experience of the New York folks, but it is undoubtedly true that it loses its virulence in a very much greater degree than is the case with the American variety. There have been cases in which it appeared in a colony, and then disappeared, and never again appeared. There are probably some peculiar circumstances in such cases, which would solve the mystery if we only knew them. The American foul brood never cuts up such capers as this. Once it is in a colony it is there to *stay*, unless removed by the hand of man. It *may* lose its virulence to a *slight* degree. Some men who have had a long experience with it think that it does, but it is too slight, even if true, to have any practical bearing. The American foul brood is like a bull dog—once it gets a grip it never lets up. There is one reason for this difference: The scale of the American variety, when it dries down, sticks to the side of the cell so closely that it is impossible for the bees to remove it—it almost becomes a part of the cell-wall. In the European variety the scale can be easily removed—is so loose that it may even drop out in the handling of the comb. The bees can very easily clean out the cells if they choose, something that they cannot do with the American variety.

The bees seem to be able to resist and, in a *measure*, overcome black brood. Strength of colony and variety of bees have a bearing. Italian bees put up a much more successful fight than do the blacks. One of the first steps recommended by the New York inspectors is the introduction of Italians. This, alone, will not effect a cure, but is a great help in that direction. With the American foul brood, variety of bees, or strength of colony have not much bearing. Once the infection is in a cell, it is there to *stay*. Other cells become infected, and it *stays* there. The bees can't clean it out, and the time finally comes when there are few clean cells in which to rear brood, and, even in clean cells the brood is almost certain to become infected from the food that is given it. The colony is doomed.

I can readily see how the Alexander method of leaving a colony queenless until the brood has hatched may prove effectual under certain conditions. Here is a point that must not be overlooked: Mr. Alexander's frames and hives are small. In the spring the combs are practically free from honey, the *old honey with its contagion is gone* and Mr. Alexander proceeds to feed. With large hives and combs, in which old stores, perhaps infected, are carried over from season to season, the results might be different.

Another point of difference, according to Dr. Phillips, is that black brood is a spring disease, that is, it is more virulent in the spring. It may disappear from a colony in the fall, only to appear again in the spring. If there is any season of the year when American foul brood is at its height it is in the fall.

American foul brood spread across the country much more slowly than does the European variety. With the

former it is almost always possible to trace the source of the contagion, while the latter often appears in an apiary several miles from other bees, and in a manner that might be called mysterious.

There is one very important point upon which both varieties are exactly alike; they can be eliminated completely from any apiary by shaking off the bees and allowing them to build new combs. I was in one apiary of about 70 colonies, many of which were diseased last spring with black brood, and all were "shook" except four colonies, and not a trace of the disease could be found—combs and brood all clean, bright and healthy.

EXTRACTED DEPARTMENT.

CEMENT MORTAR AND CONCRETE,

Some Suggestions as to its Use in Buildings, Walls, Etc,

There are probably some bee-keepers who are thinking of this fall building a permanent bee-cellar, and the question of what shall be used in building the walls is a serious one. In many places concrete made of Portland cement, sand and gravel will be the most desirable for several reasons. It is cheap and durable, and, if a few suggestions are followed, the work can be done by unskilled labor. The United States government has gotten out a bulletin on the subject, and from that I extract the following points:—

Cement mortar is an intimate mixture of cement and sand mixed with sufficient water to produce a plastic mass. The amount of water will vary according to the proportion and condition of the sand, and had best be determined independently in each case. Sand is used both for the sake of economy and to avoid cracks due to shrinkage of cement in setting. Where great strength is required, there should be at least sufficient cement to fill the voids or air spaces in the sand, and a slight excess is preferable in order to compensate for any uneven distribution in the mixing. Common proportions for Portland cement mortar are 3 parts sand to one of cement, and for natural cement mortar, 2 parts sand to 1 of cement. Unless otherwise stated, materials for mortar or concrete are considered to be proportioned by volume, the cement being lightly shaken in the measure used.

A "lean" mortar is one having only a small proportion of cement, while a "rich" mixture is one with a large proportion of cement. "Neat" cement is pure cement, or that with no admixture of sand. The term "aggregate" is used to designate the coarse materials entering into concrete—usually gravel or crushed rock. The proportion in which the three elements enter into the mixture is usually expressed by three figures separated by dashes—as, for instance, 1 3 5—meaning 1 part cement, 3 parts sand, and 5 parts aggregate.

In mixing cement mortar it is best to use a platform of convenient size or a shallow box. First, deposit the requisite amount of sand in a uniform layer, and on top of this spread the cement. These should be mixed dry with shovels or hoes, until the whole mass exhibits a uniform color. Next, form a crater of the dry mixture, and into this pour nearly the entire quantity of water required for the batch. Work the dry material from the outside toward the center, until all the water is taken up, then turn rapidly with shovels, adding water at the same time by sprinkling until the desired consistency is attained. It is frequently specified that the mortar shall be turned a certain number of times, but a better practice for securing a uniform mixture is to watch the operation and judge by the eye when the mixing has been carried far enough. In brick masonry the mistake is frequently made of mixing the mortar very wet and relying upon the bricks to absorb the excess of water. It is better, however, to wet the bricks thoroughly and use a stiff mortar.

In securing sand for mixing mortar or concrete, if it is possible to select from several varieties, that sand should be chosen which is composed of sharp,

angular grains, varying in size from coarse to fine. Such sand is, however, not always obtainable, nor is it essential for good work. A coarse-grained sand which is fairly clean will answer the purpose. If gravel, sticks, or leaves be present they should be removed by screening. The voids in sand vary from 30 to 40 per cent, according to variation in size of grains. A sand with different-sized grains is to be preferred, because less cement is required to fill the voids. By mixing coarse and fine sand it is possible to reduce the voids considerably.

It is customary to use the terms "river sand," "sea sand" or "pit sand," according to the source of supply. River sand as a rule has rounded grains, but unless it contains an excess of clay or other impurities, it is suitable for general purposes. When river sand is of a light color and fine-grained it answers well for plastering.

Pit sand for the most part will be found to have sharp, angular grains, which make it excellent for mortar or concrete work. Where clay occurs in pockets it is necessary either to remove it, or else see that it is thoroughly mixed with the sand. The presence of clay in excess frequently makes it necessary to wash pit sand before it is suitable for use.

The results of tests made in this laboratory would indicate that the presence of clay, even in considerable amounts, is a decided benefit to "lean" mortars, whereas it does not appreciably effect the strength of a rich mixture.

It is important that gravel for use in concrete should be clean, in order that the cement may properly adhere to it, and form a strong and compact mass. As with sand, it is well to have the pieces vary in size, thereby reducing the voids to be filled with mortar. The voids in general range from 35 to 40 per cent.

Cement concrete is the product resulting from an intimate mixture of cement mortar with an aggregate of crushed stone, gravel or similar material. The aggregate is crushed or screened to the proper size as determined from the character of the work. In foundation work, stone or gravel 3 inches in size may be used to advantage, whereas in the case of molded articles of small sectional area, such as fence posts, hollow building blocks, etc., it is best to use only such material as will pass a one-half inch screen. An ideal concrete, from the standpoint of strength and economy, would be that in which all voids in the aggregate were completely filled with sand, and all voids in the sand completely filled with cement, without any excess. Under these conditions there would be a thoroughly compact mass and no waste of materials.

It is a simple matter to determine the voids in sand and also in the aggregate, but in mixing concrete the proportions vary a great deal, depending ing in each case upon the nature of the work and the strength desired. For example, in the construction of beams and floor panels, where maximum strength with minimum weight is desired, a rich concrete is used, whereas in massive foundation work, in which bulk or weight is the controlling factor, economy would point to a lean mixture. When good stone or gravel is used, the strength of the concrete depends upon the strength of the mortar employed in mixing and the proportion of mortar to aggregate. For a given mortar the concrete will be strongest when only enough mortar is used to fill the voids in the aggregate, less strength being obtained by using either a greater or less proportion. In practice it is usual to add a slight excess of mortar over that required to fill the voids in the aggregate.

It is more accurate to measure cement by weight, unless the unit employed be the barrel or sack, because when taken from the original package and measured in bulk there is a chance of error due to the amount of shaking the cement receives. As it is less convenient, however, to weigh the cement, it is more common to measure it by volume, but for the reason stated this should be done with care.

For an accurate determination of the best and most economical proportions where maximum strength is required it is well to proceed in the following way: First, proportion the cement and sand so that the cement paste will be 10 per cent in excess of the voids in sand; next, determine the voids in the aggregate and allow sufficient mortar to fill all voids, with an excess of 10 per cent.

To determine roughly the voids in gravel or crushed stone, prepare a water-tight box of convenient size and fill with the material to be tested; shake well and smooth off even with the top. Into this pour water until it rises flush

with the surface. The volume of water added, divided by the volume of the box, measured in the same units, represents the proportion of voids. The proportion of voids in sand may be accurately determined by subtracting the weight of a cubic foot of packed sand from 165, the weight of a cubic foot of quartz, and dividing the difference by 165.

For general use the following mixtures are recommended:

1 cement, 2 sand, 4 aggregate, for very strong and impervious work.

1 cement, 2½ sand, 5 aggregate, for ordinary work requiring moderate strength.

1 cement, 3 sand, 6 aggregate, for work where strength is of minor importance.

In mixing concrete by hand a platform is constructed as near the work as is practicable, the sand and aggregate being dumped in piles at the side. If the work is to be continuous, this platform should be of sufficient size to accommodate two batches, so that one batch can be mixed as the other is being deposited. The cement must be kept under cover and well protected from moisture. A convenient way of measuring the materials is by means of bottomless boxes or frames made to hold the exact quantities needed for a batch.

A very common and satisfactory method of mixing concrete is as follows: First measure the sand and cement required for a batch and mix these into mortar as described on page 5. Spread out this mortar on a thin layer and on top of it spread the aggregate, which has been previously measured and well wetted. The mixing is done by turning with shovels three or more times, as may be found necessary to produce a thoroughly uniform mixture, water being added if necessary to give the proper consistency. The mixers, two or four in number according to the size of the batch, face each other and shovel to right and left, forming two piles, after which the material is turned back into a pile at the center. By giving the shovel a slight twist, the material is scattered in leaving it and the efficiency of the mixing is much increased.

Concrete should be deposited in layers of from 4 to 8 inches and thoroughly tamped before it begins to harden. The tamping required will depend upon the consistency of the mixture. If mixed very dry it must be vigorously rammed to produce a dense mass, as the proportion of water increases less tamping will be found necessary. Concrete should not be dumped in place from a height of more than 4 feet, unless it is again mixed at the bottom. A wooden incline may be used for greater heights. Rammers for ordinary concrete work should weigh from 20 to 30 pounds and have a face not exceeding 6 inches square. A smaller face than this is often desirable, but a larger one will be less effective in consolidating the mass. In cramped situations special forms must be employed to suit the particular conditions. When a thickness of more than one layer is required, as in foundation work, two or more layers may be worked, at the same time, each layer slightly in advance of the one next above it and all being allowed to set together. At the end of a day there is usually left a layer partially completed which must be finished the next day. This layer should not be beveled off, but the last batch of concrete should be tamped behind a vertical board forming a step.

To avoid introducing a plane of weakness where fresh concrete is deposited upon that which has already set, certain precautions have to be observed. The surface of the old work should be clean and wet before fresh material is put on, a thin coating of neat cement grout being sometimes employed to insure a good bond. The surface of concrete to receive an additional layer must not be finished off smoothly, but should offer a rough surface to bond with the next layer. This may be done by roughing the surface while soft with pick or shovel, or the concrete may be so rammed as to present a rough and uneven surface. Wooden blocks or scantling are sometimes embedded several inches in the work and removed before the concrete hardens, thus forming holes or grooves to be filled by the next layer.

As stated before, it is important that concrete be tamped in place before it begins to harden, and for this reason it is proper to mix only so much at a time as is required for immediate use. The retempering of concrete which has begun to set is a point over which there is much controversy. From tests made in this laboratory it would appear that such concrete suffers but little loss of strength if thoroughly mixed with sufficient water to restore normal consistency.

The time required for concrete to set depends upon the character of the cement, upon the amount and temperature of the water used in mixing, and upon the temperature of the air. Concrete mixed dry sets more quickly than if mixed wet, and the time required for setting decreases as the temperature of the water rises. Warm air also hastens the setting.

Lumber used in making forms for concrete should be dressed on one side and both edges. The expansion and distortion of the wood due to the absorption of water from the concrete frequently make it difficult to produce an even surface on the work, and unless the forms are accurately fitted together more or less water will find its way out through the cracks, carrying some of the cement with it. A method sometimes adopted to minimize the effect of expansion is to bevel one edge of each board, allowing this edge to crush against the square edge of the adjacent board when expansion takes place. In the case of wooden core or inside mold, expansion must always be taken into consideration, for if neglected it may cause cracks or complete rupture of the concrete. Sharp edges in concrete are easily chipped and should be avoided by placing triangular strips in the corners of the molds To prevent cement from sticking to the forms they may be given a coating of soft soap or be lined with paper. This greatly facilitates their removal and enables them to be used again with but little scraping. A wire brush answers best for cleaning the forms.

REQUEENING COLONIES.

How it May be Done at Little Expense After the Close of the White Honey Harvest.

Thus far I have never killed off old queens and substituted younger ones in their places; I have allowed the bees to do their own superseding. Whether I shall always follow my present practice I don't know. My home yard this year was stocked mostly with young queens, those of last year's rearing, consequently there was no lack of laying powers on the part of the queens, but I do think that the honey crop in some of the out-apiaries was lessened from old queens. All of the colonies will be looked over this month, and every queen that shows signs of failing will be replaced with a young queen. Some of these queens will be reared and some bought.

If colonies are to be requeened, I think after the harvest is better than in the spring, as the leaving of a colony queenless a few days at this time of the year does no great harm.

If a man is to rear his own queens, I know of no simpler or better plan the one described in Gleanings by Mr. G. Mr Doolittle in the seventh chapter of his interesting series articles entitled "A Year's Work in an Out Apiary." Briefly, the plan is that of killing the old queen and giving the colony a ripe cell, but Bro. Doolittle gives the details so graphically that I can't resist the temptation to copy that part of his article. He says:—

Having found the queen and killed her, the next work is to give them one of the ripe queen-cells I have brought. In taking them from the brooding colony at home, each one was placed in one of the West cell-protectors, so that the bees would not destroy the queen by cutting into the cell before they were aware that their old mother was gone. Each cell-filled protector was partially imbedded in a sheet of cotton wadding, cut to fit into the bottom of a paste-board thread-box, easily obtained at any drygoods store. Having the number required in the box, another right-sized sheet of wadding is put over all, the cover to the box put on, and a rubber cord sprung around the whole to keep all in a secure position so that the cells cannot roll around when the box is handled. One end of the box is marked *top*, and the base of each cell is placed toward this end of the box so that I may always know that the cells point down when carrying the box in my inside vest pocket, or pocket in my shirt, where cells are always carried at all times except when used in the bee-yard where they

A "ripe" cell is one from which the queen will emerge in from twenty to

thirty hours, and I have often carried such for from one to twelve hours, in the way here given, without the loss or injury of a single queen. In this work the wadding is far preferable to cotton batting, for the glazing on the wadding keeps the cotton from sticking to the cell or cell-protector, as it is otherwise liable to do.

After killing the queen the frames are all put back in the hive, when two of the center ones are pried apart enough so that the cell-protector will go down just under the top-bar to the frame, when the frames are brought back to place again, thus imbedding the protector into the comb so it is securely fastened there until removed by the apiarist. As this is the season of the year when the bees do most of their superseding of queens (it seems so natural to them), my loss in using this plan will not average more than one queen-cell out of twenty given. So small a loss will not pay for a special visit to the apiary to ascertain whether colonies so treated obtain laying queens or not—especially as the colony which will occasionally destroy a cell or kill the just-emerged virgin queen have brood of their own from which to rear a queen, so the loss is never very great should an occasional cell be destroyed. Of course there is a chance that the young queen may be lost when going out to meet the drone, in which case that colony is doomed unless rescued by the apiarist. In such a case as this the observing apiarist will easily discover the loss by an outside diagnosis of such colonies at a later visit to the apiary. This requeening at this time is so easily done that there is no excuse for having poor queens at the out-apiary.

The reader may think that what is here given conflicts with what I have written in the past about allowing the bees to take care of the superseding of their queens themselves. With the small and contracted brood-chamber, I still hold that the bees will take care of that matter fully as well as the apiarist can; but with this system of working, and that with ten-frame Langstroth hives, a queen will lay nearly as many eggs in two years as she would under the contraction system in three or four years; so that any queen which is more than two years old is almost sure to be played out; therefore I make it a practice with this plan to supersede all queens which are two years old at this time, and in the way given above. This plan is one of strenuousness too, all the way through, by which we get a multitude of bees in the field at all times during the honey harvests; and even when ordinary colonies are doing nothing, or securing only a living, these rousing colonies are actually laying up stores. Last May, when the colonies as ordinarily worked were living only from hand to mouth, these big colonies at the out-apiary actually laid up from 20 to 30 pounds of stores in the combs above their brood. And then when other colonies were working a very little or not at all in the section supers, these were completing their first 44 sections, and well at work in the second super of 44 above. Such work as this is enough to cause the queen to produce all the eggs in her ovaries in about two years; and as the work of superseding as given above is easily done, I think it well pays to kill any queens when two years old, and give a cell to the colony, unless it is a queen that has proven herself of extra value, when I would keep her to breed from the next year, should she live through.

Just a word about what a populous colony will do: Some of you may remember that some of my colonies were extra strong last spring on account of the bees "drifting" when set out of the cellar, well, it was a surprise, even to me, to see the amount of honey that some of these colonies brought in from the few scattering willows, elms, soft maples, and the like. Ordinary colonies gathered little more than they consumed but these extra colonies filled several combs besides.

OUT DOOR FEEDING.

Some of the Abuses, and How It May be Used to Prevent Robbing.

Most of us have looked upon the exposure of sweets during a honey dearth, as a sure forerunner of honey robbing, and, as usually done, so it is, but it seems it is possible by this very exposure to attract the bees *away* from any hive that is opened. Last year

Ernest Root experimented quite extensively along this line, and published in Gleanings the result of this experimenting, and, as the time is now here when robbers are likely to become troublesome if hives are opened, I can do no better than to copy the article entire. M. Root said:

We have overcome to a great extent the difficulty of wearing out bees experienced with the outdoor feeding as mentioned on p 906 of our last issue. We use 60 lb cans with small holes punched in the top as before. These are *now* filled with syrup of the consistency of two parts of water to one of sugar. The weaker syrup has less of a tendency to make the bees scramble against each other. Then, to mitigate further the damage to the bees by reason of their struggling against each other, the 60-lb. cans are elevated some *ten feet above the ground*. The wire bail or handle that is in the top is unsoldered. The can is then turned upside down, and the handle is soldered to the bottom. The other end of the can is perforated with small holes, as before explained. A rope is passed over a limb of a tree, 12 feet or more above the ground. When the can is filled with the two-to-one syrup, the rope is tied to the bail (now on the bottom of the can), when the can is hauled up to the height of about 10 feet. It may take several hours for the bees to find it; but when they do they will begin in earnest The bees will form in bunches at the perforations, and drop down; but instead of dropping with a thud or a jar to the ground or in the grass, sustaining more or less of a shock, and wearing out their wings in the scramble to take wing in the grass, they catch wing before they actually strike the ground, and fly up again. They no more than get a little sip of syrup than down they go again, catch wing, fly up, take a sip and down again, and so on. The under side of the tin is so smooth that there is nothing for the bees to cling to, and they can not do very much scrambling. But just the minute two or three get to tugging at the same hole down they go. The result is, we have produced almost all the conditions of an artificial honey-flow. It takes the bees so long to get a load of syrup that they fly back and forth to the hives quietly, and without excitement. The 60 lb. cans of dilute syrup will keep a yard of some 300 colonies during an absolute dearth of honey quiet for a couple of days so that the hives can be opened indiscriminately, and combs exposed without any robbing. It begins to develop now that the bees that do most of the robbing represent but a very small portion of the whole yard. It is these that we keep busy by outdoor feeding. As they can not do any scrambling to any extent there is not the same wear and tear that we experienced in our early experiments. We feed up for winter all of our 300 colonies at the home yard by this outdoor feeding. What is more, this syrup is ripened in nature's way, and therefore must make an ideal winter food.

I am becoming more and more convinced that there is more to this outdoor feeding than we formerly supposed. Very often extracting has to be deferred until after the honey-flow, or during an absolute dearth of honey. It is *then* that robbing will go on at a furious rate; for it is simply impossible, in opening the hives, shaking and brushing the combs, to prevent robbers from getting a sip of honey now and then—just enough to put the whole apiary in an uproar. Although I have not tried it, I feel confident that this robbing nuisance can be entirely overcome. Take ordinary cheap honey and dilute it considerably with water. Put it into two square cans prepared in the way I have described, two days before extracting is to be done. I recommend in this case the use of *honey* rather than syrup, so if some of the fed product goes into the combs that are extracted it will do no harm, because it will be honey just the same. In the two days intervening the bees will have found the feeders and will get nicely started. Probably the two cans of feed will last them for the two days. Two cans more, at least, will enable the apiarist to extract all of his honey; for the would-be robbers have become accustomed to the feeder; and if some few bees should steal a little honey from the combs it will not cause a *furore*, because other bees will naturally suppose it comes from the feeders. The net result of this is, that 100 or 150 lbs. of honey borrowed from the bees enables one to take from them several tons of extracted honey in a dearth.

A few days ago at one of our outyards the boys attempted to do a little in-hive feeding. It was not long before the apiary was in an uproar,

and one of the men phoned up to our office to know what he should do. I telephoned back to restrict the entrances of all the hives with green grass, and stop inside feeding or opening up any more hives, and to prepare immediately two square cans for outdoor feeding. This they did, hanging the cans on the limbs of two near-by trees on the out-skirts of the yard. It took the robbers a little time to learn where the feed was. As soon as they discovered it, robbing began to let up. The next day one of the boys went back to finish up his work with the colonies. He opened up the hives indiscriminately, without any trouble from the robbers. I am sure we could have done extracting or anything else, because the combs were exposed just as much as if extracting had been going on.

A good many county fairs will now be held within the next thirty days. Some bee-yards will be located near some of these fair grounds, where watermelons will be cut open, and molasses candy made. If two outside feeders be hung up two days previous to fair time it will effectually stop any robbing on the part of the bees around any of the candy-stands. We demonstrated this conclusively a year ago, and we now feel that we are master of the situation.

But there may be some canning of fruit; and if your bees are a nuisance, start an out-door feeder and keep it going until the canning season is over. Perhaps the owner of a cider-mill lodges a complaint. As he will probably run his mill for thirty or ninety days it will not be practicable to run out-door feeding for that length of time, unless the whole apiary needs a general feed.

The best thing to do in that case is get mosquito-netting and screen the mill. If, on the other hand, the yard is short of stores and will require the feeding of several barrels of sugar, and if there are no other bees in the vicinity, outdoor feeding can be practiced to great advantage.

So far I have not said anything about the abuse of this method of stopping robbing by giving the bees food. One of the abuses is letting the bees get the syrup so that they can take 50 to 100 lbs. within an hour, wearing their lives out prematurely. The grooved-board plan makes this possible; while the square can, with holes punched in it and elevated ten feet above ground, reduces the wear and tear to a minimum, or not much more than a natural honey-flow.

Another abuse would be feeding your neighbors' bees or stray bees in bee-trees. Obviously the only thing to do is to feed in the hives, unless you can arrange with your neighbor to pay his pro rata of expense.

HOFFMAN FRAMES.

The Ends of the Top Bars Not Suitable for Use in Shaking off Bees.

I have recently had several days of experience in shaking bees off the combs for extracting honey, and it has only served to strengthen my dislike for Hoffman frames. As Mr. Chapman says, "they have no handles" It is true there is a projection of the top bar for them to hang upon, but it is only ¼ of an inch thick, while the top bar is about an inch in depth, and these little ¼ inch projections seem to be built on purpose to be split off, as I soon found when I went to using them for handles in shaking combs My own top bars are of poplar, 7-16 thick, and the same size the whole length, with no jog or notch to encourage splitting. They neither break, split, nor sag, and I can pick up a comb and give it just as hard a jerk as I wish, with the comfortable feeling that I know the comb won't part company, and go tumbling on the grass. Of course a man can take hold of the top bar back from the ends—but let me give an extract from an article written by Mr. W. C. Cathright, of California, and published in Gleanings. Mr. Cathright says:—

I have been very much interested in the discussion of the merits and demerits of the Hoffman frame. Before coming to California I used and liked the Hoffman frame; but I was a comb honey producer. I have visited many large apiaries here, and am convinced the plain frame is best for large apiaries run for extracted honey.

These frame as made here have one inch projection of the top-bars past the end-bar. This gives one a chance to get two fingers under each end so as to get a good grip for shaking off bees. You say, Mr. Editor, that you prefer to pick up a frame by the top-bar just inside the end-bars that is, where it is usually covered with bees, while with the long-top bar the ends are further away from the bees asit is possible to get.

While holding the top-bar as you say between or inside the end-bars, and shaking off bees, that would be entirely out of the question with me. It's just like trying to lift your hives with cleats or hand-holes. Our hives are made with rabbets $\frac{3}{8}$x$\frac{7}{8}$, so there is a bee-space at the ends of the top-bars. The staples for end spacing are a good thing; but cutting off the ends of the top-bar to get a bee-space when they were already too short for ease of haudling is, in my opinion, ruinous. Then to make the projections almost useless as a support for heavy combs, you have reduced the thickness to $\frac{1}{4}$ inch. They should not be less than $\frac{3}{8}$, and nailed through the top into the ends. This prevents splitting off the top. Most of the Hoffman frames I find about over the country are nailed only one way—i. e., through the end into the shoulder of the top-bar. They should be nailed both ways; but if only one way it is more important to nail through the top into the ends One experiment ought to prove this to you. Take two frames, one nailed one way and one nailed the other; weight them about like a comb of honey; hold them above the hive, letting them drop on the rabbets, and see which one is first and easiest to break.

ADVANCED BEE CULTURE

One of the most difficult tasks of my life is that of writing an advertisement of ADVANCED BEE CULTURE. Be as modest as I can, it still smackes of egotism – sounds like a parent praising his own child. If the book had been written by some other man, the writing of an advertisement would be comparatively easy. However, even at the risk of laying myself open to ridicule, of becoming a laughing stock, I am going to *forget* for *once*, that I am its author and publisher, and write as though of another's work

When 18 years old I visited an apiary in swarming-time; saw bees hanging in great, golden-brown clusters from the swaying boughs of the old apple tree; saw the snowy white combs growing as by magic; saw the waxen cells filled with nectar, and inhaled that *sweetest* of all perfumes—the odor from a bee hive in harvest time. I was filled through and through with enthusiasm. Here was a business that was most truly the poetry of life. I was that day born a bee-keeper. There was no longer any doubt as to what should be my life-occupation. I at once began buying bee books and journals, and visiting bee-keepers, and studying the business from every possible standpoint. It was six years later before I was able to actually engage in the business, but I then possessed as thorough a theoretical knowledge of bee-keeping as does a young physician of medicine when he begins to practice.

All this was 30 odd years ago; and, since then, I have run the whole gamut of bee-keeping, time and time and again. I have practiced all sorts of methods for artificial increase. I have battled with the difficulties of natural swarming; I have produced tons and tons of comb honey; have tried my hand at extracted honey production; I have reared and sold thousands and thousands of queens; I have exhibited bees and honey for 15 consecutive years at from one to half a dozen State fairs, I have wintered bees in all sorts of ways, out doors and in, in cellars and buried in clamps; I have attended nearly all of the conventions of a National character; visited hundreds of bee-keepers in their homes, scattered from ocean to ocean and from the lakes to the gulf; I have read all the books and journals; for nearly 20 years I have published the Review, enjoying the confidence and correspondence of bee-keepers scattered all over this country; in short I have been a wide awake, enthusiastic, practical, actual work-a-day, bread and butter bee-keeper all of these years, making a living for myself, wife and little ones, *out of bees*.

ADVANCED BEE CULTURE is the ripened fruit of all these years of varied experience; it is the crowning effort of my life. I look upon it as the best piece of work that I have ever done, or, perhaps ever *will* do. It is written from a bread and butter standpoint. It teaches how to make a living, yes, more than that, *make money* out of bees. From all of these sources that I have mentioned, from my own experience, and that of the men with whom I have associated, I have described the most advanced, the *best* methods, of keeping bees for *profit*. I begin at the opening of the year, and

go through the season, step by step, touching briefly but clearly and concisely upon all of the most important points, showing their relationship, one to the other, and how, joined together, they make a perfect whole. If I could have had this book 20 years ago, and followed its teachings, I might now have been a rich man. I say it fearlessly, because I *know that it is true*, that no practical bee-keeper can afford not to read it. The courage, enthusiasm, and inspiration alone will be worth more to him than the cost of the book, to say nothing of the more practical instructions. Many a man fails from a lack of these very useful qualities, and the perusal of ADVANCED BEE CULTURE will do much to help him in this respect.

One more point: A dozen years ago I took up photography as a hobby, as a pastime. I have studied it just as you have studied bee-keeping. I have read the journals and books on the subjects, attended the conventions, etc. I have lugged a large camera along with me all over United States and Canada, and used it with loving care. ADVANCED BEE CULTURE contains the gems of this collection of all these years— a collection that is simply unapproachable in the line of apiculture.

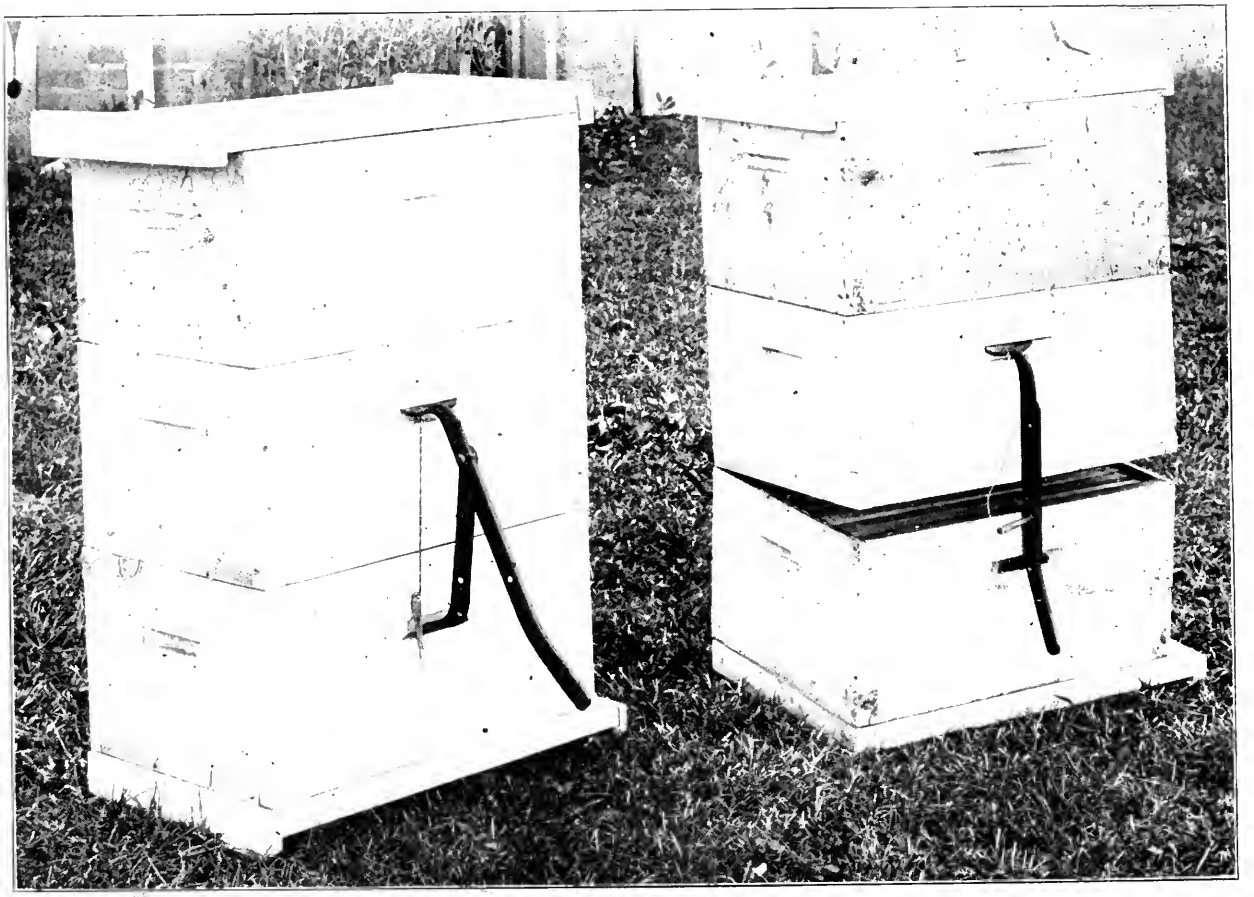
The book is beautifully printed with clear, large type on heavy enameled paper. It is bound in cloth of a bluish drab, and the front cover embellished with a green vine of clover, a bee of gold sipping nectar from the snowy white blossoms of the clover. Taken all in all, it is a beautiful book.

If the advertising that I have done in the past has not convinced you that you need the book, then the fault is in the *advertising*; and, for this once, I have cut loose and said just what I think of the book, just as I would of some other book—I may never do it again.

Price of the book $1.20, or the Review one year and the book for only $2.00.

W. Z. HUTCHINSON

FLINT, MICH.



Levers for Lifting Hives when Putting Bee Escapes in Place.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, SEPT. 15, 1906. NO. 9

Conveniences in the Production of Extracted Honey.

W. Z. HUTCHINSON.

EVERY successful bee-keeper eventually works out a system especially adapted to himself and his environments. I have in view the management of a series of out-apiaries for the production of extracted honey, and I wish to develop a system with the greatest amount of *elasticity* about it. I don't wish to be compelled to do a certain thing upon a certain day. I wish for a whole lot of leeway. With ordinary management, a great honey-flow brings a hurry and a rush in extracting to give the bees room I wish to avoid that. Mention has been made several times in the Review of the successful and profitable management of an apiary by Mr. E. D. Townsend with only four visits a year. It is in this direction that my ideas are tending; but I scarcely expect to reduce the number of visits to four; in fact, Mr. Townsend himself does not now practice nor recommend so few visits.

WHAT MAY BE DONE WITH PLENTY OF EMPTY COMBS.

First and foremost in my system must be plenty of supers and empty combs. I would have enough of these so that the bee-keeper could give more room at any apiary, at any time during the season, even though no honey were extracted until the season was over. I don't mean by this that I would not extract any honey until the season was over, as, in some locations, it is quite likely that I should, but I would have enough combs so that the bee-keeper could give enough surplus room at any time during the season, regardless of what the flow was, or of whether any extracting was done—just as though there were a great unlimited pile of supers of comb at every yard, and the bee-keeper could go out and get one at any time and put it on where and when it was needed.

Of course, extra combs and supers cost money. I made 300 of them last spring and I know what they cost me. Each ten-frame super filled with sheets of wired foundation cost 75 cts. I think four such supers for each colony, spring count, will be sufficient in this locality probably more than would ever be used, as they would furnish storage room for nearly 200 pounds of

honey. The cost would be $3.00; and with proper care such supers and combs would last a life time, as they are exposed to the weather only a short time each year. I think it would be fair to estimate the interest at six per cent. Twenty cents a year is certainly a fair estimate for the cost of these supers. No one can produce extracted honey with less than two supers for each hive; why not have two more when the cost each year will not exceed ten cents, and thus be able to have some elasticity about the management—be able to simply put on more supers instead of being compelled to extract in order to give room? Do you begin to grasp the central idea of my system? One man could go on a wheel to an out-apiary and put on 100 supers in half a day, giving surplus room for 5,000 pounds of honey, while, to extract that amount would require the services of a gang of five or six men, working hard in the heat of a whole day.

A "STUMP PULLER" FOR LIFTING HIVES.

The mention of one man putting on 100 supers in half a day brings me to the subject matter of my paper—"Conveniences in the Production of Extracted Honey." I should not place the super of empty comb on top of two or three nearly completed supers, but underneath them. I should practice tiering up the same as I do in comb honey production. This, of course, would necessitate the raising up of the already filled supers. I expect that the time was when some of my readers would have smiled at what I am about to say I would use to lift those supers of honey, in order to put an empty super beneath them, but Gleanings has been publishing some articles from Mr. Ferris of Wisconsin, and in those articles he has described a derrick that he uses to lift heavy supers of honey, so I suppose I can now say that I have long had in mind something of this sort for raising supers of honey in order that empty supers might be put beneath them. My idea was to make a sort of tripod, like a camera tripod on a larger scale, or like a stump machine on a smaller scale, using ropes and pulleys to do the lifting, and hitching to the hive by means of four hooks, a hook going into each handle-hole on the four sides of the hive. This may seem like a laughing matter, but, to the man who lifts ten-frame supers all day, well, he will laugh for *joy*. I have not yet made such an arrangement, but I expect that I shall, and then I'll tell you exactly how it works and what I think of it.

LEVERS FOR LIFTING HIVES WHEN PUTTING ON BEE-ESCAPES.

Although I have not yet rigged up the stump puller for lifting hives, I *have* made an arrangement for raising up hives when putting bee-escapes in place. The frontispiece makes this so plain as to nearly do away with the need of any explanation. It is simply an iron lever with the short end widened out, or split into two sharp prongs that can be thrust into the hand-hole in the upper hive, while the lower end of the support of this lever is treated in a similar manner, and can be placed in the hand-hole of the lower hive. When the end of the lever is depressed, the upper hive is raised. The depression is continued until the two levers are parallel, when a wooden pin is thrust through two holes that come opposite each other, thus the levers are held in position, the upper hive being elevated about an inch and a half above the lower hive. That is, the hive is raised that much upon *one* side, when I go around to the other side and use another set of lifters on *that* side, when the upper hive is held an inch and a half from the lower one, and it is an easy matter to slip in the escape-board, and then to low-

er the hive. In order that the pin may not be lost it is tied to the end of a string fastened to one of the levers. It will also be possible to use this device when putting queen-excluders in place. There is no lifting of the hives, and it is actually *fun* to put on bee escapes by the use of these levers. If the weather is warm, and the propolis soft, the levers alone can be depended upon to loosen the hive, but, if the weather is cool, the hive better be loosened first with a screw driver. First raise the hive just a little crack, not quite enough to let out the bees, then drive smoke into this crack, and they will be out of the way when the hive is raised.

THE ADVANTAGE OF USING BEE ESCAPES.

In some of his articles Mr. R. F. Holtermann said that for years he had always dreaded to have extracting-time come, and, as it is usually managed I don't wonder at it. The hardest, most disagreeable part of the work is getting the bees off the combs. At best, it is unpleasant for both the bees and the operator. The weather is almost always hot, and the smoking and brushing, especially the latter, make the bees cross, and between the heat and the stings and the mussy character of the work, the poor bee-keeper has anything but a good time. It is not so bad when honey is coming in, but there is always some of this work to be done at the close of the season, when there is robbing to contend with. The use of the bee-escapes cuts out all of these unpleasant features. Instead of several men working all day in a sort of mild torment (and sometimes it isn't so very mild) to get the bees off 5,000 pounds of honey, one man can put on the bee-escapes in half a day, and really enjoy the work, if he has some such arrangement as I have described. In two or three days, at the outside, practically every bee will be out of the supers, and all that is necessary is simply to lift them off and wheel them into the honey house. It will not be necessary to even use any smoke in doing this, although it will be needed in removing the escape-boards. Don't you see how those two things, plenty of combs and the use of bee escapes, can change the whole aspect of extracted honey production? They do away entirely with the rush and hurly burly of hurried extracting in hot weather.

HEATING UP HONEY TO EXTRACT IT.

Right here I expect that some one will say "How about extracting the honey? Won't it be too cool after the bees have been off it so long? Yes, it will; and will have to be warmed up before it can be extracted. Have a partition across the honey house; store the honey one side of the partition, and have the extractor the other side. Have a small hard-coal stove in the side where the honey is stored. Start a slow fire in there a few hours before the extracting is to begin. Don't expect that the honey will warm up in an hour or two It will require several hours. Better start the fire the evening before, then it will be all ready to extract the next morning. If the honey house is at an out-apiary, let the man who is to extract (or the men, as the case may be) go to the apiary the evening before and build the fire, and sleep at the apiary all night. Every honey-house at an out-apiary should have a cupboard, with some dishes, some oil stoves, and a bunk. Of course, it is not necessary to have the honey-house partitioned off, but it makes pretty warm work to extract in the same temperature as that needed to warm up the honey—about 95 degrees. A small, second-hand, base-burning coal stove can usually be bought for a few dollars, and 25 cts worth of coal will warm up 5,000 pounds of honey. A hive or two at a time can be brought out from the warm room, and will not cool before it is extracted, while the

extracting room may be kept as cool as a parlor. With this method of management there is no dripping of honey over the floors, as the bees clean up any broken brace combs before the honey comes off the hives, and there are no bees brought in with the honey, as when they are hastily brushed off, to be crushed on the floor, or to buzz about on the windows. Everything can be kept as clean and neat, and comfortable—well, I extracted my honey here at Flint right in my office, taking the honey off with bee escapes. and carting it four blocks to the office.

HOW TO MAKE A HONEY KNIFE CUT LIKE A RAZOR.

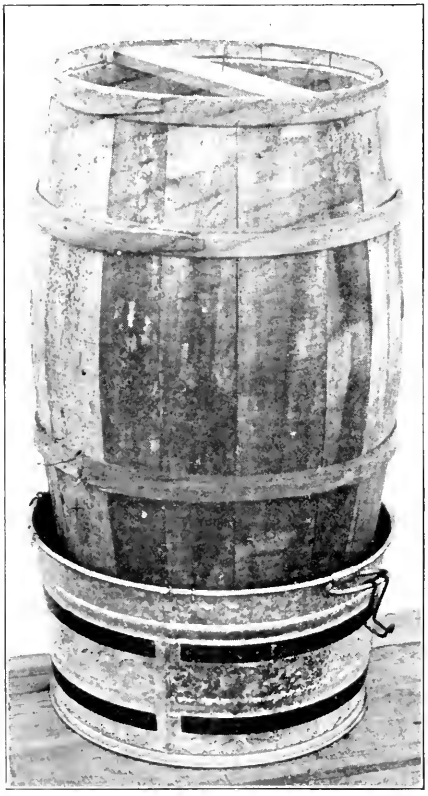
After the honey is off the hives, the biggest job is that of uncapping the combs. If they are thick, "bulging," they can be uncapped much more easily. If only eight combs are used in a ten-frame super they will be of this class, when, by cutting deeply, so

Lamp-Stove That Keeps the Uncapping Knife Hot.

as to leave the combs only about an inch thick, each side can be uncapped with "one fell swoop." It was hard for me to get over the feeling that I ought to uncap as thinly as possible – that thick cappings were like thick parings taken from a potato– but it really makes little difference whether the honey goes through the extractor or drains from the cappings. To do the best and quickest work when uncapping, have the knife, sharp, hot and wet. Only the man who has tried it can realize the difference between such a knife and one that is cold, dull and dry. I have a little two-burner, oil stove sitting on a barrel at my elbow, and on top of the stove a baking tin full of water. The wicks can be adjusted to keep the water at just the right temperature—a little below the boiling point. When through uncapping a comb, instead of laying the knife down on something else, I simply lay it in the tin of water—it is just as easy. When I begin extracting on another comb the knife is hot and wet, and the way it slips through the comb is a caution. Very new combs, or very old ones, do not uncap as easily as those that are between the extremes. An old comb that has been recently drawn out thick, that is, the bees have lengthened the cells, partly with new wax and partly with that taken from the old comb, is about the nicest comb to uncap. The lower part of the cells have a stiffness, or stability, while the upper part has sufficient softness to make it cut easily. A man can afford to go to quite a lot of expense and pains to get just the right kind of combs for use in his supers—old combs spread wide apart as the saving of time in uncapping is very important.

A cracker barrel is away ahead of anything else for holding the cappings. In the first place, it costs only ten cents. Next, it is just about the right height. Again, the cappings can be allowed to stand in it and drain for weeks and weeks—no hurry about the barrel, simply pay ten cents for another one. I bore three or four holes in the bottom for the honey to run out. This may not be necessary, as such barrels are not water-tight, but it is a safe thing to be *sure* there is a place

for the honey to get out. Then I nail a wooden cross-piece across the top, but, before nailing the cross-piece in place I drive a nail through it—about a ten-penny nail—and when I put the cross-piece in place I have the point of this nail turned uppermost. The point of this nail is to rest the frame on when uncapping the comb. The point of this nail comes as near being a universal joint as anything with which I am acquainted—the frame can be turned "every-which-way" and it will not slip about. Rest one end of the frame on



Cracker Barrel Uncapping Tank.

this nail-point, stand the comb in a nearly upright position, hold the comb with the left hand, grasping it near the upper end, then begin at the lower end to uncap, giving the knife a sort of slanting motion, such as a barber gives his razor, drawing it back and forth as it cuts its way upward, at the same time slanting the comb slightly forward (toward the knife) so that the cappings, as they break off, will drop into the barrel instead of upon the surface of the comb. The barrel is placed over a galvanized iron tub and supported by double hooks made of heavy wire. One end of a hook is hung upon the edge of the tub. There are four hooks, and when all are in place, about equally distant, upon the upper edge of the tub, the barrel is lowered into the tub, the hooks upon the other ends of the wires catching it in the "chime," and supporting the bottom some four inches below the top of the tub. One of these hooks was taken out and hung upon the handle of the tub, in the cut that is given, in order to show more more perfectly the construction of the hook.

MAKING VINEGAR FROM THE HONEY LEFT IN THE CAPPINGS.

When the season is over, late in the fall, or early in the winter, the cappings will be rendered into wax. The hoops will be cut, and the staves pried off, and there will stand the cappings in one great cake, all ready to be chopped up and rendered into wax. They will be melted up in a clean, new boiler, and the water will be used for making vinegar. This will utilize every last ounce of the honey. This vinegar proposition may seem like a small one, but do you suppose that any of the great manufacturing or packing concerns would ignore it?

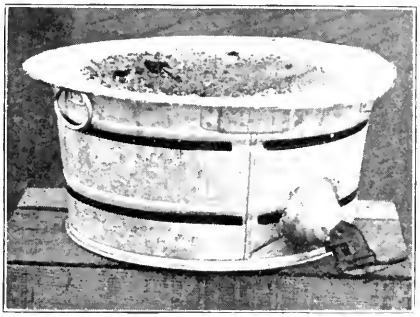
SUPERIORITY OF THE ROOT, FOUR-FRAME EXTRACTOR.

I have this year used the Root, four-frame automatic extractor, and it is certainly worthy of all praise. The brake, and the automatic reversing of the combs, and the ball-bearings, are time-savers and great comforts. The machine is inclined to run more stead-

ily than the two-comb. There is less of that wobbly motion if some of the combs vary in weight. Of course I have never tried the six-comb nor eight-comb extractors, but, for the ordinary apiary, it seems to me as though those machines would not present sufficient advantages over the four-frame to warrant their adoption. In extracting *new* combs it is better to reverse them twice, turning very slowly the first "whirl."

AN AUTOMATIC STRAINER.

Here in the Review-office was a hole in the floor that had been made for a belt to pass up from the cellar when

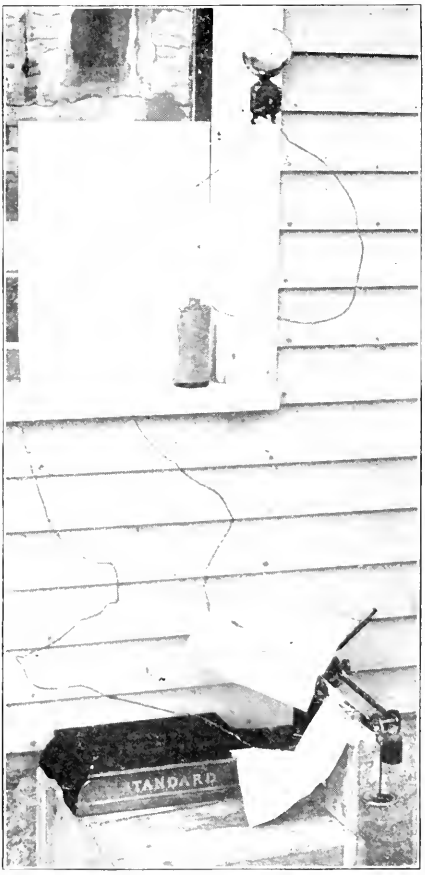


Cheese Cloth Strainer on Top of a Tub.

the printing press was run here. This opening had been stopped up, but I opened it up again, and set the honey extractor right on the floor, with the honey gate over the opening, thus allowing me to run the honey into the cellar. Under this opening I set another galvanized iron tub, and covered it with cheese cloth for a strainer, the cloth being sewed to a wire hoop a little larger than the tub. The honey from the extractor fell upon this strainer, and went through into the tub, from whence it ran through a honey gate into a 60-lb. square tin can; the can, in each case, sitting upon platform scales, and an electric bell giving the alarm when the can was full.

AN ELECTRIC ALARM FOR SHOWING WHEN THE CAN IS FULL.

In a late Review I gave quite full directions for the arrangement of an electric alarm for giving notice when a can is full of honey, but, as this article is a sort of resume of several things before mentioned, I will touch upon this matter a little more. I carried the scales, battery and bell out of doors and fixed them up by the side of



Electric Bell That Rings When the Can is Full.

the house in order that I might take a photograph of them, and show all of the details. The scales used are a pair having a double beam, one beam

for the hopper and one for the platform; but that has no particular bearing upon the point we have under consideration. The battery used is one of the ordinary, dry-cell batteries such as are used for telephones, door bells, or for furnishing a spark for gasoline engines. Be sure and get a good battery. If you can get only the cheapest kind, better get two cells and connect them, as the connections upon the scale beam are not as close as are usually made when a door bell is set up, and it requires a good strong current to overcome these imperfect connections, and ring the bell. It won't answer to depend upon a bell that does not *always* ring—better have none at all. In the cut, the battery sits upon the window sill, and, above it, fastened to the window casing, is the bell. The wires will show how the connections are made. I have put two pieces of white paper on the scales to show more distinctly the course of the wires where they are fastened to, or approach, the beam. One wire is coiled around the back end of the beam, and the other passes over a wooden post, and the end projects out just over the outer end of the beam, and, when the beam rises up, because the can is full, it touches the wire and completes the circuit, thus ringing the bell.

If the wire used in making connections is not pretty heavy and stiff, better nail a block to the top of the piece of board that supports the wire where it projects over the scale-beam, letting the block project over the wire where it passes above the scale-beam, then when the beam rises it will *press* the wire between itself and the block, and thus get a more perfect connection than would be the case if the beam simply raised against a slim, pliable wire that presented very little resistance—a block of wood above the wire keeps it firmly in place and allows of *pressure*.

You will see that the uncapping, the extracting, the straining and the canning, all go along simultaneously, almost automatically, and with only one person in charge, unless it is desirable to have more.

From 70 colonies of bees, here at Flint, I have secured about 4,500 pounds of the finest clover honey I ever tasted, besides increasing the number of colonies to 102, and this with a poor season; but what strikes me most forcibly is the small amount of work with which I have accomplished this. Not only this, but it has all been pleasant, agreeable, I might say, *easy* work—nothing of the strenuous character. This is the kind of bee-keeping I am trying to develop—an extensive business; a lot of bees, scattered in outapiaries, but so managed that there will never be any rush nor hurry. There may be a little more money invested, yes, and, perhaps a *little* more work done, but it will all be of the leisurely sort which will allow one to take time to enjoy oneself as the work goes along.

FLINT, Mich., Aug. 27, 1906.

Some Much Debated Physiological Questions.

ADRIAN GETAZ.

THERE are some questions that are in the habit of bobbing up periodically in the bee papers, not only here, but in Europe as well; and some of these questions have already been thoroughly investigated, and, if not

solved; have at least been studied as far as it is possible, with our present means of investigation.

VIRILITY OF VIRGIN DRONES.

The first that comes to my mind is whether the drones from virgin queens, or laying workers, are able to fertilize queens or not. Leuckart affirms that some of his queens were thus mated, since at that time no other drones were about. A few instances have been quoted in the bee papers of queens fertilized by drones from laying workers' colonies early in the spring of the year, before any normal colony had drones.

However, as the queens mate outside, and, as the "personal identity" of the drone could not be established even if he were seen, it is possible that the aforesaid queens may have mated with drones from some where else, without the knowledge of the apiculturist. So, until we have some means to have the queens mated in confinement, or in a big tent, direct evidence will be wanting.

But there is some circumstantial evidence. In the first place, careful microscopical examinations repeatedly made by different observers, have shown that the drones from virgin queens and laying workers are identical in every respect to those from a fertilized queen, and possess a full complement of fecundating germs, just as well as those raised in a colony having a mated queen.

In the second place, the manner in which the queen is fertilized, and the eggs receive that fertilization, show that the drone eggs have nothing whatever to do with the fertilization of their mother.

When a queen is fecundated, the fertilizing germs of the drones (spermatozoa) are thrown into an organ similar to a pouch or a sack situated in the body of the queen near its end. That sack has no communication with any other organ of the queen that we can see, except the opening by which the spermatozoa went in, and by which they come out, one by one to fertilize the eggs.

The eggs are found higher in the body, in two organs called the ovaries. They come down through a tube, pass before the sack containing the spermatozoa, and from there to the outside of the queen's body. If, when they pass before the sack they receive a spermatozoon, they become female eggs and produce either queens or workers. If they don't receive any they produce drones.

Such being the case, and the ovaries having no connection whatsoever with the sack containing the spermatozoa, it is clear that the eggs produced in the ovaries are perfect drone eggs, and that the introduction of the spermatozoa in them, transforms them into female eggs. It is clear, also, that since they are produced as well when spermatozoa are present as when not, they ought to be as perfect in one case as in the other, since the spermatozoa shut up in the sack (that sack is called the spermatheca) have no connection with the ovaries.

DRONE PROGENY.

What I mean by that is the question often raised whether the drones produced by a queen are influenced by the drone that fecundated that queen, or in other words, do they possess any of the characteristics of that drone.

Considering the manner in which the eggs are produced, I should say no. What influence could the spermatozoa shut up in a sack have on the ovaries situated away from the sack?

Right here some smart Alec will undoubtedly say that they might, though we don't see how. That may be true, but before we admit it, we must have some proof of it. We could as well say that the phases of the moon *might* have an influence on them, though we don't see how.

Some writers have said that sometimes mismated Italian queens produce drones rather too dark to be considered pure. Considering that the color of drones and queens, and even workers, is not always constant, even in the purest strains, and also that the different races have been so intermingled, that we cannot be certain of the absolute purity of any strain of bees, we can see that that fact has very little weight if any at all.

WORKER PROGENY.

That title, like the preceding one, is not exactly correct, but will answer the purpose just as well. What I mean is which has the most influence on the characteristics of the worker bees, the queen or the drone?

I think it is the drone. In the higher animals, the concourse of both sexes is needed, whether the offspring is male or female, and generally the offspring gets characteristics from both. With bees the case is different. The introduction of the male germ has the effect of completely transforming a male egg into a female egg; and this principle holds, even in the case of hermaphrodites, that is, bees partly male and partly female.

We might expect bees possessing heads or legs intermediate between those of the drone or those of the worker, but it is not so. We may find a worker head on a drone body or some of the legs perfect worker legs; with the others perfect drone legs or any other combination. But wherever the female element reaches, the transformation is complete. Such being the case, the influence of the spermatozoa being so strong, we may expect that not only the sex, but the characteristics of the workers come chiefly, at least, from the drones.

As to the facts in the case, we all know that the hybrids from a mismated Italian queen are more like the black bees than like the Italian, in many respects their temper, disposition to run from the combs, tendency to cap the honey white, etc.

Doolittle tells us that when he first began to keep Italian bees, there were only black bees in the neighborhood. That gave him a chance to observe the first cross. He says that while the hybrids from an Italian queen mated to a black drone were more like the black bees than the Italians, the reverse took place when a black queen was mated to an Italian drone.

QUEEN MATING.

Do queens mate more than once? This has been debated recently as an entirely new question. But it is not. Turning to Langstroth revised, page 53, we find this:

"It is now well demonstrated that the queen is fertilized for life by a single mating, though in rare instances they are said to have mated two days in succession, probably because the first mating wss insufficient."

A French apiarist reported recently that a queen had mated, laid a few eggs irregularly, then mated again a few days later and then layed abundantly.

The next question now is: Could the queen mate again later on during her life? That she may mate two or more times in succession during the first few weeks of her life seems to be well established. But as to mating later, that is something else. We cannot have direct evidence, for if no queen carefully watched did mate again, we never could say with absolute certainty that it should be the same with all others. But we have pretty strong circumstantial evidence that they do not. In the first place, no queen that has failed to mate during the first few weeks of her life has ever been known to be anything else than a drone layer during the rest of her life. Queens raised too late in the fall to mate never mate the following spring.

In examining with a microscope a young queen recently mated, the spermatheca will be found completely full of spermatozoa. If an older one is examined, the spermatheca will not be so full. The older the queen the less is the amount or spermatozoa found, and in queens three or four years old the spermatheca eventually becomes empty and finally they lay only drone eggs. If there was any possibility of a second mating, some of the old queens would have been found with a "re-filled" spermatheca. But it has never happened.

There is another consideration: In dissecting queens of different ages, it is found that the entrance of the sexual organs shrinks to some extent after they are a few weeks old. That the shrinkage takes place cannot be doubted, whether it is sufficient to prevent further mating cannot be told positively. At any rate, Cheshire does not make any positive assertion. We may add also that clipped queens, which certainly cannot mate a second time, retain their prolificness as long as any others.

EGG-LAYING.

What causes or prompts the queen to lay worker eggs in small cells and drones eggs in the large ones? That is another of those debatable questions which take periodical rounds in the bee papers.

Is it instinct or is there any physical cause for it? So far as physical causes are concerned, there is only one possible, and only that one has been advanced. That is the pressure of the small cell on the abdomen of the queen forces her, or, at least, induces her, to lay a worker egg.

Among the writers whose opinions have some weight, only Wagner, Quinby and L. C. Root have held that theory. They thought that the eggs found in the queen cells might be put there by the worker bees themselves. Found [illegible] at that time was very little used. Now we know positively that the queens deposit the eggs in the queen cells themselves. We also know that they lay worker eggs in foundation barely drawn, where the cells are not much more than one-eighth of an inch deep. In either case, no compression is possible. So the compression theory has been abandoned, and we now say that her instinct prompts the queen to put unimpregnated eggs in the drone cells. This is the only explanation possible as far as we know. Furthermore, it is in perfect conformity with the laws of nature. A larva in a worker cell is fed with a particular food. Place that larva in a queen cell and the bees will change the food. Reverse the process; put a queen larva in a worker cell and the bees will feed her with worker food. Now, if the size of the cell induces the bees to change the food; why could not the size of the cell induce the queen to lay a certain kind of egg in the cells destined to that purpose?

Instinct is something in the brain or mind of the animal that induces him to act in a certain way under certain circumstances. Here are a few examples:

There is a young chick, perhaps only one day old; a hawk appears in the sky; the chick has not seen it, and, if he had, he would not have known what it was; the hen gives a peculiar cluck, and the chick immediately lies down flat, and perfectly still, in the grass or the dead leaves until another signal from the hen calls him back. His instinct prompts him to act so under these circumstances, though he certainly cannot know why and what for.

Another example is furnished by a kind of mason bee which builds a nest of clay, puts a certain quantity of food in it, lays an egg on it, and builds a cover on the whole. If, when the nest is built, a hole is made in the bottom, the bee will put in the usual amount of food, lay the egg, and then cover the empty nest as carefully as if nothing

had happened and the food and egg were in, instead of having fallen out through the hole.

That's instinct, absolutely nothing else. And it is largely the same way throughout the whole animal kingdom. Even in the human race, instinct plays a larger part than might be at first supposed. Parental and sexual influences are mostly due to our physical peculiarities. But we say it is nature, not instinct, though, after all, instinct *is* nature.

Against the supposition that the compression of the cell determines the sex of the egg, it might also be stated that, if true, with our bees, it would be also true, with other kinds of bees, and allied insects, such as wasps, etc.; but we find at once that it cannot be. The drones of Apis Dorsata are raised in the same cells as the workers. In Apis Indica the drones are smaller than the workers. Among wild bees, there are no cells at all in many cases.

INFLUENCE OF FOOD.

Some writers have asserted that the workers transmit their qualities to the young bees through the food they give them. It may not be very polite for me to say so, but it is certain that only men completely ignorant of the physiology of nutrition or very peculiar in their opinions could ever maintain such a proposition.

What would become of a child, or even a grown man, if he would inherit the qualities of the cow or goat which furnishes him the milk he drinks? Or if the eggs and meat he may eat raw have the same influence on him, not speaking of the oysters? And how could it be, anyway, since the food, before being assimilated, is completely transformed, through different organs? After being thus transformed, it arrives in the blood. The blood distributes it wherever needed. What becomes of it does not depend on its nature, but on the nature of the organ to which it is assimilated. The same food becomes muscle, bone, hair, or anything else, according to where it goes.

And the same conditions obtain when the young animal is growing. The food assimilated produces organs which are determined by the egg or female germ to which the male germ may or may not be added.

The only way the food may influence the offspring is by its quantity and quality, as such, and, therefore, a more or less perfect development is obtained. That explanation is not very clear but I do not see exactly how to make it plainer but an example will show what I mean.

Let us plant a grain of wheat in a poor soil, and a grain of corn in a rich ground. We will obtain two plants very different. But it would be absurd to say that if the grain of wheat had been planted in the rich ground it would have produced a plant of corn. The wheat produced on poor ground is not like that produced on rich ground, but it is wheat all the same.

So it is in the animal kingdom. The characteristics of an animal are determined by the original male and female germs. The food is merely a question of development. And this depends on the quality and quantity of the food *as such*, without regard to its origin.

In the case of queen bees, both the queen organs and the worker organs, or, rather, the original cells, from which they will develop, exist in the fecundated egg, and it is only a question of which will be fully developed.

REFERENCES.

Some one will undoubtedly want to know where are my "authorities" for all the above. Among the bee books, I would refer to Cheshire, Langstroth revised, Prof. Cook and Quinby revised by L. C. Root.

For the question of nutrition, development of animals, etc., in a word biological questions, any of the advanced treatises on physiology and biology. The elementary school books are not

sufficient. The articles of the Encyclopedia Britannica will do the readers who will merely want to know how it is, without going into a thorough study of the subject.

On Doolittle's assertion concerning the influence of drones, see Bee-Keepers' Review, Jan. 1902, page 20.

On second mating of queens, and laying in queen cells, see American Bee Journal, March 17, 1904, page 199; and Gleanings, April 15, 1904, pg. 144.

Concerning the queen larvae fed worker food when transferred in worker cells, see American Bee Journal, Jan. 28, 1904, page 54.

As to the mason bees putting feed and eggs in a nest without bottom, see Lubbock's Senses and Instincts of Insects, chapter 12. The whole book is very interesting and should be read by every bee-keeper.

KNOXVILLE, Tenn., Oct. 10, 1905.

Keep Fewer Bees and Give Them Better Care.

H. A. SMITH.

SUCCESS in any pursuit almost invariably follows close attention to details In no business does this better apply than in that of bee-keeping. We are often surprised when reading articles from large honey producers, to see how great a stress they lay upon attention to work in the apiary which would seem, to the novice, to be of minor importance. The fact of the matter is, however, the man who is particular in small things accomplishes great things

For an example, some springs we find a great many queenless colonies. and nine times out of ten, the queens of those colonies were over two years old. Some winters seem harder on aged queens than do other winters, and, as the loss of a single queen means the loss of a whole colony, surely it does not pay to take any risk; but let us attend to the detail of renewing old queens. Perhaps very few of us realize what we really do lose when we lose a colony of bees. Let us keep track of the income of a certain colony, and its increase, for five years, and we will then realize the importance of attending to details, and, if possible, saving every individual colony.

There are other small details, which, if neglected, or attended to, mean the losing or saving of dollars A few blades of grass do not amount to much, but when growing in front of an entrance are a great hindrance and loss of time to the little workers. Just watch the bees for a few minutes, scrambling through the grass, with their heavy loads, and if you have any heart you will attend to the detail of pulling a few blades of grass. You will have to have your eye open for details, however, or you won't *notice* the grass.

A few square inches of drone comb in each frame do not seem to be doing much harm, but if we could find out how much honey it requires to bring those few thousand drones to maturity, besides what they eat afterwards, we would likely attend to the detail of substituting worker for drone comb.

The addition or lack of $\frac{1}{8}$ of an inch in the size of a frame or hive may not sound very big, but you will likely say

something which *does* sound big when you find your frames grown fast to the hive. I've been there, so I know.

And thus one could go on, naming many small points commonly neglected, which go to help disgust many bee-keepers with the business, when, in fact, the business showed its disgust for the man, and drove him out of the field of apiculture.

I believe the tendency is altogether too great toward what might be termed *wholesale* attention in the apiary. No doubt some one will ask how it could be managed otherwise when operating three or four hundred colonies. That is just the point. A great many wholesale apiarists very often cover twice as much ground, and have twice as much expense, as is necessary to get as good returns from half the number of colonies, with half the expense for fixtures, etc., if important details were attended to. In fact, they *could not* attend to so many colonies if they attended strictly to all details.

There is another point in favor of cutting down the number of colonies: If there comes a poor season you get all the honey there is in the field; you have much less expense and a less number of colonies to feed.

I am convinced that if some men would try the experiment of replacing one-half the number of colonies with a proportionate amount of *attention*, they would secure as much honey of a better quality and a better race of bees, and such things as foul and black brood would not gain such a foot hold. The matter of attention is similar to that of overstocking a locality. If you have more bees, than you have attention and care to bestow, your bees are bound to suffer.

PALERMO, Ontario, Aug. 22, 1906.

Cheap, Substantial and Desirable Home-Made Hives.

E. F. ATWATER.

THE practical bee-keeper who hopes to handle a score of apiaries had best adopt the simplest hives that can be used with satisfactory results. Our preference at present is an eight-frame hive of standard size for comb honey, and for extracted, the regular ten-frame hive. If we were to start anew, it is quite probable that we would use the ten-frame hive for all purposes, using the full ten frames in the brood nest for extracting-colonies, and eight, nine, or ten frames, with dummies, when needed, for comb honey brood nests.

If one has the time in winter he may do as we have done, make up a lot of very satisfactory 10-frame bodies or full depth extracting supers, at a very low cost. We have many full depth 10-frame hive-bodies which have cost us only *five cents* each for material, aside from paint. They are made of coal oil or gasoline cases (same as cases for two, five-gallon honey cans) accurately cut, and the sides of double thickness, $\frac{3}{8}$-inch lumber.

At the lower corners, a strip of galvanized iron, about $\frac{3}{4} \times 3\frac{1}{2}$ inches, is folded around the corner and nailed with three-penny common nails, *well clinched*. That prevents the lower corners from spreading or opening.

Across the top of the ends, and even with the top of the hive, is nailed a cleat $\frac{1}{2} \times 2 \times 16$ inches. These cleats furnish the hand-hold, strengthen the weak place left by the cutting of the

rabbet in which the top bars hang, and tie the top of the sides, so that there is no spreading there, unlike most makes of dove tailed hives, which soon gap at the upper corners, and all too often the strip left by the cutting of the rabbet becomes broken up.

Any cheap boards can be worked up in this way, if you have no other work which will pay you better. Use long, cement-coated box-nails, and paint your hives well. If new lumber is to be bought, just five feet are needed for a 10-frame body, and, by nailing the cleats ½ x 2 x 16 across the top of the ends, and tying the lower corners with the strips of galvanized iron, you have a hive that will compare favorably in usefulness and durability, with *any* factory-made hive.

Of course your lids must be cut one-inch longer than usual, if you use cleats which project below. If you have factory-made lids on hand, just dress off the part of one of the end-cleats which projects below.

If you have a power circular saw and outfit, better *halve* the corners of your hives, for there *is* an advantage in strong hives, for supers do not sit in the yard year after year, but are handled so much that corners may open more or less. Halving prevents this, and, next best, is our plan described above.

This latter plan has the advantage that any one who can saw a board off true and square, can easily make his own hive-bodies.

But to use hives and supers with plain box-joints, not re-inforced in any way, would not suit me at all.

MERIDEN, Idaho, Nov. 13, 1905.

Editorial

I Have Bought the Cavanagh bees that were in the Northern Michigan apiaries. There were 250 colonies, about 400 ten-frame supers of surplus combs, four extractors, tanks, tools, etc. I paid an even $1,000 for the outfit.

Preparing Bees for Winter ought to now be the order of the day, providing any preparation is needed. Lack of stores, weak colonies, and old or poor queens are the main points that need correcting. Unite the weak colonies, supersede the poor queens, and feed when it is needed don't put it off until cold weather. Don't get the idea that wintering is going to rectify any of these short comings. Some people have an idea that poor or unripe fruit is all right to can. It isn't. Canning does not change its character. It's the same with a colony of bees. If you expect it to be a good colony in the spring, it must be good *now*—have plenty of bees and plenty of *good* stores, and a good, prolific queen. Such a colony kept through the cold weather in a warm cellar, say 45 degrees, is almost certain to be a good colony next spring. *Now* is the time to lay the foundation for next year's honey crop.

Thoroughly Ripened Honey is, I fear, something that even some bee-keepers have never tasted. I will admit that I have never tasted such fine flavored, perfect, extracted honey as that that I have produced this year. Even old bee-keepers who come here, and are given a taste, exclaim "Well, I never tasted honey quite the equal of that!" One man who had practiced extracting as soon as the bees begin to seal the

honey, and then had ripened (?) (no, *evaporated*) it in tanks, and believed such honey the equal of any, was compelled to admit, although reluctantly, that there was a difference between honey ripened by the bees, and that evaporated by man. This honey was left on the hives a month or six weeks after it was sealed, during which time it received that finishing touch. There is really as much difference between green and ripe honey as there is between fruit in these two conditions. There is a smoothness, a richness, a flavor, a ripeness that can be secured in no other manner.

Missouri Bee-Keepers' Convention.

The annual meeting of the Missouri State Bee-Keepers' Association, will be held at the Court House of Marshall, Missouri, October 2nd and 3rd, 1906.

Elaborate preparations are being made by the Saline County Bee-Keepers' Club for the reception and accommodation of bee-keepers.

Hotel accommodations can be had at from one to two dollars, or board and lodging can be secured at fifty or seventy-five cents per day in private boarding houses, for those who will write to Mr. M E. Tribble, at Marshall, Secretary Saline County Bee-Keepers' Club, asking him to arrange for them.

Badges are being prepared and will be mailed to those applying for them to Mr. Tibble. These badges are to be worn by bee-keepers when arriving on trains to assist the reception committee, members of which will meet each incoming train, to recognize the visitors.

It is the intention of the Association to introduce a foul brood bill at the next session of our legislature, and preparations for the work of canvasing the State in the interest of this bill are to be made at this meeting. It is therefore of great importance that we may have a large attendance.

All bee-keepers are invited to attend and join our association.

Robert A. Holekamp,
Secretary Mo. State Bee-Keepers' Association.
4263 Virginia Ave., St. Louis.

Postal Card Nominations of Officers for the National Association.

General Manager France has sent out notices asking for postal card nominations to be sent to him nominating officers to be elected at the next annual election of the National Association. The following officers will complete their terms of office with the year, and it is their successors that it is now desired to place in nomination. President, C. P. Dadant; Vice President, Geo. E. Hilton; Secretary, W. Z. Hutchinson; General Manager, N. E. France; Directors, Jas. A. Stone, G. M. Doolittle and R. A. Holekamp.

So much has been said about the Association being run and managed in the interests of supply manufacturers, dealers, editors, etc., that I think none of these classes better be placed in nomination. Let the men nominated be producers, pure and simple. As for myself, I positively decline to accept the office another term, and I would like to see Jas. A. Green, of Grand Junction, Colo., elected as my successor. He is a thorough bee-keeper, bright, intelligent, well-educated and very ready with his pen, and I feel certain would fill the office with credit to himself and the Association.

Send your nominations to N. E. France, Platteville, Wisconsin, and send them soon enough so that they will reach him by September 29.

Do Bees Select Their Future Home in Advance of Swarming?

A subscriber wishes me to answer the above question. I think they fol-

low no invariable rule. There are many instances that prove they may do either way. To illustrate: One man saw some bees working out and in a knot hole in a tree, and climed up to examine, supposing he had found a bee tree. When he reached the hole, there were only a few bees there. He broke off a branch and thrust it into the hole, but only a few frightened bees came out. Two days later, as he was passing the spot, he heard a roaring overhead, and looking up saw a swarm of bees approaching, when, with no hesitancy they at once entered the opening. It certainly looks as though, in this case, the tree had been selected in advance.

Again, a man saw a swarm, as it entered the edge of some woods, scatter and spread out, and bees were seen searching the bodies and limbs of large trees, as though looking for an opening. Once more, swarms often hang on a limb all the afternoon, or all night—if they had previously selected a home, it is not likely they would have waited so long before occupying it. Sometimes a swarm clusters in some sheltered spot, or on a rail fence, and never takes the trouble to find a hollow tree, but builds combs right in the open air, something that it seems they would not do if they had found a hollow tree. Fortunately, however, it makes no difference in the management of an apiary, whether the finding of a home is before or after swarming.

Rates to San Antonio.

Time is slipping along, and the date for holding the annual convention of the National Association, at San Antonio, is creeping nearer. For those who expect to attend, the following from the General Passenger Agent of the Missouri, Kansas & Texas Railway, will be of interest. He writes me as follows;

August 22, 1906.

Mr. W. Z. Hutchinson,
Flint, Michigan,

Dear Sir:—

I have pleasure in advising you that for the annual Association of Bee-Keepers to be held at San Antonio, Texas, November 8th to 10th, 1906, the Missouri, Kansas & Texas Railway will authorize a rate of one first-class fare plus fifty cents for the round trip from Indian Territory and Oklahoma points, for the sale of excursion tickets Nov. 6, 7, 8, final return limit Nov. 13.

On Nov. 6th, there will be on sale Homeseekers' excurson tickets from St. Louis, Hannibal and Kansas City at rate of $20.00 for the round trip to San Antonio. From Chicago the rate is $25.00; from St. Paul and Minneapolis, $27.50; from De Moines, $23 00; from Omaha and Council Bluffs, $22 50. From all these points tickets are on sale via the M. K. & T. Ry.—a line with its own through trains from St. Louis and Kansas City to San Antonio. The excursion tickets sold on Nov. 6, 7, 8 will be good thirty days from date of sale and will, in addition, admit stop over privileges both on the going and return trip. This will enable the delegates to make a very delightful trip to the great winter resort of Texas and at the same time get a better and more intimate knowledge of the great and growing Southwest.

I have pleasure in sending you under separate cover, copy of our latest Time Folder and copy of our pamphlet, "The Story of San Antonio." If there is any additional information about the trip, I can give you, which will be of benefit to your readers, I shall be very glad to do so on request.

Co-Operation in New York, and Why Some of the Journals are Silent.

An editorial in the American Bee-Keeper complains because the jour-

nals, or the majority of them, say little or nothing of the association of bee-keepers in New York which is buying goods for its members at a lower rate than the regular retail price. The Bee-Keeper intimates that this silence comes from sympathy with the manufacturers and dealers in supplies—or that the dealers control the journals. So far as the Review is concerned the sympathy is with men who co-operate to better their condition. It has said so repeatedly, and it is not necessary to say it again that its readers may know its views The trouble with the co-operative movement in New York was that it was linked or combined with an attempt to overthrow or injure the National Association, on the assumption that it was controlled and managed in the interests of the dealers or manufacturers. Not only have the New York Associations withdrawn from the National, but they have used every possible influence, and have succeeded in some instances, to induce other State Associations to withdraw. The New York bee-keepers have been successful in buying their supplies cheaper through co-operation, and then turned around and dimmed the luster of their achievements by an attack upthe National. Not one in a thousand of the members of the National is a dealer in supplies. Of its 16 officers, only three can be called dealers. To talk about the dealers dominating this body of men to their own interests versus that of the producers, seems the height of folly. If there *is* really such a feeling as this, and it is sufficiently wide-spread, it might be advisable to make a change in the constitution prohibiting the election to office of a supply dealer or manufacturer of supplies.

There is a need in this country of a National organization devoted exclusively to the interests of honey producers, and I have always believed the National to be such, but, if there is any chance whatever for a doubt in the matter, then let's change the character of its constitution sufficiently to remove the doubt.

How to Ship Honey With no Danger of Loss to Strangers Who Don't Pay In Advance.

Men who are advertising honey for sale, as I am now doing, are quite likely to receive orders from strangers who do not send the money in advance, and the question arises, what shall be done? It certainly is not good "business" to fill such orders without taking some precaution for securing the payment for the honey. A man can go to a bank and see what "rating" is given his customer. If his rating and credit are good, it is usually safe to ship goods and send a bill. If his rating and credit are not satisfactory, or if he has no rating, a man can write and ask for cash in advance, or else for reference, but all this takes time, and sometimes results in a loss of the sale, and it is well to know that there is a method of overcoming these difficulties, providing the customer lives near a bank; and that can be learned by inquiring at any bank. The plan is that of sending the bill of lading with draft attached, to the customer's bank, with instruction to deliver to him the bill of lading when he pays the draft, and the possession of the bill of lading enables him to secure the honey—otherwise he can't get it. Let's go a little more into detail. When you take your honey to the railroad depot, ship it to *yourself*, and just below your name and address, write: "Notify John Jones," or whoever your customer may be; then, on the back of the bill of lading write: "Deliver to John Jones," and sign your name. When you get your bill of lading, go to your bank, and ask that this bill of lading be forwarded with a draft attached for the amount the sale, to the bank where your

customer lives, the bill of lading to be delivered to your customer when he calls and pays the draft, but not otherwise. Write to your customer and tell him what you have done; that, when the honey arrives, he can go and examine it, and if it is satisfactory, entirely as represented, he can go to his bank and pay the draft, and get the bill of lading that will enaple him to get the honey. When he pays the draft, the bank will forward the money to your bank, and there it will be placed to your credit and you can draw it out at any time.

This plan enables a customer to examine goods before paying for them, to be satisfied that he has not been fooled with a special sample, and it protects the seller from loss from some dishonest man.

Of course if a customer should refuse to accept and pay for the honey, you would be out your freight, but that would be a small item compared with the worth of the honey; and, if the honey is what it was expected to be, there are very few men who would refuse to accept it after they had ordered it.

Getting Combs Cleaned Up After Extracting is Over.

I have no honey house at the apiary here in Flint. The apiary is four or five blocks away from the house. This is a disadvantage in some respects. When the honey had been taken off with the use of bee escapes it had to be hauled home in the evening, in order to avoid the attentions of robber bees. After it was extracted came the problem of getting the combs cleaned up before stacking them away for the winter. There were over 100 ten-frame supers, and it seemed like quite a task to cart them back to the apiary at night and put them on the hives, then take them off again and bring them to the house for storing. It was not entirely without misgivings that I stacked them up, one evening, out in a vacant lot, a few rods from the house. The hives were set squarely over one another, in piles about six hives high, and a cover put on each pile. A small entrance, perhaps ½ x 2 inches, allowed each pile. I was up early the next morning and kept close watch of the proceedings. It was not long before the bees found them, and the air around them was soon black with bees. Not only this, but they gathered in perfect swarms around nearly every house in the neighborhood. One neighbor came and told me where there was a swarm of bees around his house, but they acted as though they had lost their queen. I went around to all of the houses and explained the matter to the inmates; told them that there was not much danger of the bees stinging them, that they were simply hunting for honey, and that as soon as they found that that I had put out, they would leave the houses Within two or three hours the bees had deserted the houses; but it was amusing to see how foolish and frantic the bees acted in some cases. At one house there was a portico having a post that came up against the siding, leaving wedge-shaped cracks between the post and siding. There were at least three or four quarts of bees, all up and down this post, all fighting like mad to get into those openings between the post and the siding. At my own home, on the floor of the back porch, in a corner where the floor joined the wall of the building, the bees gathered in a bunch several inches deep. I went up to the bee yard, and all of the fronts of the hives were black with bees, in more or less of a squabble. These things all quieted down during the day, and I don't know of any one being stung, although, it is likely that some of the neighbors felt more or less annoyed.

The bees cleaned up the combs all right, but they did mutilate a few of the new combs—not seriously, but

enough so that it would be noticed. No, it was not because so many bees gained entrance and fought over them, as I opened some of the piles once in awhile, and took a look. There was no great crowd of bees on any of the combs, no fighting and crowding, but, so long as the comb is soft and tender, and has a sweet taste, they are inclined to gnaw away at it to some extent. There was no robbing at the apiary, and the bees quieted down in a day or two.

Will I ever repeat the operation? Well, I don't know. So far as myself, the colonies and the combs are concerned, I have little fault to find the most I care about it is the alarm and annoyance among the neighbors. If the apiary were isolated, as is the case with some of those up north, I would see no great objection to the plan. Of course, no hives could be opened at such a time and probably not for several days afterwards, but I don't expect to open another hide here again this year. Where there is a honey house near the bees, as there ought to be, I think it would be preferable to set the combs on the hives, and let the bees clean them up quietly, decently and in order.

EXTRACTED DEPARTMENT.

DANGER IN QUEEN-CAGE CANDY.

Foul Brood is Sometimes Spread by the Honey In the Candy in Queen Cages.

The Review has several times called attention to the possibility of foul brood being spread through the candy used in queen cages. I suppose there are very few men who would knowingly send out queens in cages provisioned with candy made with honey containing the germs of foul brood—I should hate to think *any* man would do it, but it has been done, although it may have been done unknowingly. When I last met Mr. France he recounted an experience where he found foul brood in each alternate hive in a row of a a dozen colonies, and the owner was most positive in his assertions that there was no possible way in which foul brood could have been brought into this yard—that is, to his knowledge. Foul brood inspectors inherit, or soon acquire, the habit of poking around and finding a great many things that escape the ordinary observer, and it was not long before Mr. France ran across half a dozen queen cages. "Hello!" he says. "What have you got here?" "Why they are queen cages in which I bought some queens." "In which colonies did you introduce them?" Then there was some scratching of the head, but it was finally admitted that it was in those very hives where foul brood was found. "Did you let the bees eat out the candy to release the queen?" "Yes," was the reply. That settled it as to where the foul brood came from.

The only safety is in removing the queen in the house, and destroying the cage and bees, putting the queen into a new, clean cage.

On this point Gleanings has some excellent advice. It says:—

In selecting an extracted honey to use for making a queen-cage candy, it is *very* important that the source of that honey be known. If unknown it should be thoroughly boiled to disinfect it from any *possible* germs of black or foul brood. One boiling will not be sufficient. Boil it one hour and let it stand two or three days and then boil again another hour. This is better than boiling three hours all at one time.

One can readily see, if he will reflect a moment, how foul brood *might* be spread through the agency of bee-candy. Most of the mailing-cages now are self-introducing by the bees eating out the candy and finally releasing the queen. Suppose this candy is contaminated with germs of black or foul brood. The chances are that the colony to which this queen was introduced would soon show symptoms of disease, even though the colony or bee yard whence this queen came might be perfectly healthy. This matter is so important that I would respectfully suggest that our apicultural exchanges bring the matter before their readers. In the meantime the purchaser of the queens, if he wishes to be on the safe side, taking no risk, may recage the queen received in the mails, introducing her by means of bee-candy made of honey out of his own yard.

SELLING HONEY AT FAIRS.

A Novel Method of Drawing Crowds and Making Sales.

The season of fairs is now upon us, and many bee-keepers are taking advantage of these gatherings to make a market for their honey; and many more might do so if they would. There are several methods of selling honey at fairs, some of which have been mentioned in the Review, but it is likely there is no plan that will draw a crowd as will a demonstration, or exhibition, with live bees in a wire cloth tent. Gleanings has described this method, and told of the immense quantities of honey that had been sold at such exhibitions, and now it again calls attention to the matter as follows:—

I promised last fall that I would remind our readers of the importance of preparing bee and honey exhibits at the coming county fairs. Arrange right now for space. Instead of going right inside of the fair house I would advise putting up a temporary booth outdoors, or rent a tent from some camper who has just returned from his vacation. Prepare a nice honey exhibit, showing honey in its different forms.

To draw a crowd, get inside a wire-cloth cage, one big enough to hold yourself and a hive of bees. While an attendant is prepared to make sales, you or some one else should get into the cage, barearmed, bareheaded, without coat or vest, and shake the bees into a big dishpan. Now shake the pan until the bees are thoroughly demoralized, rolling them over and over. In this condition you can do almost anything with them, providing you do not pinch them. Gently pass the two hands under the ball of bees, moving them very slowly until you have your hands full, then hold them before the astonished crowd. Crowds? Oh yes! the people will fairly swarm around your exhibit. When you get the crowd, *then* is the time to give a nice little talk about bees and honey. While you are talking your attendant should show an extractor as well as other appliances. Tell the people who you are, where your bee-yards are located, and hand out honey-leaflets and blank postal cards with your name and address; explain that honey is a wholesome sweet, much safer and better than ordinary cane sugar, and far better than most candy. Answer all the questions the crowd may put; and if you do not sell honey, and lots of it, *it will be your own fault.*

Your sales for two or three days, while the fair is in progress, will more than pay expenses, and will give you a permanent advertisement that may enable you to dispose of your own crop right in your own locality at twice or possibly three times the price you would get by shipping it to the city. If the experience of others is duplicated, you may sell a great deal more than you produce.

In connection with your exhibit of bees you ought to have a couple of observatory hives. A one-frame nucleus with glass sides is better than a whole hive with with glass sides, although we advise the use of both.

There should be a large placard out in front of the demonstrating cage, stating that that hive of bees will be handled at such and such hours. Arrange the period for bee demonstrations so as not to conflict with other things on the ground that may pull away your own crowd. Then remember to make your main demonstration just about the time people are going home, for *then* is the time people will buy.

UNRIPE HONEY,

Some of the Evils That Come From Extracting Honey Before it is Sealed Over.

It is to be hoped that the journals will take up the crusade against the extracting of unripe honey, and keep it up until no more honey is extracted until it has been sealed over. I will admit that it is possible that honey may be ripe before it is capped over, but the circumstances are exceptional, and the only safe advice is to urge the capping before extracting. If this course should become universal it would greatly advance the demand for extracted honey. Right in this line I take pleasure in copying an article from Alpine McGregor, of Ontario, Canada, published in a recent issue of Gleanings. Mr. McGregor says :—

I just wish to emphasize an editorial comment on Mr. E. W. Alexander's article, p. 153, Feb. 1. Referring to the advisability of allowing the extracting-combs to become fully capped before extracting, you say, "In all the lake regions I am sure it is imperative" The "lake region," if I am correct, includes nearly all Canada except Manitoba and the Northwest, where, practically, there are no bees, and a part of the United States. I too am sure that it is imperative.

I remember very well when D. A. Jones was "King" in Canada. He practiced and advised extracting before the combs were capped, and ripening the honey in tanks holding about 375 lbs. All the bee-keepers with whom I was acquainted, and I think I may say the majority in Canada, followed this plan. The result was that the honey market for years was such that it was more difficult to sell the honey than to produce it. Many went out of the business; and those who remained, the writer among the number, decreased their stock. I will mention just one case in point.

A man, less than two miles from here, about twenty years ago extracted over 200 lbs. per colony. Being short of ripening-tanks he ran it into cans too soon; and the consequence was that every pound fermented, bulged out the cans, and forced itself out at the top. It was all sold within twelve miles from here, and I need not enlarge on the effect it had on the demand for honey in this "locality."

I will not say that good thick honey can not be produced by artificial ripening provided there is plenty of ripening tank capacity and the weather is hot and dry; but take any one of the last three summers, last summer especially, when almost every second day there was rain, a damp atmosphere, cloudy and cool day and night—will any one say that honey could be properly ripened in such an atmosphere and at such a temperature?

About twenty years ago the writer was present at a convention in the City Hall, Toronto. The Rev. L. L. Langstroth, Mr. A. I. Root, Prof. Cook, Mr. D. A. Jones, and many other prominent bee-keepers from the United States and Canada were there. In the course of a discussion Prof. Cook arose and asserted, with all the dogmatism of a fifteenth-century Calvinist, that honey extracted before it is sealed and artificially ripened is just as good as that fully ripened in the hive. He had tested it—with some of his students I think he said—and they could not tell any difference. He further stated that he could not afford the time to let the honey ripen inside the hive. Mr. A. I. Root took the opposite view, and maintained that honey which is fully capped before extracting is superior—a position which I believe is endorsed by nine-tents of the bee-keepers throngl out the United States and Canada today.

Right here I may say that I do not consider an extracted-honey producer fully prepared for his business unless he has three supers for each colony of drawn combs. Thus equipped we *can* afford the time to allow our honey to become fully ripened in the hive.

I shall not presume to question the Alexander method of extracting honey in *his* locality, especially *buckwheat* honey. I rather fancy that exposing it in large tanks for a week or so would improve it, as it might dissipate some of the aroma (?). But I do not want to see that system revived and reintroduced through the medium of Gleanings.

The editor of Gleanings comments as follows:—

[As I have before stated, I will say again with further emphasis, that for

the average bee-keeper, in the average locality, the combs should be fully capped before extracting. The extraordinary bee-keeper in an extraordinary locality may extract before capping.

Prof. A. J. Cook is not now in this country or I would refer the paragraph in reference to extracting uncapped honey to him direct; but I may say this much: Since the time of the convention referred to, he has given out a statement that seems to be backed by facts and by scientific men generally, that the bees do something more than merely evaporate the nectar. They "invert" it, according to the chemists—or, as Prof. Cook prefers to put it, "digest" it, making a distinct chemical change between the nectar just as it comes from the flower and the honey from a fully capped comb. It is the opinion of the editor that Prof. Cook would *now* be among the number who would advise the average bee-keeper to let his combs become fully capped before extracting.—ED.]

UNCAPPING HONEY.

Some Points to be Considered in Order to Do the Work Quickly.

Only the man who has worked from morning until night wielding the uncapping knife in the honey house can realize the immense difference in the time required to uncap a thin, "lean" comb, and one that is bulged out on each side, such as result in spreading the combs apart, using eight combs in the place of ten. With a knife that is long enough, a Langstroth comb can be uncapped with a single upward swoop, but the Bingham knife, as usually made, is not long enough to reach across the comb and be used in this manner, and E. D. Townsend, in an article to Gleanings, calls attention to this point and urges the manufacture of a longer knife with a special handle that will allow the operator to get his hand closer to the knife, thus securing a better leverage. Here are some of the things that he says:

Some time ago I received a sample of Bingham's uncapping-knife from the A. I. Root Co. to test. The blade is the same as usual, only an inch or thereabout longer than the regular. The handle is the Coggshall idea, being flat on the top and bottom, as the knife lies on the table, and is also planed off on the edge where the thumb comes when taking hold of the knife when using.

And now, Mr. Editor, I will say a few words about uncapping and uncapping knives. We have felt the want of a longer uncapping-knife for several years, but have been loath to ask for it for fear this extra length would make the knife unwieldy, or, in other words, every little we add to the blade in length we lose in leverage. I wish I could have used this knife with the blade an inch longer than the regular, one season before passing an opinion on it. Our extracting-frames are all the Langstroth size, mostly with $\frac{7}{8}$ inch deep top-bars; but a part are only $\frac{3}{8}$ inch deep. This, after figuring out the bottom-bar, leaves from 8 to $8\frac{1}{2}$ inches of comb surface. Eight of these combs are used in a ten-frame body. In our extracting upper stories this wide spacing, $1\frac{3}{4}$ inches, makes great plump fat combs. Now, to uncap, set the comb to be uncapped on end, on the usual sticks, over the uncapping tank, with the edges of the comb towards you, held in position with the left hand. We start the knife at the lower end of the comb to be uncapped. At this stage the comb, for convenience, will stand on a slant to the left. Now begin the upward movement of the knife, back and forth, endwise, with a seesaw motion. This makes the knife cut more keenly. Now, about the time you see the cappings are going to fall off the knife, with the left hand push the comb to the right until it stands perpendicular. If you are now holding the knife at the correct angle, the beveled edge on the knife being on a level with the comb after it is uncapped, the lower edge of the knife will be an inch or so off from the uncapped surface, so the cappings will clear the comb and fall direct into the uncapping-tank below. Uncap deep, clear down to the frame.

I am convinced that the best honey could be produced by using nothing but foundation in the upper stories to extract from; but as this is impractical the next best thing to do is to uncap *deep* so the comb when given to the bees to be refilled, will be, say, one inch thick. This leaves the cells only $\frac{1}{2}$ inch deep, and is the *next best* to foun-

dation. Then by 1¾ inch spacing the combs uncap very nicely, and I never could see but the honey was just as good as if more combs were used in the upper story—i. e., closer spacing.

Keep moving your knife up, with the drawing motion mentioned above, until you go the whole length of the comb; and if you have done a good job, and there were no indentations or unusually rough surface, your comb will be finished with one stroke of the knife.

And here let me say, no one will ever go back to narrow spacing, after once trying wide spacing; but don't forget to uncap *deep*. This leaves your combs the regular thickness when extracted, and I think the honey will be of a little better quality in these thin combs.

I think that, after reading thus far, it will be easy to convince the reader how handicapped we have been with the regular short Bingham knife as it has been manufactured heretofore. Of course, those who still practice close spacing will need the regular knife. That brings me to a point. We shall need two knives—the new long broadside knife and the "regular" knife.

Kirkpatrick's Honey-Peddling Vehicle.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, OCT. 15, 1906. NO. 10

Retailing Honey on Rural Free Delivery Routes.

GEO H. KIRKPATRICK.

I ENCLOSE a photo of the vehicle that I have constructed for use in selling honey, and I also give my experience and success in canvassing a R. F. D. route for the purpose of selling honey to the farmers and lumbermen.

As you will see, the vehicle is mounted on a light pair of bob sleighs. I also have a set of wheels for it for summer use. It is provided with a door and sash in each side, and a sash in front; the lines passing through two, one-inch holes. The frame supporting the top is of oak and the panels are of basswood. The upper half of the sides and top are of heavy duck, painted with three coats of white paint, I have it neatly lettered on each side, besides, there is also a painting representing a colony of bees with a comb lifted out.

THE ADVANTAGE OF A SPECIAL VEHICLE.

I consider it an advantage to use a special vehicle, as when I have made a trip through a certain section of the country, everybody, including the local papers, is speaking of me and it is a splendid advertisement.

I give notice to the heads of families on a certain R. F. D. Route, 10 days previous to my canvass, by mailing a card that I've gotten out. On this card I give my occupation, when established, and post office. One sentence reads:

"Sir, I wish to inform you that I will canvass Rural Route No. (giving the number of Route and date of the day or days I will make the canvass.")

In this way I largely increase my sales, as the people are expecting me, and have saved a dollar with which to purchase a pail of honey. I am sure I make many more sales by giving the people notice of my coming, than I would were I to make the trip unexpectedly.

On routes well established that I make, we will say, the first of every month, my customers learn to expect me without giving notice through the mail.

My retail package is a ten-pound friction-top pail, *one size only*. Each pail is neatly labeled, and contains 10 pounds of well-ripened honey gathered from wild red raspberry—"the honey that made Michigan famous" for the superior quality of its honey. I sell this 10-pound pail for $1.00, and reserve the pails; picking them up on my next trip.

Selling honey in this way is a delight; one can do it with a clear conscience, knowing that he is giving his customers value received. We know we have a good thing for sale; one of the best foods God ever gave to man. Let's join hands, brother bee-keepers; produce the best grade of honey obtainable and place it before the public in a practical and profitable way at a fair price.

The key to success is fairness, good weight and good quality. If it is possible, deliver to all customers a better quality of honey than they can get elsewhere. Most people are willing to pay a fair price for a good article. If there is anything about the honey that is not exactly as it should be, call the customer's attention to it when the sale is made, thus holding the customer. No business man can afford to lose a customer.

We should show our customers that they can save money by the use of honey. I expect in the future to put out a little circular to go to each customer, telling the value of honey as a food.

ONLY THE HIGHEST QUALITY OF HONEY SHOULD BE SOLD FOR TABLE USE.

I believe it is possible to produce a much better grade of extracted honey than is being produced today by the average producer. The average bee-keeper, in my opinion, looks more to the quantity of his honey than to the quality. Only the very best should be sold for table use, and that should be all capped before extracting. All uncapped honey, and all off-grades, poor in flavor, light in body, or dark in color should be sold to the bakeries or other manufacturing companies.

I have retailed, in small quantities, several thousand pounds of extracted honey direct to consumers; and I have noticed, if rightly done, it brings good results.

GREAT CARE NEEDED IN LIQUEFYING HONEY.

Experience is a good teacher. By experience I have learned that 60-lb tin cans are very nice to use in storing a crop of honey, nice also for shipping the same, but not suitable for liquefying honey. I believe a very large per cent of our fine grades of honey are in a measure spoiled in the 60-lb cans when heating the honey to bottle it for the retail trade. It is next to impossible to melt a cube of honey 9 x 9 x 14 inches without spoiling the flavor and color. I prefer and use open-topped tubs for the storage of honey for my retail trade. Lard tubs can be obtained at grocers at about 10 cents each and hold 95 lbs. of honey. With a large quantity of boiling water they are quite easily cleaned. I fill the tubs, then cover with a good quality of heavy paper and nail on the cover. When granulated they are ready to ship to any market.

To liquefy the honey, I dig it out with a two-inch chisel or a carpenter's stick, and put it in a double tank, a smaller one inside a larger one, with water between. Honey melted in this way requires but little heat, and there is no danger of overheating, thus avoiding all danger of spoiling the flavor and color of the honey.

RAPID CITY, Mich., Mar. 7, 1906.

Foul and Black Brood and Hoffman Frames.

E. T. ATWATER.

FRIEND HUTCHINSON, your editorial on page 240, "Black Brood and Foul Brood," prompts me to write a few lines on the same subject. You say, "Perhaps we may as well begin to call the latter American foul brood, and the former European foul brood, as this seems to be the decision of the majority of the inspectors." Please don't be in a hurry about it. See Dadant's exposition of the subject in August 23rd, American Bee Journal. From the points made by Mr. Dadant, I for one will not drop my old belief that the *foul brood* of Europe and America are the same. You know that Capt. Hetherington said "Black brood is twenty times worse than foul brood" While E. W. Alexander says of foul brood "It is as much worse than black brood as smallpox is worse than measles, I don't care who says to the contrary." Now in regard to the claims made by Samuel Simmins, I have often thought that he could not have the same disease under observation that is such a nuisance in this country; but I have seen at least a little evidence this summer that leads me to think that there may be no difference, and that the Simmins-Alexander method may perhaps under some conditons, cure *real* foul brood.

With one exception, all of our yards are free from foul brood, but in one apiary it is a somewhat persistent factor. This summer, during the flow, the diseased colonies were shaken onto foundation, for the usual method of cure. The removed brood, with a small force of bees, was stacked up three to five stories high, on a new stand, all queenless. In about a month I glanced into each "tower," when, to my surprise, I found, in the *top story* of each, not a cell of diseased brood, but plenty of young, healthy brood, as the bees had reared themselves a queen.

Where the diseased brood had been, I found, either holes in the comb, or the comb torn down to the septum. I at once called my assistant's attention to these facts. We then lifted off the top stories, but the diseased matter had not been cleaned out of the cells in the other stories. Perhaps, if the colonies had been very strong, they would have cleaned out all combs alike.

I shall certainly test the Simmins-Alexander cure if the disease appears next season, using a small brood-nest. If this method can be applied before any of the dried-down scales are covered with honey, there is perhaps a possibility of a cure. I now *know* that you are mistaken in saying that the bees can "clean out the cells, if they choose." "The bees can't clean it out." You can see testimony to the same effect in Gleanings, 1905.

Are you correct in saying that both black brood and foul brood can be eliminated by shaking off the bees and allowing them to build combs? Has there not been reputable testimony showing that the method is not reliable for black-brood?

THE PROJECTING ENDS OF HOFFMAN FRAMES.

Seems to me that you are giving the Hoffmann frame "worse fits" than it deserves. The standard thickness of the projection of the top-bar on which it hangs, is 5-16 inch; not ¼ inch, and that extra 1-16 inch, is a "whole lot" in that place. Most of the unspaced,

thick top-bar frames sold have the projection quite as thin and narrow as the Hoffman, and that is a mistake, as the projection should, for strength, be full-width of the top-bar clear to the ends, and, for our own use, we have them so made, 1 1-16 inch wide from end to end. The projection on our frames is 5-16 thick, 1 1-16 wide, and 1 1-16 long, and is *of course*, no weaker than the same size projection on the plain frame. No doubt it was a great mistake to make the standard thickness of top-bar projection only 5-16 inch, rather than ⅜ inch (or more) as it was years ago, but if it is one inch to 1 1-16 inchs wide, it does very well and saves the terrible bother of two thicknesses of top-bar projections, with its bee-space mix-ups, you must admit that the Hoffman frame can be so made that it *will* have "handles."

I have used both kinds of frames for years and expect to make mostly Hoffman frames for our own use, if I do not adopt the Alpaugh spacer, as illustrated in January 18th American Bee Journal. The Alpaugh device certainly has some fine points, combining many advantages of both spacers and non-spacers and eliminating some of the faults of both. I've a mind to try it.

ALLEVIATING THE TORMENTS IN AN EXTRACTING TENT.

Your account of extracting in a tent, p. 231-232 is about right; but as I've extracted tons and tons in such a place of torment, I'll tell how to make it at least a little nearer comfortable.

Your idea of a platform in the tent, for extractor strainer, etc., is our arrangement also, but we eliminate some of the faults of the average tent by first setting up a rim of 1 x 13 inch boards, just the size of the bottom of the tent.

The tent is then set up and the lower edge of the tent is held to the upper edge of the boards by means of a few lath and shingle nails. This makes the room a foot higher inside, gives more room, more air, and by throwing a little dirt along the bottom of this foot-high wooden wall, no bees can crowd under and into the tent.

To improve the ventilation we cut a hole, about 2 x 3 feet, in the end of the tent opposite the entrance, and over this opening is attacked a window screen fitted with bee-escapes.

The swarming fever among your colonies was certainly easily cured. Not so here, this season.

IDAHO HONEY SO THICK AND "GUMMY." IT WON'T GO THROUGH CHEESE CLOTH.

Wish you could test that cheese-cloth strainer (p. 268) "in this locality." When I came to Idaho, I cut the bottom out of a galvanized tub, and soldered in its place a circular piece of heavy wire screen with ¼ inch mesh. This tub just fitted into the top of an old extractor can. Into the tub I put a piece of wet cheese-cloth, and filled the tub with honey.

Next morning half of it had run through. There *is* a principle that can be utilized with fine wire-cloth, or perhaps with cheese cloth, that I think will work even with thick gummy honey, and if, after testing, it proves satisfactory, I will send a description, with full credit to the inventor.

MERIDAN, Idaho, Oct. 7, 1906.

[I remember reading the article by Mr. Dadant. It was well written, and fair arguments used. but, for some reason, it did not convince me that he was correct in his views. I *know* there is a difference between the so-called black brood and our old fashioned foul brood, and I know that some of the things said by Europeans about foul brood do not apply to our American variety. Before I became acquainted with the black brood, and knew it was that disease to which the Europeans had reference, their assertions and articles were decidedly a puzzle to me —now they are clear.

In all of my experience, I never knew bees to get rid of foul brood scales by cutting out portions of the cells, but, if they did under the conditions you mention, it is well to know it.

It is possible that shaking off the bees and allowing them to build new combs may not *always* free them from black brood, but I was in an apiary of 60 colonies last summer in which this plan had entirely eradicated the disease.

Of course the thicker the projecting end-bars of the Hoffman frames, the less likelihood of their splitting off, but *any* projecting end-bar, formed by cutting a notch in a thick top-bar is much more likely to split off than is a projecting end not so formed. A plain, straight, top bar, even if only 5-16 thick, will not break nor split if it is the same thickness the whole length, but a projecting end, even ⅝ thick, will split off quite easily if formed by the cutting of a notch. That notch gives it a start. When we jerk on the projecting end, the tendency is to pull the projection loose from the rest of the top bar—when there is no notch there is nothing to pull the projection away from. This is the weak point in all thick top bars, the projecting ends of which are formed by cutting a notch.

I don't want thick top bars with notches, nor self-spacing arrangements—just plain, 7-16 x ⅞ top bars without any frills. ED. REVIEW.]

50,000 Pounds of Honey Retailed By One Man.

H. C. AHLERS.

MY SALES to date are 19,452 pounds all extracted honey. On Sept. 1st, I had sold 12,367 lbs. My sales will probably exceed 50,000 lbs. by April 1st—the close of my season.

I keep each customer's name on a card and record and date every call. A reliable man does my delivering and calling. Any green man can do the work with the record before him, every card and order placed in rotation. All letters are copied. I still use the old press. Letters, orders and receipts are filed together, alphabetically. When one file is full I start another.

I am advertising for honey in Gleanings, The Review and The Rural Bee-Keeper. I get many offers of honey. One offer I credit to the Review. All the remainder were received through Gleanings, although I offer 7¼c at my station, I can now get more clover honey than I can use at 7c.

I get most of my honey from the S. W. part of Wisconsin. All clover honey is partly alsike. I have had only five barrels *strictly* white clover.

The whole secret of the business is to advertise properly and persistently. Supply your customers promptly with the very best honey, and keep after them. But one out of fifty will sit down and order honey by mail.

I now charge a sliding scale; a 25-pound tin pail, $2.75; 13-pound tin pail for $1.50; and a Mason quart jar for 40 cents.

I bought 2,000 13-pound empty pails; 500 25-pound pails and 12 gross of quarts, and I shall have to duplicate the latter.

I would remark: A German paper is worth five times as much as an English printed one, with the same

number of readers. The Germans are *the honey eaters.* Bee-keepers must cater to them.

I have made six shipments by freight since Sept. 6th. The largest, 240 pounds; eighteen shipments by express since July 5th. The largest 377 pounds to Chicago. I have shipped to Davenport, Iowa, St. Louis, Joliet, Galveston, Philadelphia, Baltimore and Washington, in 60-pound cans at 10 cts. per lb. F. O. B. I have shipped to Sheboygan 25 pounds; to Watertown 120 pounds. Results of advertising.

I got my first idea from "Success" and then The Review has kept stirring me up.

I shi. you a sample by mail. This honey was drawn from the tank. I am putting up 2,000 lbs. for next week just like it. It is a blend from three shippers. Part of the honey cost 7c. Please write me and tell me candidly just what you think of it.

I have 98 colonies of bees *now.* My crop was scant 3,000 pounds inferior honey.

WEST BEND, Wis., Sept. 28, 1906.

The National Association and its Managers.

ARTHUR C. MILLER.

MR. EDITOR:—You are usually so clear sighted and just, that I am greatly surprised at your editorial in the September number on "Co-operation in New York, etc." As you are undoubtedly aware there has long existed among many members of the National Association a feeling of distrust of some of its officials and a resentment against the way they conducted its affairs. (How far this was justified does not this moment concern us.) There was also much ill feeling against some of these officials as individuals on account of their real or supposed acts in the conduct of their commercial affairs. In attempting to remedy matters in either the society or in commerce it was inevitable that the two would be mixed, as the action was against the same individuals. Hence, we find the bee-keepers acting simultaneously on co-operative buying and on withdrawal from the National. After trying to make the National more truly an organization for bee-keepers and to place men of their own craft in charge of it they decided that their only remedy was withdrawal from it and the formation of a new body composed exclusively of honey producers. As a part of the new movement they proceeded to mutual help in the reduction of the prices for supplies. The action of the New York societies in this latter feature has been followed by many other societies, and by some of them independently of any consideration or mention of National affairs. It is because of the silence of part of the press on this point that the bee-keepers are sore.

As for conditions in the National. You say "Not one in a thousand of the members of the National is a dealer in supplies." That body had about two and a half thousand members and a casual glance at the list will reveal a score or more of dealers among them. But the bee-keepers have classed with the dealers the editors, chief and departmental, and other employes and close associates. Now, if you will look at the list of the officers you will

find at least eight of the sixteen belong under that classification with several others doubtful. Such classification you should be familiar with. To talk about these men dominating the society being "folly," the members of or a large body of them at least, do not think it folly, evidence of which you have in the rapid falling off of membership. You also have evidence of it in the matter which passes between officers, which rarely comes to the ears of the other members. For obvious reasons it would be better to save the old society than start a new one, but if the old is to be saved, radical changes will have to be made, both in the personnel of the officials and in the constitution. From all over the land comes evidence of the feeling that the meeting of the National at San Antonio next month will mark the beginning of its end or of its rejuvenation. If the former, another body will promptly take its place, if the latter you will see it quickly regain its old members and grow as it never grew before. Let us hope it will be the latter.

PROVIDENCE, R. I., Oct. 3, 1906.

[I have been an officer of the Association for a dozen years or more, I have attended nearly all of the conventions, I have been about all over the country, I have received letters from hundreds of its members, yet, never, in all this time, have I ever heard a whisper that there was any feeling of distrust of some of the officials, or resentment against the way they conducted its affairs. I was aware that there was a whole lot of kicking because of the uniformly high price of bee supplies, but I never heard any complaint that the manufacturers and dealers were using their connection with the National to further their private interests.

There has never been any attempt to change the character of the National. The members have never tried to elect a man and failed. All such talk is the merest balderdash.

Two or three years ago, when the officiary of the National was more largely dealers than it is now, some of the New York members were working night and day to increase its membership, now, when most of these dealers are out of office, these same members find that these dealers do not "conduct their commercial affairs" to the liking these members when, presto, they jump on the back of the National! Blame the National for the acts of dealers now out of office! Could anything be more unreasonable?

A labor agitator can stir up a body of satisfied, contented workmen, and induce them to do foolish acts that they would otherwise never have thought of doing; so a few bee-keepers in New York can stir up and mislead a lot of bee-keepers who would otherwise remain loyal.

The co-operation of the New York bee-keepers in buying supplies was praiseworthy, and as I have stated in previous number, I should have been glad to have heralded the movement had it not been coupled with a senseless attack upon the National. As it was it seemed to me an act of charity to drop a mantle of silence over the whole business. It was because of this silence on the part of the press that Bro. Miller says that bee-keepers are "sore." Now, I'll tell you exactly what I think: When those two or three New York men had stirred up this matter, I imagine they felt as a pigmy might feel when he had attacked a giant. They expected that the apicultural press would stand aghast. Not a word was said, and, naturally, they felt "sore." If any of my readers felt sore because of my silence, I wish they would let me know—remember, too, that I am not thin-skinned.

Then, because of this silence, the journals are accused of keeping still because they were in cahoots with the

dealers. This taunt broke the silence. I doubt, however, if the person who made this fling really believed that the Review was guilty of such conduct. You may call it egotism, or call it what you like, but I don't believe there is a person in the United States who believes that the Review would remain silent, believing that that silence would further the interests of supply dealers, versus those of producers.—ED. REVIEW.]

Some Hints on Preparing Bees For Winter.

HARRY LATHROP.

THE preparation of bees for winter should really begin at swarming time, by the careful forethought of the bee-keeper in looking after the welfare of each colony to see that it has a good queen, and, later, in saving combs of honey for winter stores. This work can be done after the main honey flow, but the best time to do it is when the bees are easily handled.

In most cases, here in Wisconsin, extracting combs must be left on the hives for the bees to take care of till about the middle of October, because few are so provided that they can guard against the ravages of the moth.

It is a happy chance if a fall flow of honey has allowed the bees to gradually fill the brood chambers as brood rearing ceases. I often have this condition on my fields, as there is usually an abundance of autumn flowers, such as asters, goldenrod, sunflowers, etc.; but sometimes these flowers fail to yield honey owing to weather conditions, and then October finds the brood chambers nearly empty. What is to be done? Change combs, slipping below as many full combs of honey as you can, and supplement with sugar syrup fed in pans or crocks in the upper story, using green grass or excelsior to keep the bees from drowning in the pans.

If some of the extracting combs contain a little honey, uncap it and hang it in an upper story over a colony that needs more stores. Place a carpet or quilt having a small hole in it, or a corner turned back, over the brood combs, so that the bees will carry down the honey. Some colonies persistently stick to a set of extracting combs in the fall. I uncover such during a cool night and early in the morning, when the cluster is contracted, take away what combs I can, and repeat the operation till I get them all off. When a cool spell occurs in October one can sometimes strip a yard down to the brood chambers very easily, as in most of the hives all the bees will be below; that is, if queen excluders have been used, and I always use them.

I would like to winter a good many double brood chambers, that is, two-eight frame stories, the upper one to be nearly solid honey, but they are hard to handle and take up too much room in the cellar.

As fast as the combs are clean and dry, place them in supers and stack in a safe place. They may be stacked in

an open shed if the job is well done, and each pile carefully covered and weighted. These combs are the bank account of the bee-keeper and on them, and *plenty* of them, hangs his success. They have more than any other one thing to do with solving the question of swarming. The editor is surely on the right track when he advocates an abundance of extracting combs. I make combs and buy some when I have a chance, but never sell any. The objection has been made that it is too hard to protect combs. I think that part is all easy enough if one understands them as well as he does bees. Let the bees protect the combs at all times except during cold weather. I think many of us are coming to the belief that the time to do spring feeding is to do it the fall before, but better late than never will hold good.

The approach of real winter should find all colonies reduced to the brood chamber, well-covered, entrances contracted, and all ready to be carried in at a moment's notice. The cellars also need attention. I always sweep them clean in the spring after the bees have been removed, and leave them so they will get plenty of air during the summer. Before time to put the bees in, benches should be made ready. By having all these things properly done, putting away the bees may be made a real pleasure instead of a dreaded task.

BRIDGPORT, Wis., Oct. 12th, 1906.

Some Points Regarding a Long Uncapping Knife.

T. F. BINGHAM.

FRIEND HUTCHINSON, I read the knife-article in the Review yesterday. If you will correspond with Mr. Manley, also Mr. W. E. Forbes, you will get a report of two long knives, that I made for them. They have had them to use two summers, and can say what they think of them. At their request, three years ago, I made the long knives—9 inch blade. I had six knives made, and sold them, and have had no complaint. So, I infer they were satisfactory.

But in Townsend's idea would preclude the use of such a knife as would serve him, being used pleasantly by ordinary bee-keepers. Nine inches would not be long enough for him. (Probably he knows about Mr. Forbe's knife as they live near each other.) Mr. Townsend's figures of $8\frac{1}{2}$ inches of comb surface with $\frac{7}{8}$ top bar and $\frac{1}{4}$ inch bottom bar would make a net width of $9\frac{5}{8}$, add to this the ability to "sea saw," that he notes, and the blade would be not less than $11\frac{1}{2}$ net, straight edge, on the two sides of the blade. What would answer if designed to use on uneven surfaces (not flat), would occasionally have to have an oval point, and be $\frac{1}{2}$ inch longer—in all a 12 inch blade sharp all the way.

One feature could be added to relieve this long blade; the shank could and should be made straight, like any butcher knife used in a meat market. Such a handle would do away with the flat-side handle. No use for bent shanks on long knives, designed to cut only cross-wise of combs. Such a

straight long knife would be a success with bee-keepers who use wide spacing of frames. If the idea or fact could be done away that not all combs are not level, the end of the blade could be square, and so do away with ½ inch wasted in the point, the curve of which is of no use except in concave plans.

I have just measured the first Bingham knife made, and which I have used ever since it was made, about 30 years, and which cost me $2.50 to make, and it measures 2½ inches net, cutting edge and is 2½ inches wide. I believe it is the best uncapping knife ever made it is a beauty.

The long knife, of course would cost more, and the postage would be more I got $1.00 each for the lot of about a dozen that I had made 9 inches long. Please ask Messrs. Manley and Forbes about them

FARWELL, Mich., Oct. 1, 1906.

Editorial

Australia is really beginning to give the bee-keepers exclusive control of bee pasture. If this isn't right, *why* isn't it?

Alan Irving Root, the youngest son of E. R. Root, appears on the front cover of Gleanings for Oct. 1st, as a laughing baby in a "go-cart." The picture is one that I think almost any one would call "cute."

The Ontario Bee Keepers' Association will hold its annual convention in Toronto Nov. 7, 8 and 9. This will be at the same time that the Ontario Horticultural Society holds its annual exhibition of fruit, flowers, honey and vegetables. Single fare is extended to all.

Arthur C. Miller writes me that the November issue of the American Bee Keeper will have an editorial urging the "saving of the National (?)" and stating conditions fairly; and I am looking forward with interest to the perusal of said article.

Annexation of Cuba is a very remote possibility, and, even if it *should* come about, E. R. Root says that bee-keepers would get cheaper sugar to feed their bees; possibly the sugar; would be so cheap as to put glucose out of existence but then, as Mr. Root says, all this is crossing bridges before we come to them.

F. W. Alexander, of New York, says in Gleanings: "In regard to running some other business with bee-keeping, I must say that I don't think much of it. If you want a larger income, just add one or two hundred more colonies. I don't know of anything so nice to go with bee-keeping as plenty of bees."

Hive Lifting devices may yet come into use in the large apiaries. I hesitated to tell what I had in my mind, that of a miniature "stump puller" for lifting hives; I feared that it might cause a laugh, but Gleanings has now illustrated three devices for this purpose. One by Mr A. K. Ferris, another by Mr. John Bailey, and still another by Mr. R. F. Holtermann.

This Issue of the Review has been delayed by my absence in Northern Michigan preparing the bees for winter and building three out-door cellars for wintering the bees. I hope my readers will pardon the delay, as this was work that could not be neglected, and now I can turn my whole attention to the Review and soon have it caught up again.

"Fewer Bees and better care" was the subject of a recent article in the Review, and the American Bee Journal considers it passing strange that such an article should appear in the Review when its editor preaches the doctrine of "keeping more bees." It was published simply because its editor believes in being fair, and showing up both sides.

Gleanings is rapidly becoming a "departmental" paper. Dr. Miller has a department "Stray Straws," then there is "Bee-Keeping Among the Rockies," by J. A. Green; "Conventions with Doolittle;" "Facts and Fancies" by J. E. Crane, and, perhaps I have missed some, and there has lately been added "Notes from Canada," by R. F. Holtermann.

An Automatic cover for comb carrying boxes on a wheel barrow is one of the handy things described by Wm. Lossing in Gleanings. Pressure by foot on a treadle raises the cover, and a coiled wire spring returns the cover, when the pressure is released. The arrangement allows the use of both hands, and is away ahead of using the ordinary "robber cloth."

Localities differ greatly only a few miles apart. J. A. Green tells in Gleanings of great differences in this respect. He had six apiaries the past season, and the poorest and best were only two miles apart. He says there are several factors in the problem that he has not yet worked out, but he is satisfied that it is a great deal safer to have several apiaries than only one.

A Special Car will leave Chicago on the forenoon of Nov. 6th for the San Antonio convention, reaching St. Louis on the evening of the same day, where several bee-keepers expect to join the party. The round trip will cost $25.00 for the railroad fare with an additional charge of $4.25 to pay for a berth two nights. For further particulars, write to Geo. W. York, 334 Dearborn St., Chicago, Ills.

Requeening colonies in the easiest possible manner, says J. A. Green in Gleanings, is that of giving ripe queen cells, protected by a West cell-protector. No, he does not hunt up and remove the old queens. The young queens will, in many cases supersede the old ones; and, if queens are kept clipped it is an easy matter to know whether the old queens have been superseded or not.

Lazy Bees for gathering honey are sometimes very sharp at robbing. I have referred, in one or two places in this issue to a strain of bees that we had this year which were poor workers; well, when we took off the supers and stacked them up, these bees were the first to find the honey in the combs, and to carry it home. They would be flying in full force from these colonies, while scarsely a bee could be seen leaving the other hives.

A Power Driver extractor (one driven by a gasoline engine, for instance) will secure more honey because the continued high speed empties the combs dryer. It might be said that the honey goes back and is taken out by the bees, but Mr. J. T. McIntyre says that when there is much drip the bees are improvident, and eat more than is actually necessary to sustain their bodies. Then the use of power really takes the place of, or does the work, of one man. A man can uncap a set of combs, put them in the extractor, start the machine, and then go on uncapping another set while the engine is running the machine.

Cleaning Honey Boards, those of the wood-zinc style, is something that sometimes needs doing, and J. A. Green says,

in Gleanings that an excellent plan is to lay the boards out in the sun until the wax and propolis are thoroughly softened, then scrape both sides with a sharp metal or wood scraper. The scraper must be narrow enough to go between the slots. He says the metal scraper is preferable, but a piece split from a broken section will answer a very good purpose. Keep the scraper *perpendicular* to the zinc, and move it rapidly back and forth, first on one side, and then the other.

Railroads, as a rule, take great pains to keep their "right of way" free from weeds and rubbish. In many places quite a harvest might be gathered by the bees from sweet clover growing along railroads, if the "section hands" would not cut it down. Gleanings says that an organization of bee-keepers in Cincinnati, Ohio, requested the railroads to allow the clover to stand while in bloom, and the request was granted to the great gain of the bee-keepers.

This is a move that may well be imitated by other bee-keepers' Associations.

Early Cellaring of bees is desirable, for the saving of stores, if for nothing else. Mr. L. C. Clark, of Hiawatha, Kans., writes to Gleanings that he fed his bees sugar syrup in the fall, weighed them Oct 15th, then left them out of doors until Jan. 1st., (11 weeks) and during this time they consumed an average of 10 pounds per colony. They were then placed in the cellar, and from then until March 7th, the consumption was only $2\frac{1}{2}$ pounds.

I have several times had a stack of colonies set on a pair of scales when placed in the cellar for winter, and the average consumption was usually only about one pound of honey per month.

Nails of the right size, and convenient to hand, are an important part of the outfit of a shop or honey house. When I had a shop I had a box a foot wide and 16 inches long, by about four inches deep, divided into four compartments, with a handle in the center. In one compartment were kept ten penny nails, in another 8's, in another 6's, and in the other lath nails. Then I had two boxes four inches wide, two inches deep and 16 inches long, and each box was divided into four compartments. Wire nails of varying sizes were kept in the boxes, thus I had right before me, at all times, an assortment of a dozen different sizes of nails, and could select at a moment's notice, the kind of nail exactly suited to the work.

Introducing Queens by the long caging process is, I believe a mistake. I have recently introduced 40 queens with the loss of only one queen—and that was a very populous colony of hybrids. During the day I hunted up the old queens, and, as fast as they were removed, the new queens were caged (alone) in the hives in cylindrical wire cloth cages and left until dark, when they were all released by putting soft candy in the ends of the cages and allowing the bees to eat out the candy. My brother Elmer says he has been introducing queens all summer in exactly the same way, except that he allows the bees to release the new queen *at once*—simply hunts up and removes the old queen, and puts in the new one caged with the opening of the cage stopped with candy or broken up comb honey. He has not had a loss. I think it is a mistake to allow a colony to start queen cells before releasing the queen. If the new queen is released soon after the removal of the old one, I doubt if the bees scarcely realize the 'change.' They don't have time to miss the old one, to really know that she is gone, and when they find the new one, they may think she is their own real mother.

A Cider Press is all right for pressing wax out of slum gum: So writes Mr. Louis G. Rickert, of St. Thomas, Virginia. He put his combs into a burlap sack, boiled it up in a wash-boiler, then put the sack and its contents into a cider press, and it worked to a charm. I presume there are few bee-keepers who have a cider press at their disposal, but, for those who have, there is no need to make a wax press.

Selling a Crop of honey at a good price is fully as important as its production. By advertising, and sending out samples of our honey, we have already sold one-half our crop at from one to two cents more per pound than jobbers would have paid for it, and there is no question but that the rest of it will go at the same advance in price.

Of course it costs to advertise and to send out samples, but, eventually a list of customers will be secured that will stand ready to take the crop each year. Mr. E. D. Townsend has been following this plan of selling for several years, and now finds it unnecessary to do much advertising. Old customers don't ask for samples—they know what the honey will be. Nearly all of his honey was sold (contracted) before it was off the hives.

I see some ask that stamps be sent for samples. I think this is a mistake. A few may ask for samples not expecting to purchase, but on the other hand, some, after seeing and tasting the superior quality of the honey, may order when they did not intend to order.

And this brings up another point: This plan of selling can be made a success only when the quality of the honey is *really superior*. You must be able to say to your customer, and show him by sample, that no such honey can be bought in the open market.

First step, honey of a superior quality; second step, a price in proportion to its excellence; then judicious advertising that will reach the class that usually gets its honey of the jobber.

Doolittle's Advice to Lazy People.

It has been said repeatedly that, in order to succeed in bee-keeping, one must have a love for it; if there is no love for it, better get out of it and go into something for which there *is* a love, but Mr. G. M. Doolittle says, in the American Bee Journal, that thousands upon thousands don't love *any* calling in life. I fear that Bro. Doolittle has struck upon a sad, sober truth. Some folks are downright *lazy*. *Work* of any kind is distasteful to them. Such people are unfortunate in their make-up, and ought to be encouraged, by all possible methods, to "brace up" and be somebody.

Bro. Doolittle says that the worst feature of the matter is that these people keep changing from one thing to another. When success does not crown their half-hearted efforts, they conclude that they have mistaken their calling, and change to something else which gives no better results; and so they keep on changing, until, at the end of life, the whole thing has been a miserable failure.

Bro. Doolittle's advice is to choose some kind of calling, and then stick to it, and *put forth enough effort* to make a success of it; and he thinks the choice may as well be bee-keeping as that of any other calling.

Advantages of the Dadant System of Extracted Honey Production.

Mr. F. W. Lessler, of Syracuse, New York, in a private letter to myself, says: "From the experience that I have had with out-apiaries, I should use the Dadant hive if I were starting again. About all there is to do is to put on the supers and take off the honey. There is no swarming to speak of; no excluders are necessary; always plenty of stores in the brood chamber; good wintering; no trouble to get the

bees started in the supers, as there is above an excluder; and a better grade of honey, as most of the early honey goes into the brood nest. I have a few hives of this kind in which I have not removed a comb from the brood nest in two years, and have taken about 100 pounds of honey from each hive each season. I believe that this is the hive and the system for the man who has to depend upon hired help."

Uniting Bees.

Often in the fall of the year it is advisable to unite two or more colonies into one, and the first question that comes up is how to avoid fighting among the bees that are put together. As I have never had any trouble from this source, perhaps I can't help much with my advice, but I can tell how I have done the work successfully. Almost invariably have I had all of the bees *queenless*, except one colony, and I have piled the hives one above the other for two or three days, then put the best combs into one hive, and shaken the bees from the other combs. Often I have hung the combs of bees side by side, mixing them up promiscuously, and have had no quarrelling. If those subscribers have had losses from trying to unite colonies would tell me exactly all of the circumstances, it is possible that I might assist them. My bees have always been Italians—remember that.

The U. S. Chemical Standard for Honey.

The Department of Agriculture at Washington has published a chemical standard for honey which reads as follows:

1. Honey is the nectar and saccharine exudations of plants gathered, modified, and stored in the comb by honey bees (*Apis mellifica* and *A. dorsata*); is laevorotatory, contains not more than twenty-five per cent. of water, not more than twenty-five hundredths per cent. of ash, and not more than eight per cent. of sucrose.

2. Comb honey is honey contained in the cells of comb.

3. Extracted honey is honey which has been separated from the uncrushed comb by centrifugal force or gravity.

4. Strained honey is honey removed from the crushed comb by straining or other means.

As honey dew is often gathered in varying quantities, the following supplementary statement was added:

The standard does not in any way exclude small quantities of honey dew from honey. We realize that bees often gather small quantities of honey dew that cannot be detected in the finished product by chemical means, and does not damage its quality. It is only when relatively large amounts are gathered that the quality of the honey is impaired, and it fails to meet the requirements of the standard. It is generally agreed that such a large amount of honey-dew is injurious to the quality of the product, which can not then be properly regarded as honey.

No Danger of the Fall Honey Going Into the Supers in the Spring.

The American Bee Journal takes up this subject, quoting from the Canadian Bee Journal an item in which there is an attempt to show that there is danger of sugar fed in the fall, or of dark honey getting into the sections the following spring. This matter was first started by the American Bee Journal advising bee keepers to leave plenty of sealed combs of dark honey in the brood nest in the fall, arguing that such combs of dark honey would be the equal, pound for pound, the next season, with light honey.

Then the Review took up the matter, and suggested that bee-keepers notice next spring how much of this dark honey went up into the sections. This was done because there has such a hullabaloo been raised against the feeding of sugar for winter stores, for fear some of the sugar might be carried up into the sections the next spring. I wanted them to notice that the dark honey was not carried up, and, con-

sequently, sugar would not be carried up.

The American Bee Journal handles the matter very fairly and conservatively; and decides that the change is "very remote."

More than once have my winter stores been largely buckwheat, yet never has there been an ounce of the buckwheat appeared in the sections the following season. Last spring we even put full combs of buckwheat honey in the brood nests of some of the hives, only a short time before the opening of the honey harvest, yet none of it ever showed up in the supers.

I greatly doubt if supers are ever filled in the *slightest degree*, with any honey not gathered during the harvest year.

Give the Supply Dealers and Editors Due Credit.

In the article by Arthur C. Miller it will be noticed that he not only classes editors with the supply dealers, as men who should have no voice in the affairs of the National, but departmental editors, employes and even "close associates" of editors, ought to be counted out. I wonder if even correspondents and subscribers of bee journals will not yet be asked to keep out! Seriously, I am at a loss to know why editors should be classed in this manner with manufacturers and dealers. I can understand that dealers wish to sell supplies at a high price, and that producers of honey wish to buy them at as low a price as possible, but where does the editor come in? His sympathies must ever be with his subscribers. True, a portion of his income is derived from the advertisements of dealers, but a very small portion, indeed, compared to that from subscriptions.

It is possible that an association of honey producers would better confine their officiary, yes, and their membership, to those who are producers only, but, when the National does this, I most respectfully ask that the past services, efforts and contributions of supply dealers and editors be acknowledged and recognized. Without such assistance from these tabooed classes, the National would have been pretty small potatoes.

Difference in Stock.

In the past I have had much to say regarding the importance of good stock, but we, brother and I, have had a very vivid illustration along this line the past season. In two yards we had a chance to compare two strains of bees, and, whatever the bees of one strain may have been in the past, they fell behind this year. When making the first examination, after moving the bees, Elmer found the colonies of this strain really more populous than those of the other strain, and they have remained so during the entire season, but have fallen far behind in the amount of surplus stored. In the buckwheat harvest, great masses of these bees would loaf on the outside of the hives, with plenty of empty combs, and the other strain of bees were bringing in honey hand over fist. The management was the same with both lots of bees.

In another apiary this same strain of bees did not store more than half as much honey, although really more populous, and given the same management as the other strain.

I am requeening this strain of bees this fall, mostly with queens from J. P. Moore, and next year I shall expect to see the results.

Building Cheap Cellars.

My brother Elmer and myself now have on the ground the material for building two cellars for wintering bees in Northern Michigan.

Here is our plan for building them: First, plow and scrape and dig out the excavation in a sandy hill side. Then

set up cedar posts about three feet apart and board up with cheap hemlock lumber on the outside of the posts. For a roof, first spike 2x6 scantling to the tops of the posts, that is, let one scantling extend across the cellar from the top of one post to a post on the opposite side of the cellar. Nail cheap lumber to the under side of the 2 x 6 joists, and cover the floor, to the depth of a foot, with dry sawdust. Put a peaked roof of cheap lumber over the sawdust to keep it dry. Have the gable ends of the roof made of lumber to keep out the snow. Leave an opening two feet square in the center of the floor. This will allow the dampness to pass off. Have a double door at the lower end of the cellar. The bottom of the cellar at this end will be level with the ground outside.

Now then, the roof, sawdust and joists will remain sound indefinitely, and can be moved away and used in some other location if so desired. The posts and sand walls will last several years, long enough to enable us to decide whether we are to occupy the location permanently; in which case, we will simply board up *inside* the posts, filling the space between the two walls with a cement mortar, when we will have permanent walls.

This plan allows us to build a cellar very cheaply, yet to save and use most of the materials in case there is a change of location. If there is no change, then a little additional expense will make a permanent establishment out of it.

If we are making a mistake anywhere please write us *at once*.

Burying Bees.

A subscriber asks me to give the best plan for wintering bees in pits.

The first requisite is a sandy hillside. Clay is death—don't attempt it if the soil is not sandy and dry.

Dig a trench several inches larger each way than the hives, and several inches deeper than the hives. Lay down poles or scantling to set the hives on. The hives ought to be up at least six or seven inches above the bottom of the trench, and the top about even with the surface of the earth, lay poles across the trench, then some more poles lengthwise of the trench, on top of the poles first put on, and cover all with a foot of straw, then shovel on the earth to the depth of about 18 inches.

Better have the pits extend up and down the hill, then there will be no opportunity for the water to stand on them.

There is no need whatever of putting in any ventilation, as I have proven by *repeated* experiments.

I leave off the bottom to the hives and raise the covers a little crack, putting a piece of section honey box, or some other thin slip of wood to hold up the cover.

Provisional Program of Inspectors' Meeting,

San Antonio, Texas, November 12, 1906.

Demonstration of Bacteria of Bee Diseases.....
Dr. G. F. White, United States Dept. of Agriculture, Washington, D. C.

History of Bee Disease Inspection in Wisconsin.....
N. E. France, Inspector of apiaries for Wisconsin, Platteville, Wisconsin.

General Discussion of Existing Bee Disease Laws An Examination of Laws Now in Force and Suggestions for Most Effective Legislation

The Introduction of European Foul Brood into Michigan.....
W. Z. Hutchinson, Inspector of apiaries for Michigan, Flint, Michigan.

The Inspection of European Foul Brood in New York.....
Charles Stewart, Inspector, 3rd District of New York, Sammonsville, New York.

Foul Brood on the Pacific Coast.....
F. A. Parker, former Inspector, Santa Barbara County, Lompoc, California.

The Present Status of the Investigation of Bee Diseases.....
Dr. E. F. Phillips, United States Dept. of Agriculture, Washington, D. C.

Reports of Inspectors from the various States and Counties on the Progress of Inspection.

This program is subject to such changes as may be necessary but it will indicate the character of the meeting. All persons interested in Bee Disease Inspection are urged to attend. A number of persons prominent in this work have agreed to be present.

Respectfully yours,
E. F. Phillips,
Acting in Charge of Apiculture.

Open-Air Feeding Allows of the Opening of Hives and the Handling of Combs.

It has been reported, several times, that the feeding of bees in the open air, would allow of the opening of hives, and the handling of combs during a scarcity of honey. As such feeding stirs up and excites the bees, and sets them to trying to rob other hives, it seems quite natural to suppose that it would only make matters worse for the bee-keeper who wished to open hives.

It might make it worse at *first*, but, after the bees have *found the feed*, it keeps them away from hives that are being opened.

At one of our Northern apiaries there is no honey house, and we were waiting until one was built before removing the supers, but there were so many delays that it was decided they must come off *at once*. Perhaps half of them were taken off before the bees found the combs and got ready to work carrying out the honey. The work was then advanced until the next day, when the remainder were removed, and the combs looked over, and those containing the most honey put back in the hives; but the point I wish to mention is that the bees did not trouble the operation. Combs of honey could be left standing against a hive, and scarcely a bee would come near them—they were all busy cleaning out the supers where they had commenced work the day before. Half a day's work was put in with as little disturbance as there would have been in a honey flow.

I am thoroughly convinced that outdoor feeding, if long continued, will bring about such a condition that bees may be handled, in time of scarcity, with as little molestation as during a honey harvest.

Program for the National Convention.

The National Bee-Keepers' Association will hold its annual convention, November 8, 9 and 10, in the Market hall in San Antonio, Texas. The Grand Central Hotel will be headquarters for bee-keepers. This is a new hotel and has 100 rooms, and there will be a special rate to bee-keepers of 50 cts a berth, and 25 cts. a meal.

Thursday, Nov. 8th, is bee-keepers' day at the fair, and so advertised by the fair Association.

During the last few meetings the program has been rather overloaded with papers, and the question box, the most valuable part of a convention has been almost crowded out, and this time I determined to remedy that difficulty.

FIRST DAY FIRST SESSION.

The first session will be on the evening of Thursday, Nov. 8th, beginning at 7:30, and will consist of the reception of members, paying of dues, distribution of badges and numbers, and the opening of the question box.

SECOND DAY—FIRST SESSION.

9:00 a. m. A paper by E. D. Town-

send, Remus, Mich., on "The Profitable Production of Extracted Honey."

Question Box.

SECOND DAY SECOND SESSION.

1:30 p. m. A paper by R. F. Holtermann, Brantford, Ont., Canada, on "The Difference Between Ripening and Evaporating Nectar."

Question Box.

SECOND DAY—THIRD SESSION.

7:30 p. m. A paper by Dr. E. F. Phillips, of Washington, D. C., on "What Science May do for Bee-Keeping."

Question Box.

THIRD DAY—FIRST SESSION.

9:00 a. m. A paper by W. H. Laws, Beeville, Texas, on "The Comparative Profits of Queen Rearing and Honey Production".

Question Box.

THIRD DAY SECOND SESSION.

1:30 p. m. A paper by C. A. Hatch, Richmond Center, Wis., on "How can the National Assist its Members in Buying Goods and Selling Honey?"

Question Box.

Adjournment.

W. Z. Hutchinson, Sec.

Producing a Crop of Honey and Selling It at a Good Price.

Twenty thousand pounds is the amount of honey produced this year by my brother and myself. This is not half what it ought to have been, and probably will be, in a good season.

The white honey, clover and raspberry, has all been sold, for spot cash, right on the ground, at 8 and 8½ cts a pound, and customers are calling for "more." We are returning money now almost every day. Then there were 6,000 pounds of buckwheat honey which is now moving off quite freely at 6 cts.

By the way there is just as much difference between ripe and green buckwheat honey, as there is in clover or any kind of honey. Our buckwheat honey was left on the hives until it was all sealed over, and is ripe, rich and smooth as much different from the strong, rank "green" stuff usually found on the market, as can be imagined.

I don't doubt that honey can be *evaporated* artificially, but evaporation is not curing or *ripening*. The bees put nectar through a process that really works a change in its character—in fact I am coming to believe that the finishing touch is not put on until the combs have received their coat of "varnish" over the cappings. Comb honey removed from the bees as soon as sealed over, never has the "finish" of the extracted honey of mine that was left on the hives a month after it was sealed over.

Without the finish this *real superiority*, it would be impossible to sell honey, as we have been doing, at a cent and a half above the market price. Time and again, this fall, has some man written that our price was too high: "Why, I can buy any quantity of clover honey, at 6 and 7 cts, delivered," is the way they would write, yet when they received a sample of *our* honey, they would plank down the 8½ cts. and pay the freight. Do you suppose they would do this if it were not really superior?

The foundation and the corner stone of selling honey above the market price are the production of a superior article. Without this you may just as well send your honey away to some jobber and take what he will give you for it. First produce a good article—away up—thick, ripe, rich, smooth and irresistible.

Let me give an illustration: I make no effort whatever to retail honey at the house. I scarcely know why; perhaps it is because we don't want to be bothered with people running in at all

hours for little dabs of honey. If they *do* come after it we let them have it, but we take no pains to encourage the habit. Well, one of our married daughters had some of this fine, well-ripened raspberry honey on her table, and a neighbor who was in was given a taste of it. The next day this neighbor's little boy came up with a pail after some of that "splendid honey." Then this neighbor had a neighbor and *she* was given a taste of the honey, and the little boy was sent up again for another pail full for the neighbor. It seems that the man at the neighbor's house was a barber, and he talked about the honey at the shop until the proprietor sent up for a can of it. When it reached the shop, every barber had to have a taste, and then every one must have a jar of it, and where this endless chain will end I don't know. All this happened here in Flint, where honey both comb and extracted, can be bought almost any day at nearly all the groceries. But it seems that the honey is simply irresistible, it will sell itself.

Now, if you wish to be able to sell honey for a cent, or two cents, above the market price, raise this kind of honey, and all you have to do is simply let it stay on the hives until it is *ripe*. If you have so few combs that you are obliged to extract in order to give the bees room, it is not likely that you will produce very much of this high grade honey. You must have plenty of empty combs. If you haven't got them, *get them*, that's the first step.

One other point: Don't let this fine honey stand around in open vessels exposed to the air, and thus lose its delicate aroma the heart and soul of honey. Strain it right from the extractor and run it into air tight receptacles at once, and close it up from the air.

After you have produced a crop of this superior honey, don't imagine that your work is done. People can't buy it unless they know you have got it. You will have to advertise, and advertise liberally at first, and send out samples freely. People prefer to see a sample of the goods before they buy. This will cost something, but, gradually, you will build up a list of customers who will come to you year after year, and they won't ask for samples either. If you say the honey is the same as last year, they will believe you.

Mr. E. D. Townsend has been selling honey in this way for several years, and now finds little need of advertising: in fact, much of his honey was contracted this year before it was off the hives.

The principles of success can be stated in a few words: Raise a big crop of good honey at a low cost, and sell it at a high price. Simple isn't it? Yet it covers the whole ground. *How* to do this is what the Review is doing its utmost to teach you.

EXTRACTED DEPARTMENT.

THE CAUCASIANS.

How They are Regarded Thus Far by the Roots.

The bee-keeping world is still interested in the Caucasians. Whether they will yet be very generally adopted is very uncertain. The Roots have been trying them quite extensively this season and here is what they have to say regarding them:

As our readers possibly know, Mr. I. T. Shumard, of Osprey, Fla., is rearing for us Caucasian queens from our

imported Caucasian, on Casey Island, off the west coast of Florida. This island has been thoroughly Caucasianized; and to insure a more perfect mating, the bees across on the mainland, some two or three miles distant, are also being Caucasinized. From time to time Mr. Shumard has been sending us some of these queens. These we have been placing in our home apiary to test out their characteristics before we make a general business of selling them.

As previously reported we find they are very gentle, but only slightly more so, if any, than our select Italians. The are slightly more nervous when the hive is just opened, appearing as if they would offer attack. Italians on the other hand, will usually show no difference in their general actions, scarcely showing a nervous movement. But the Caucasians apparently are not excited because their owner has opened the hive, but because they are alert to discover robbers. The minute one poises on the wing, a Caucasian will jump at it, and lucky is Mr. Robber if he gets away without a rough-and-tumble fight. The Caucasians are splendid defenders of their homes—no question about that, at least judging from the strain we have. This very trait would indicate that in their native hal itat they may be compelled to put up a strong resistence against their own race. At all events, the Caucasians in our apiary seem to be the first ones to rob. We have about thirty colonies of them, and, before the Italians know what is up, the Caucasians, which can readily be distinguished by their color and markings, are ready to sieze on to the first sweets in sight. Our Mr. Wardell reports that if there is any robbing going on it often happens that there are nothing but Caucasians at it, notwithstanding there are about ten times as many Italians in the apiary.

They are active cell builders, and for queen-breeding purposes they are better than Italians.

They are excessive propolizers, chinking wads of gum in the corners of the trames almost as large as one's two thumbs.

As to the amount of honey they will gather as compared with Italians, they easily hold their own. Indeed, some colonies of them run a little ahead of the yellow bees.

In color markings they are rather pretty. Instead of having dirty, muddy, indistinct ring like old-fashioned black bees, the rings are quite a pronounced silver gray. The bees as as a whole do not look quite so brilliant as Carniolans, as in this latter race the black shows up with a sort of bluish cast, while the Caucasians show somewhat of a tendency toward brown. Yet a person who is not closely familiar with the characteristic markings of the two races would very easily confound one with the other.

We have none of the Caucasians for sale yet, for the bees are still on probation. Their robbing and propolizing tendency may make them undesirable.

There is one thing I can't help noticing, and that is that no claim of superiority is made for the Caucasians over the Italians. It is said that they are very gentle, but, as Mr. Root says, they are slightly more so, if any, than select Italians. That being the case, I can see no reason for introducing them, as Italians are certainly gentle enough.

THE DIFFERENCE IN STOCK.

It May Be in Endurance as well as Length of Tongue—Perhaps in Laziness.

We had four different strains of bees in our Northern Michigan apiaries. One strain fell far behind the others. In the spring, the colonies of this strain seemed as populous as the others, in fact, they appeared to be really stronger, yet they did not get the honey. This strain was in two of the apiaries, and thus compared with two different strains. The management was the same in all cases, but, as I have said, these bees did not produce the results. It actually seemed to me that they were lazy. When buckwheat was in bloom, and the bees of the other strain were piling in the honey, these lazy fellows would hang in great clusters on the fronts of their hives, fairly covering the fronts of the hives. Inside there was plenty of empty comb to be filled, but they

simply lacked the ambition to fill it. We have killed about 75 queens of this strain and introduced new queens, mostly of the Moore strain, and next year we expect to be able to tell a different story regarding these colonies.

This matter of stock is one greatly neglected by the average bee-keeper, yes, and by the professional. Laziness is not the only feature to be looked after and removed. Length of tongue, about which we talked so much a few years ago may be all right. Then there is endurance, and power of flight, that will allow of gathering honey from long distances. The colonies that get the *results* are the ones to breed from. Right in this line there is an excellent article by Mr. J. E. Crane in a late issue of Gleanings. Mr. Crane says :—

It has been claimed by some most excellent authorities that bees will not fly, as a rule, more than one and a half to two miles to gather nectar from flowers, while Mr. Doolittle claims they will fly from three to six miles from choice. Here is certainly a great difference of opinion, honestly given. How can it be accounted for ? It seems probable that, in part, it can be accounted for in the topography of the country, the season of year, and the scarcity or abundance of nectar near at hand or at a distance. It seems reasonable to suppose that it is no more exhausting to a bee to fly four miles and gather a load of honey from flowers yielding an abundance than to glean a sacful from flowers two miles from home where, perhaps, twenty or fifty times as many flowers have to be visited to secure a load. Yet Mr. Dadant claims that his bees failed to gather from flowers yielding abundantly on an island one end of which was within one and a half miles from his apiary.

I think no one would doubt that some bees under favorable conditions fly long distances. Some thirty years ago or more I met Mr. Harbison, of California. He said there were no bees in San Diego County till he moved his down there; and, very soon after, he found bees from ten to twelve miles from his ranch. At five miles he found bees very abundant, while at ten miles there were a few, while at the greatest distance only now and then one could be found. In other words, while he found them fifteen miles in extremely limited numbers, they continued to increase as he came nearer to his yard.

These facts or illustrations have not been given to determine how far bees will fly to gather their stores, but, rather to show that there is a great difference in their strength or ambition or endurance. If Mr. Doolittle's bees will readily fly four or five miles to gather nectar, why will not Mr. Dadant's fly just as far ? And this brings me to the point I wished to make, viz., that strength and endurance are of the greatest importance in any strain or colony, or in individual bees. Doubtless we have all noticed the great difference in horses. Take two of equal age and weight, give each the same feed and care, and one will endure one and a half times or twice the hard work of the other, without any inconvenience. Of course so great a difference would be greater than the average. We have also seen the great difference in the capacity as well as endurance of different specimens of the genus *homo*. And have we not all seen two colonies of bees, so far as we could judge, of equal strength, equally prolific queen, and ample stores, one building up early in the season, while the other lagged far behind ?

I remember very well some colonies that have attracted my attention. I found them weak in the spring, but thought by careful nursing they might become useful, and by the close of the honey season have succeeded in getting them into fair condition, but not soon enough to gather sufficient stores for winter use. The next season found them in the same pitiable condition as in the previous year The more a man has of such bees the poorer he is; for they are far more profitable dead than alive, and can be made useful only by destroying their queens at the first convenient opportunity and giving them one whose offspring are more enterprising or capable of greater endurance.

I remember one colony in one of my yards that, while one queen was at the head of affairs, would insist on and succeed in getting more honey than any other colony, and this for three years in succession. It was not that they were stronger in numbers, but of greater vigor than other colonies. I remember one year they continued to

work after the rest had come to a stand still in gathering honey from some unknown source, probably outside the range of flight of the other bees.

In no other way is the vigor and strength of constitution of different colonies better shown than in seasons or periods of scarcity. Some colonies will build up, storing some honey, and swarming, perhaps, while the weaker sisters wear out so fast as hardly to hold their own, and some will run down and die, or become worthless, in spite of our efforts in their behalf.

Some years ago I moved a yard of bees two-thirds of a mile to the east of its former location, only to find later that I had moved it away from the best part of my range, and the yield of honey was a good deal reduced. What was I to do? Move my bees back a mile to the west, and so much further from my present home, but nearer the best honey? I finally decided to let them remain where they were, but breed for stronger bees, such as would be able to reach the best of their former range; and I am led to believe from the increased yield in this yard that I have, to quite a degree, accomplished my purpose.

Another time in which the greater or less endurance shows itself is when a new swarm is placed in a new hive with no brood hatching for three weeks during the time the flowers are yielding honey freely; for greater endurance means longevity, and length of days in bees is of quite as much importance as length of tongues, and I do not wish to say anything derogatory to this most excellent quality.

But say! Was it not amusing to see when, a few years ago, the subject of long tongues was discussed, how many queen-breeders were breeding queens that produced just such tongues? I have sometimes fancied that Jonah's gourd would have blushed at its own slow growth compared with the tongues of our American-Italian bees for a year or two, could it have known about it; but this is only a fancy.

The longer I live and handle bees, the more I am convinced that constitution, strength, and endurance are of the utmost importance in bees, as in other domestic creatures. Let us have long tongues if we may, and all other good qualities; but all these will be of little value without the strength to use them. If we breed for constitution we may, if we breed wisely, secure most desirable results. If I were to say what would doubtless be most popular with a large number, I presume the majority of progressive bee-keepers, I should say that the darker shades of Italian bees are to be preferred.

Now, I do not believe that the quality of a bee depends on the color of its body alone; nevertheless, I believe that the darker shades of Italians in this country are, as a rule, stronger and more enduring than their lighter-colored sisters—not that the darker shade makes them stronger, or that the lighter color makes the others weaker, but that the darker ones have been bred for honey-gathering qualities, without much regard to color, while the lighter ones have been bred for strength and endurance—some exceptions, doubtless.

That a strain of bees can be produced that will be of a light beautiful color, and at the same time most enduring, I have not the slightest doubt; indeed, the queen that I have thought has made the greatest improvement in my own bees has been one whose workers were, a large portion of them, five-banded golden bees; in fact, the lightest and handsomest I have ever handled I like a handsome bee. It rests me to open a hive of beautiful bees. It ministers to our higher nature; but if we cannot have both, let us make sure of strong, vigorous, enduring bees that fill our supers, for this also is beautiful.

AUCTION

AUCTIONER WANTED.

Unless sooner disposed of I will sell at public auction all my stock of

Bee-Hives and Supplies

now in San Antonio, Texas, during session of

NATIONAL BEE-KEEPERS' ASSOCIATION, Nov. 8, 9, 10.

A LIST OF THE GOODS:

44 No 2 Veils
330 8-frame Hives, 1 story
185 8-frame Bodies
475 10-frame Hives, 1 story
50 10-frame Bodies
474 10 frame Supers for Bulk Honey
255 8 frame " " " "
227 10-frame Empty Supers
105 10-frame " " 4¼ x 4¼
260 10-frame Supers for 4 x 5 Sections
65 8-frame " " " "
6150 Hoffman Frames
150 Danzenbaker Hive Frames
103 " " " wired
3800 Shallow frames
5 Spools Wire, ¼ oz
7¼ Dozen Spools Wire, ¼ lb.
4 " " " ⅓ lb.
21 lbs. Frame Staples
15 lbs. Tacks for wiring
365 10-frame Covers
162 8-frame "
362 10 frame Bottoms
183 8 frame "
194 Hive Bodies Nailed
86 " " " Foundation
34 3-lb. Cans
8 Clarke Smokers
33 Dr. "
15 Smoke Engines
2 Champion Smokers, 3 in.
4 " " 4 in
13 Coggshall's Bee Brushes
6 Porter Bee Escape with boards
8 " " " house
1 No. 15 Extractor
1 No. 17 "
4 Uncapping Cans
15 Uncapping Knives
125 Shipping Cases
150 Shipping Crates
24 Doolittle Division Board Feeders
40 lbs. Nails 7d
60 lbs. " 2d
3½ Doz. Spools Wire, 1 lb.
½ Dozen Coils " 5 lb.
219 Plain Division Boards
275 Section Slats
2000 Fence Separators
1100 Flat Tins
230 Rabbets
1 Rauchfus Section Press
15500 Sections
225 lbs. Extra Thin Foundation
334 lbs. Thin "
682 lbs. Thin Brood "
54 lbs. Med. " "
3 Daisy Foundation Fasteners
20 Bee Entrance Guards
3 Globe Bee Veils

Terms Cash. For particulars address

W. H. PUTNAM, River Falls, Wis.

Burying Bees in a Pit or Clamp.

See Townsend's Article in Extracted Department.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, NOV. 15, 1906. NO. 11

The Development of the Non-Swarming Hive.

"Man Proposes but God Disposes."

L. A. ASPINWALL.

HOW many of our profound and carefully executed plans, involving years of labor and study, have fallen far short of our high ideals. The United States Patent Office records show this to be true in the inventive world. Only about one invention in every hundred patented, proves to be a practical success. And how about the thousands of failures so flagrant that no patent was sought for? My proposition to construct artificial brood combs as long ago as 1888; with the view of preventing the tendency of bees to swarm, was in the providential working of things disposed of long ago. Although a success as brood combs, they failed to accomplish the end for which I designed them.

It may, as a matter of history, be well to state briefly the theory I entertained relative thereto. The construction of artificial comb, of course, made the size of cells, (worker or drone) optional. This being in mind, also, that drones were a factor governing the increase of colonies, it would seem as if their elimination might keep in abeyance the tendency to swarm. Accordingly, combs, were made in which the bees reared worker progeny exclusively. Thus far the combs were a success—I having had as many as six or seven colonies occupying and rearing brood in them for years—one colony having occupied them seven years before I decided to abandon them for those built by the bees.

The elimination of drones, doubtless, retarded the swarming impulse, yet, like a queenless colony with only a few drone eggs, which attempts the rearing of a queen, they will, when in a crowded condition, although devoid of

drones, finally make preparations for swarming. But above all was the tendency of drones from other colonies to enter these hives. Drones, unlike worker bees, are liable to enter hives in the vicinity of those in which they were reared. This contingency restores the normal condition to colonies having no drone comb, thus counteracting the influence which would result from using worker cells exclusively. Thus the theory was disposed of.

Inasmuch as unlimited room outside the brood apartment will not prevent swarming, the writer concluded to expand the brood nest, without increasing the brood area. This, as the outcome of having made wooden combs, was to construct them without a septum or base. In other words they were open at both ends; which left cells which could not be filled with honey. These were introduced between, and alternated with, the regular combs of the hive, thus expanding the colony without increasing the area of brood cells. This departure largely reduced the crowded condition, and greatly retarded swarming; and was the first evidence to my mind that swarming could positively be controlled. However, these perforated dummies were a barrier to the queen in her passage from comb to comb. As a result, the queen would frequently be found occupying but three or four combs, in which case the colony would endeavor to supersede her, and swarming would be the result.

To overcome this objection, these perforated dummies were made in three divisions, separated by a ⅜-inch space running horizontally from end to end. The result of this change was another step in advance. However, after two or three seasons' experimenting with dummies, which were made of different depths and thicknesses, but little gain was made.

Following these experiments, was a radical change. That suggested to the mind of the writer was the substitution of *slatted* frames for the *perforated* ones. These gave the queen absolute freedom in her passage from comb to comb at any point desired. The first of these slatted frames were made one-half inch in thickness, and, with a result that retarded swarming in all colonies, and prevented, perhaps, a quarter of them from swarming. Believing in the ultimate success of such slatted frames, an additional thickness was decided upon the following season, and three-quarters of an inch was established for the experiment that season. While the results were more favorable, it was evident that an increase in thickness was requisite; so one inch was adopted, which gave still better results. For the following season one inch and a half was decided upon, together with a few about one inch and a quarter. The results of these were favorable to the greatest width, one inch and a half being the same spacing as natural combs. However, fully one half of the colonies swarmed during an excessive honey flow.

As a further means of overcoming this tendency, dummies were placed at the sides of the hives, in addition to alternating them with the brood combs. Still the result was not satisfactory; frequently as many as half the colonies would swarm.

The reader cannot but realize the great difficulties and expense attendant upon producing inventions. These changes were made to fit from forty to fifty colonies annually. And, to add to the difficulty, but one experiment of the whole can be made in a year. To test it upon a few would not afford a proper average for correct results.

Noticing the tendency of bees to enter supers more freely where the passageway happened to be directly above the space between the combs, also, that more honey was stored above such direct communication, suggested the

making of wider passages to the storage apartment. This was tried upon two or three colonies, with a marked degree of success. These wider passages naturally called for slatted dummies in lieu of the ordinary separators, which were widened from time to time until one inch and a half was reached. At present, however, the one inch size is being used; and I consider them nearly perfect for the purpose designed, namely, that with freer passages to the supers, the tendency to swarm became, perhaps, 50 per cent. less than with supers having narrow passages.

After the season's experimenting, the writer entertained no further doubt as to the ultimate success, than he did with the potato planter, up to within one or two years of its completion. The workings of most colonies in the yard were so favorable to the perfect result, that no further doubts could be entertained. Still, there would be one or two swarms to every ten colonies, even with ample storage room.

Let us note, in this connection, that any or all appliances, however perfect, will fail if the storage room is insufficient.

As a further means of preventing the tendency to swarm, and, also to facilitate handling the frames, similar slatted spaces were introduced at the ends of each brood comb. These afforded still more bee-space, also better ventilation, and, prevented the sun's rays from striking directly upon the ends to which the combs are attached. It was also noticeable that the bees, upon entering the hive during a honey flow, would do so mostly at one side or end of the entrance. With closed-end frames the colony became more or less crowded at that side of the hive—the slatted ends most thoroughly relieved that tendency, in addition to affording better ventilation; also, keeping the sun's rays from increasing the heat of the colony, as already stated.

At this juncture, with wider passage ways to the supers, a corresponding evil presented itself. The wider communication made, as it were, the two apartments nearly as one, which naturally invited the storage of pollen in the sections; whole supers of beautiful white honey being rendered unsalable thereby. Knowing that drone cells were not used by the bees for the storage of pollen, the use of drone cell foundation suggested itself as being the only remedy. One thousand sections were tried upon my strongest colonies during the season of 1905 with most satisfactory results. Not more than three or four sections having two or three cells containing a little pollen near the bottom. The result was so satisfactory that I decided upon using drone cell foundation as far as was practicable. A small corresponding objection appeared with the exclusive use of the drone cell foundation. A few colonies refused to do satisfactory work with supers entirely filled with it. The increased length of the slatted-end brood frames afforded additional super room, by allowing longer section holders which accommodated five sections instead of four as previously used. By using worker cell foundation in the *end* sections, a still further advance was made. It gave the colony both kinds of comb to build—just what every normal colony persists in doing. The result was that the worker cell foundation was filled as rapidly as that for drones, notwithstanding it was at the ends and corners of the supers. Furthermore, with all this advance, not a single cell contained pollen or drone brood. This gave really more satisfactory results than was expected, and will enable the honey producer to have better filled supers. So much for the season of 1906.

In the meantime, the writer discovered, upward of ten or twelve years ago, that pollen in the brood combs was a very strong factor in induc-

ing swarming; and, however perfect the device to prevent swarming may be, clogging the brood nest with it would in most instances induce swarming. This necessitated, at the time of introducing the dummies between the brood combs, a removal of such as were well filled with pollen—leaving only such as contained but little or none. This being carefully done at the beginning of the honey flow, resulted satisfactorily. Still, with an *intense* honey flow, and a consequent yield of pollen, it became necessary to remove the outside comb of the strongest colonies, at the end of two or three weeks of white clover yield. Such combs are usually solid with pollen. Let us note that colonies which do not swarm are possessed with double the working force, and for which reason, about double the amount of pollen is stored, unless working on linden. The reader will also note that swarming in such an event is the only relief that can be afforded the colony—outside of human agency.

Let us carefully consider how beautifully Nature, through the instinctive workings of the colony, brings this about. With the brood area almost completely clogged with pollen, a condition is reached not unlike that of a failing queen, when royal cells are begun, which results in swarming. After swarming, this excess of pollen is partly consumed by the unsealed brood in various stages requiring food. This period followed by twenty-one days more before the young queen's progeny matures will practically reduce the supply of pollen in the hive. We now see how Nature in the economy of the hive brings about a perfect balance in her workings, and we, to meet Nature in this respect, must remove the excess of pollen whenever it becomes necessary.

The past season, with drone cell foundation in the center, and worker at the ends of the holders in each super, accomplished wonders—even more than was at first expected by its use, namely, the better filling of the supers, together with the superior quality of honey in drone cells.

In view of having lengthened the brood frames by the addition of slats at each end, I concluded to test their utility in that, perhaps, the removal of pollen might be avoided, and swarming restrained until the main flow had passed. Although but little hope for success was entertained, still it was deemed best to make the test, using most of the colonies in the yard. Accordingly, the pollen clogged combs were removed from but a few colonies.

It also suggested itself to the writer that in connection with the slatted-end brood frames, narrower dummies *might* be used; and, accordingly, one-inch thickness was made for the past summer's use, instead of one-inch and a half, the standard thickness. This change together with allowing the pollen to clog the brood nest, resulted in ten colonies swarming, out of the thirty. But the test was a necessity in order to prove the value of additional length in the brood frames, which included the slatted ends and longer dummies. Even if swarming could be prevented without the removal of the excess of pollen; the clogging of the brood area would be a detriment to the colony, and cause it to dwindle, for lack of brood. While I expected results unsatisfactory, I had no means of reaching, short of an experiment in the extreme (as this was), a correct understanding with positive proof as to the workings of a colony overstocked with pollen. Previous to this season, and since the discovery of pollen being a strong a strong factor in introducing swarming, I have not allowed it to clog the colonies of my yard; hence, the great advance made towards perfecting the non-swarmer.

Notwithstanding the disturbance caused by this experiment, by which

colonies were thrown out of their working condition of non-swarmers, one hundred sections per colony were produced this season taking into consideration the imperfect control, including the poor season, one cannot but come to realize the wonderful advantages of of a non-swarming hive. There has been sufficient evidence, according to my judgment, that with perfect control, even the past inferior season, one hundred and twenty-five sections per colony could have been produced.

It may be well to note, in this connection, that while progress is being rapidly made toward the completion of a perfect non swarmer, the hive bodies have also been changed materially. The coming season I expect to provide new hive bodies for all my colonies. which will be much cheaper than my present make. Of course, my experiments the past eighteen years have been very expensive, which is true if anything of merit is produced. It is the firm belief of the writer that with the past experience, including the improvements tested on a small scale this season, that swarming will be perfectly under control during 1907, and with colonies which can produce two or three times the amount of those managed under present methods, beekeeping will become a uniformly paying pursuit. With inferior or poor seasons, and swarming uncontrolled, failures are inevitable. With swarming controlled, such seasons, instead of being failures, may be made profitable. JACKSON, Mich., Oct. 20, 1906.

A Plea for More Naturalness in Comb Honey.

E. A. DAGGIT.

COMB honey is a thing of beauty. It is delicious, attractive and tempting. It is a rich, nourishing food, and, besides, makes a beautiful decoration for the table at meal time, and is sure to be admired when present. It has a beauty of its own that it fails to lose by contrast on the most richly set table; and what can be found better to decorate any table, even the most richly set, than a honey comb—a specimen of the handiwork of the little bee—whose delicate waxen cells are filled with pearly deliciousness or golden richness and overlaid with delicate white cappings?

Notwithstanding its beauty and other good qualities, comb honey has fallen from the high estate it once occupied. There is a shadow on its once fair name. Not so deep a shadow as that cast upon the name of its sister product, extracted honey, but deep enough to detract from its value on the market—thereby lowering its price.

This is the age of adulteration and fraud, both of which seem to be almost universal, almost everything that can be adulterated is adulterated. Adulteration is fraud; selling something else for a given article is also fraud; even if the article sold is just as good as the other. The transaction on the part of the seller is deceitful and fraudulent In the general suspicion of adulteration and fraud, honey—both comb and extracted—are involved. The adulteration of extracted honey has been so extensive that the suspicion against this kind of honey is well founded. So

great is the prejudice against it from this cause that it is a difficult matter to sell it, even when the producer is known to be honest, unless it is sold at a low price.

THERE IS PREJUDICE EVEN AGAINST COMB HONEY.

There is considerable prejudice against comb honey. There are quite a number of people who believe that it is manufactured and it is impossible to make them believe otherwise. I believe that idea would have existed even if the "Wylie scientific pleasantry" had not been uttered or written. In the public mind, honey is universally associated with flowers, and any departure from securing it—purely a natural product—makes it artificial to the extent of such departure, and the consequence has been a suspicion against it.

MOST COMB HONEY IS NOT STRICTLY A NATURAL PRODUCT.

Judging by experience and observation, I fear that we have made a mistake in making honey, of any kind, in any sense artificial, as we have by departure from Nature's ways. Throwing honey from the combs and refining it artificially makes it, in part at least, artificial and unquestionably inferior in character; and what is almost as bad, or even worse, is securing extracted honey in combs that brood has been reared in, whereby the flavor of the honey is injured. Honey gets its distinctive character and each kind its distinctive flavor from the essential oils that give them flavor, and when the flavor is injured its quality is also injured and the product is inferior.

I think that feeding back extracted honey to get unfinished sections completed is a mistake. These sections, under proper management, are just what are needed to secure the next honey crop. It is more profitable, in my opinion, to extract the honey from them and use them in the supers at the beginning of each harvest. The fact that extracted honey when fed back to bees will granulate in the combs, is proof that it should not be done; and producing honey in this way may have created more or less prejudice against comb honey.

THE DAMAGE DONE BY THE SUGAR HONEY DISCUSSIONS.

I fear that "the sugar honey" theory has been a fruitful cause of the suspicion against comb honey. "Sugar honey," being wanting in the principles that give to honey its distinctive character, is not honey at all; no more than mixing water and alcohol in proper proportions and giving the mixture a flavor like its kind, would make wine whiskey, or brandy. This way of making liquor was heralded forth, years ago, with a great blare of trumpets, as a wonderful scientific discovery. Such liquor was, of course, just as healthful as the natural article, if liquor can be said to be healthful at all, but soon there came a dead stillness in regard to the matter, and no more was heard of it. There is no question but that there is plenty of imitation liquor made and much that is injurious to health, but they are made and sold under cover. We no longer hear anything about the "sugar honey" theory, still, I believe there is more or less of this article made and sold as real honey; in fact it could not be sold otherwise. Its sale in this way is fraud. What different from fraud is it to produce an article that cannot be sold for itself? The fact of making a thing an imitation of something else is suspicious in itself.

COMB FOUNDATION A DETRIMENT TO COMB HONEY.

To be candid and fair, it must be admitted that the use of comb foundation in sections has been a prolific source, if not the most prolific source, of the shadow cast on one of the most beautiful and delicious of Nature's products

—comb honey. So convinced am I of this that I no longer use full sheets of foundation in sections, only starters. I am not sure, but I believe that we would have been better off if we had not used foundation in sections at all. When I first began bee keeping I used only starters of comb in sections, and if my recollection serves me right, I got just as well-filled sections as I have since with full sheets of foundation. I have often wondered if it were not posble to profitably secure honey that was in every sense a natural product. The idea is certainly well worth trying. It would be a great gain if we could produce comb honey so that we could honestly paste on the top of each section, a strip of paper that bore these or similar words: "This honey is just as the honey bees have made it from the nectar they gathered from the fields and forests; and is in every sense a natural product, both as to comb and honey. It was left on the hives until well-ripened, and hence, possesses that peculiar richness and boquet peculiar to such honey. It is the old fashioned kind of honey of the "long ago."

UNRIPE COMB HONEY.

While it is vitally important that honey should be made as nearly as possible a natural product, it is also important to have the honey left on the hives until the process of ripening has sufficiently advanced and the cappings are properly glazed over with propolis, Nature's varnish, to keep air and moisture out of the honey, the cappings being porous when they are first put on. This propolis, for some reason, is called "travel stain." Besides keeping the honey from coming in contact with the air and moisture, it serves two other purposes. One is to prevent the bees from injuring the cappings by clustering and traveling on them, and the other is to aid the bees in walking and clustering on the combs—in other words to keep them from slipping. The finished sections should be removed from the hives while the cappings are still white, although practical experience has taught me that some color to the cappings is no objection in the local trade. When I began bee-keeping I used to remove the sections as soon as the cells were capped over. The combs were beautiful specimens of delicate wax work. One day a groceryman who was selling this honey said to me: "What is the matter with your honey? People that I have sold it to think that it is manufactured." I saw the point. It seemed *too* beautiful to be real, which it was. I now leave the sections on until the cappings are a little colored. Owing to sickness in the family and other things to attend to the past year, I was overwhelmed with work and care, and the consequence was that some of my honey was left on the hives longer than it should have been, so much so that I was ashamed to offer it for sale; but I did so, when, to my surprise, *no fault was found with it.* There would be no use securing honey of such delicate whiteness as is the case when honey is just capped over, if it were not for the greed of the city market manipulator who wishes for an excuse to cut down the prices at every turn. His cunning hand is plainly evident in the system of grading as adopted by the National Bee-Keepers' Association. He fixes the prices to both producer and consumer and calls it *business.*

GRADING RULES A DETRIMENT.

The best way to grade honey for the local trade—towns and villages—that I know of is to separate the discolored sections from the real and also those not sufficiently well filled and capped over for market and then grade the others with regard to how well filled and capped over they are. In a good season the third grade should be small in proportion to the others, and the first grade should include from about

one half to three-fifths of the whole number of marketable sections.

Making honey strictly a natural product, even if we do not get quite as much for it, creates in us a degree of satisfaction that amounts to something in itself. It would be the consciousness that we are not doing what might excite in our fellowmen a suspicion of wrong doing which might excite in them a temptation to do wrong. There is in the world to day too much that is questionable in character if not positively bad. It is best to keep above suspicion, after all, it is principle and character that count.

BENEFITS OF MORALITY.

We should take pride in our business from a higher standpoint than mere money getting—from the moral and esthetic as well as the practical. We should carry on our work, no matter whether we are working for ourselves or for others, with interest in it and from love of it, or we will degrade our work and we will be on the down hill road to decay. When the moral powers decline, in time, it will be found that the physical and mental powers are also declining; in fact, these powers seem to be so interlocked with each other that when one weakens all seem, as a rule, to weaken. To keep off old age, and to remain young, we must keep in full strength and vigor our physical, mental and moral powers. Activity is life. I think it may be safely said that the "foundation of youth" lies within every one. To all I say, keep young. If old age is stealing upon you, or has stolen upon you, shake it off. Through the activity of your functions bring back the elastic step, the deep and quickened thought, and the tenderest emotion. Gradually persevere, and success will attend your efforts. Effort and determination will work wonders, and here is the richest field for their labor with the richest promise of the greatest rewards. Again I say be young. Dress young, act young. Be young in heart, be young in sympathy, be young in sentiment, be young, be young.

WHITE HOUSE STA., N. J , Feb 19, '04.

Influence of Food on Young Bees Scientifically Considered.

C. W. DAYTON.

ALTHOUGH Mr. Getaz says on page 273 of the Review that the food is completely transformed before assimilation, if I can read straight, the transformation of food is capable of being carried or extended so far or indefinitely that "complete" transformation could *never* be accomplished, nor is microscopic science able to determine the fact if it should once occur. If there were complete transformation there would be no need of the renewal of species. There would not be any old age. This lack of complete transformation is the cause of the unlikeness of all living organisms. Every organism possesses a power to transform food only to a varying degree of perfection. And because the characteristic molecular atoms contained in the milk of cows or goats (see page 273) are transferred to our systems, lack-

ing complete transformation, is the reason for our preference for cow's or goat's milk, according to which a person has been in the habit of using and acquired a taste for. Taste is not changed *by* habits but *through* habits which changes the system. Then taste changes to suit the system. Yet the milk may have been sufficiently digested or transformed for assimilation into the circulating medium of our bodies, but still a portion retaining the same molecular organization as if it had remained in the circulatory medium of the cow or goat.

Transformation being imperfect it is a consequence of assimilation being imperfect. The blood is a flowing river from which the different organs separate out and retain molecular materials suited to their particular needs. The material is obtained from the blood in a more or less imperfect state and the organism begins to shape this way or that to best utilize the imperfect material. Being used in an imperfect condition it is all the sooner cast out as effete, not always because it *is* effete from having been in use, but on the account of the imperfect manner of use, which may be the result of imperfect transformation, imperfect assimilation and imperfect construction of organic tissues. It returns to the blood where it may be retained or even appropriated by other organs of the body. Few if any of the constructive cells of the body are perfectly organized, and of those cast out few or none are entirely effete. In fact, effete matter itself is no more nor less than a degree of disorganization of molecular cells—not entire annihilation. Disarrangement for use in one part of the system may organize molecular matter for use in another part of the system. The system may, in time, change its constructive requirements so as to utilize varying materials. Disease is an illustration of the work of this faculty It is seen that secretions, like the food of bees, may contain molecular atoms from any part of the body of nurse bees. They may have occupied for a length of time, the ganglionic (brain) tissue and cells; appropriated their vital characteristics.

Food of larval bees is secreted by glands which are connected with the circulating medium of the nurse bees. Glands do not create new structures from foreign substances. Merely separate out and reorganize the molecules and cells which are already present and afloat in the circulating fluid. Perfect organization or transformation alters the utility and effect of the same pre existent molecules and cells. Glands may not perform their their work more perfectly than the other organs of the body. Consequently the change calculated to be made and the perfection aimed at is not complete.

In case the young bees are fed on pure honey there would still exist the same transmission of influences of the older bees since the change of nectar into honey is performed through the addition of a glandular secretion derived from the organic circulation. The influence would be transferred, not to bees only, but to any insects or animals which consumed the honey. It might not have a perceptible influence on man, because he also subsists on fifteen to thirty other kinds of food liable to exert a distracting if not a really counteracting influence.

If the "original germ" theory is correct, one organism would be a duplicate for another and there would be nothing to inherit. Environment, also would have no effect, and all of the five senses would be rendered uncessary and useless. Without the operation of the senses, memory and reason would soon fail because of lack of activity or use.

CHATSWORTH, Calif., Nov. 1, 1906.

Editorial

MICHIGAN STATE bee-keepers will hold their annual convention in Big Rapids, Dec. 25 and 26, when there will be reduced railroad rates.

My Bees and those of my brother, and what we are working on shares, about 500 colonies in all, are all in the cellars—went in between the 10th and 20th of November.

Propolis may be prevented from sticking to one's fingers by the use of grease, says Jas. A. Green in Gleanings. He urges that it be given a trial. Vaseline will answer. Mr. Green uses mutton tallow.

The Northwestern convention, to be held in Chicago, Dec. 5 and 6, particulars in regard to which appear elsewhere, is really one of the best conventions held in this country—it is next to the National. It is held in the center of a great, honey producing region, as well as a great railroad center, and at a time when exceedingly low rates are given on the railroads, and everybody likes to go to Chicago, at least once a year, and feel its hustle and bustle and see the sights. The editor of the Review expects to attend this convention, and wishes to meet as many as possible of his friends.

Last Month I thought this issue of the Review would be out on time, or pretty nearly on time, but we "struck a snag," or something worse, in making one of our bee cellars in Northern Michigan. The cellar was dug in the woods, on a side hill, and it was sandy on top and we expected it would be sand all the way down, but after we had grubbed out a few small trees, and removed a net-work of roots, and then expected clear sailing, we struck the hardest kind of hard pan, and every bit of the rest of it had to be picked out slowly and laboriously witha pickax To make matters still worse, the work was seven miles from home, and it took us nearly half the time to come and go; but there was no help for it, the work *had to* be done. We were nearly five weeks in building three cellars and one honey house, feeding and getting the bees ready for winter, and putting the bees in the cellars; but it is all done, and bees and cellars all in good condition, and the wintering ought to be successful. I'll tell you all about the cellars, and how the bees winter, before it is time to build cellars another year.

The San Antonio Convention.

For the first time in several years I missed attending the National convention. I had been laid up with an attack of rheumatism and was just able to be about, but not well enough to stand a long journey and the hurly burly of a convention. From letters that I have received I learn that the attendance was about 150; that it was a good convention; that harmony and peace prevailed; that the next convention is to be held east of the Mississippi, time and place to be decided by the Executive Board. Three separate amendments were proposed; one to prevent supply dealers from holding office; one to keep queen breeders out of office; and the third to do the same with editors—all were lost. It does not look as though the rank and file were so very "sore," after all, because

men of these classes had served them as officers. By the way, one candidate for re-election, Mr. Geo. E. Hilton, says definitely that he will neither resign nor refuse office to please any person or persons. I admire the position that he has taken. I might add that it is not simply because of all this talk about dealers and editors holding office that I am declining to again accept the secretaryship; the main reason is that I am overburdened with work. First, there is the Review to look after, which is more than enough for one man, then there is the looking after foul brood; and this year, I have several hundred colonies of bees. With so much to look after, something is sure to be neglected.

Chicago-Northwestern.

The Executive Committee of the Chicago-Northwestern Bee-Keepers' Association take great pleasure in making the following announcement:

Through the kindness of friends it is possible to hold the next convention of our Association in the fine hall known as "Brunt Hall," in the Bush Temple of Music, corner of Chicago Avenue and Clark Street, Chicago. This is the same hall where the National Association met last December. Arrangements have been made with the restaurant in the basement to serve good meals at very reasonable rates. The Revere House will lodge bee-keepers at their usual low rates. This Hotel is at the corner of North Clark and Michigan Streets.

Dr. C. C. Miller writes: "I don't how much I can do toward making or marring the convention, but, Providence permitting, I'll be there."

N. E. France says: "So far as I know now, I can come."

C. P. Dadant writes: "I promise to attend your convention if possible."

Let us have a full attendance of all the bee people (ladies and gentlemen) within reach of Chicago. Come and see the great International Live Stock Exposition, and spend part of your time at the bee-keepers' convention.

The meeting will be as follows: Wednesday, Dec. 5, 10 a. m. to 12 m; 2 p. m. to 5:30 p. m.; and 7 p. m. to 9:30 p. m. Thursday, Dec. 6, 9 a. m. to 12 m; and 2 p. m. to 4 p. m.

Question box all the time.

Everybody come and make this the biggest and best bee-keepers' convention ever held in Chicago. Reduced rates on all the railroads.

Geo. W. York, Pres.,
Mrs. N. L. Stow, Vice-Pres.,
Herman F. Moore, Sec.
Executive Committee.

EXTRACTED DEPARTMENT.

NATIONAL PURE FOOD LAW.

Its Provisions, Penalties and Scope.

Gleanings is a most excellent journal, but it seems as though the Nov. 1st issue was just packed with good things, and none of them was better than the resume of the Hepburn pure-food bill that passed Congress last June. It has been years since there has been any legislature of so much importance to bee-keepers as is this law. Practically it will do away with the damning and damaging influence of adulteration. I expected to give this a "write-up" for the benefit of my readers, but Mr. Root has done the same thing so well, so much better than I would be able to

do it, that I will simply copy his editorial entire, and thank him for the privilege. Here is what he says :—

The Hepburn pure-food bill, one of the most important measures that ever passed Congress, became a law on June 30th of this year, but will not be in force until January 1, 1907. I have before me a copy of the law, and the rules and regulations applying to said law as they were prepared by the Secretaries of the Treasury, of Agriculture, and of Commerce and Labor. That the new law has "teeth" in it, can not be denied. It is going to do more to wipe out adulteration and misbranding than anything that has ever been done for half a century. While in a sense it is restricted to interstate and territorial business, yet its *practical* working effect will be to prevent the dishonest food and medicine purveyors from doing business in *any State*, whether it has a pure food law or not. No glucose mixer or adulterator, after January 1st next, will dare put his goods on the market again; for if he does he is liable to run up against Uncle Sam in a way that will not only subject him to a heavy fine, but may put him behind the bars where he will stay for a time. It is a well-known fact that law-breakers are far more afraid of United States officials than mere State officers.

It is vitally necessary that every bee-keeper and honey-seller know something about this new law. Even honest men might inadvertently become entrapped; and it is important, alike, for both the law-abiding as well as the would-be law-breaker to know what the law is.

In a general way it makes it a crime against the United States to misbrand or adulterate *any* food product, medicine or liquor, without showing the exact contents on the outside of the package. In any State where there is no pure-food law one may adulterate and misbrand as before, *providing* his products do not go beyond the limits of that State. But the moment they pass beyond the border-line into another State he is liable to fine and imprisonment. There is where the rub is. Inasmuch as it would be impossible to do a strictly within-the-State business, the practical working effect of the law would be that misbranding and adulterating will have to stop on every foot of ground owned or controlled by any State or by the United States as a whole. The law goes farther. One cannot adulterate or misbrand goods that are to be used for export into a foreign country without taking fearful chances.

PENALTIES.

Any person who shall violate any provision of this law relating to an interstate or territorial business shall be guilty of a misdemeanor, and shall on conviction, be fined not to exceed $500, or be sentenced to one year's imprisonment, or both; such fine and imprisonment to be at the discretion of the court. For each subsequent offense and conviction he shall be fined not less than $1000, or sentenced to one year's imprisonment, or both, at the discretion of the court.

The penalty for exporting misbranded goods will be $200 for the first offense, and $500 for a succeeding offense, or to be imprisoned one year, or both, at the discretion of the court.

GUARANTEE OF PURITY REQUIRED.

A special feature of this bill is that no dealer in food or drug products will be liable to prosecution if he can show that the goods were sold under a guarantee of purity from the wholesaler, manufacturer, jobber, dealer, or other party residing in the United States, from whom purchased. It is proper to remark right here that it is very important that every purchaser of honey or beeswax secure from each wholesale jobber or producer, that the goods purchased are guaranteed by him to be pure. In the event that it is found afterward that they are adulterated or misbranded, the presentation of this guarantee by the dealer will protect him, when proceedings will be taken up against the maker of the guarantee, and he, in turn, as I understand the law, can go back to the original producer, provided, of course, that he in return is protected also by a guarantee of purity from said producer. As I understand it, this guarantee will not apply in any case where the original package in which the goods were received has been broken and the goods have been put into other packages.

It will come to a pass that, before a sale can be consummated, a guarantee of purity will have to be furnished. When the examination or analysis shows that the food or drugs are adulterated, the dealer furnishing such goods shall be duly notified.

PROCEDURE WHEN ADULTERATION OR MISBRANDING HAS BEEN DETECTED BY A UNITED STATES OFFICER.

Section 4 of the law is liberal toward the suspected offender in that it gives him a chance for hearing before the actual penalty is applied. When examination or analysis shows that he is possibly or probably guilty, notice is served to him or to the parties from whom he obtained the goods, or executed the guarantee as provided in the law. A date is fixed by the Secretary of Agriculture, or such other official connected with the food and drug inspection service as may be commissioned by him for that purpose, when a hearing shall be held. Said hearing shall be in private, and shall be confined to questions of fact. If it be shown that a mistake has been made, the parties shall be discharged, but if it be shown that he is guilty, the fact will be published, and in addition the offender will be subject to the penalties already mentioned.

The adulterators of food products fear publicity more than anything else. They do not care so much about a small fine; but Uncle Sam has fixed it so that the law-breaker shall get a big fine, some free advertising, and, in addition, a free ride, perhaps to prison. No wonder there was a tremendous glucose lobby present to kill or weaken the measure when it was before Congress. No wonder the liquor and patent medicine people feared it.

MISBRANDING OR LABELING HONEY AS COMING FROM ONE APIARY THAT WAS PRODUCED IN ANOTHER.

Not only is it made a crime against the United States to misbrand an article of food by putting out a cheap substitute under the name of something better, as, for example, a glucose mixture for honey, but it will also be unlawful to sell a *pure* honey under a label showing that it came from some *particular* apiary when, as a matter of fact, it was produced in another. Let us take a concrete case: Mr. John Jones has purchased a lot of labels that read "Pure Honey from the Apiary of John Jones." We will say he has produced 10,000 lbs. of extracted honey. He has a right to use this label on all the honey *he produces* in his apiary or apiaries, *but on no other*, *however pure*. He builds up a big trade, and there is more demand for his goods. His 10,000 pounds of his own production is all gone. He goes out into the open market and buys more honey of the same source, no better no worse than he produces in his own yard; but if he uses the same label to put out his honey he will be rendering himself liable if I understand the law. It is true no chemist could ever show whether the honey bearing such labels was produced in his apiary or not; but other evidence might show a misbranding, and our Mr. Jones would be up against Uncle Sam in a way that would kill him before his own trade.

The law does not prevent him, however, from adopting a trade label of *wider* scope reading something like this: "Pure Clover Honey put up by John Jones." Under this label he may sell his own honey and that which he purchases. But just the moment he buys a mountain sage or a pure basswood and sells it under that label, he will be rendering himself liable again. If he desires to have a stock label that will apply to both white, red, and alfalfa clover honey he can use the words "Pure Clover Honey put up by John Jones," for alfalfa is a clover the same as sweet or red clover. He might in my opinion, without being liable, but if he desired to put up a blend of clover and basswood or sage honey he had better adopt the wording, "Pure Extracted Honey, put up by John Jones." In every case, when John Jones buys honey he will do well to require the seller to give him a guarantee of purity.

The law is very clear in making it unlawful to represent that a certain food product was produced in any particular State when, as a matter of fact, it came from another State. To illustrate, no more can Ohio cheese be sold as New York cheese. In the same way Wisconsin honey could not be sold under the name of York State honey without rendering somebody liable.

FORM OF GUARANTEE.

As I have already stated, it is quite important that every bee-keeper when he buys honey from some other bee-keeper, jobber or dealer, make him give a guarantee of purity. The guarantee suggested is as follows:

I [we] the undersigned do hereby guarantee that honey or beeswax shipped, distributed, or sold by me [us] specifying the same as fully as possible] is not adulterated or misbranded within the meaning of the food and drugs a t, June 30, 1906. (SIGNED IN INK.)

Our customers are asking us to furnish this guarantee, and we in turn are asking those who furnish us honey or beeswax to give us the same guarantee. No producer or jobber should hesitate to furnish such a writing: for the moment he hesitates, that moment his goods will be under suspicion.

GENERAL EFFECT OF THE LAW.

There are many provisions of this law; but those already given are the principal ones that relate to bee keeping. Suffice it to say, its general provisions apply equally to all products, medicines, and liquors. No more can a medicine be sold under an innocent name and contain some powerful poison *unless* the exact amount of such poison as well as any other ingredients be stated on the label. Thousands of people have died as the result of liquor, cocaine, strychnine, and other deadly poisons administered in medicines having an innocent name.

The effect of this provision of the law is going to be to drive a lot of dangerous proprietary medicines out of the market. As soon as the dear public knows what these innocent-sounding medicines are, it will leave them severely alone, and it ought to.

This national pure-food law may rope in some innocent bee-keepers and other well-meaning persons; but it is their business to *know* the law, and Gleanings has taken this opportunity to inform them.

Every pound of honey that one buys of somebody else should be covered by a guarantee, else the purchaser may assume a great risk; and, further, the label shall not be misleading in any manner whatsoever.

WINTERING BEES IN CLAMPS.

Have a Sandy Hillside; Use Plenty of Straw; Give no Ventilation; and Protect in the Spring.

I look upon Mr. E. D. Townsend as about the most successful, extensive, practical bee-keeper there is in Michigan—perhaps he stands at the head—and anything from his pen is always helpful to the man who is making a business of bee-keeping. It may be a little late to put in practice, this fall, some of the ideas given in his article appearing in November 1st Gleanings, but some of them will come handy next spring, while the general principles brought out are suitable for application at any time. Here is what Mr. Townsend says:

It is hot this morning, August 20—a morning the least suggestive of zero weather and the wintering of bees; but it was so last year, and winter followed, so we will prepare as usual.

With a pencil and a roll of paper I have wandered down to the Pine Lake bee-yard, three-fourths of a mile south of the town. Long before I reached the apiary the low hum of the bees could be distinctly heard; then a little later that well-known (to bee-keepers) aroma of the buckwheat was evident; then the birds are gathering in flocks preparatory for that southern flight to winter quarters. In the distance the katydids could be heard chirping. The leaves are turning golden, as in fall. These and many other indications give evidence that the season is nearing its end, and we cannot help asking, "What has the harvest been?" Yes, I live in town, and have no home yard, so my experience for the last six years has been wholly with out-yards. Then I had another reason besides writing for coming out to one of my yards I said the buckwheat was in bloom. Yes, and it has been for the past ten days—a two or three pound flow per day, and during all this time there have been no surplus receptacles on the hives. The consequences are, the brood-nests are just bulging out with this early August buckwheat honey for winter stores. It would do your heart good, Editor Root, to raise the covers off some of the 400 colonies here near Remus and see the great fat combs of honey the bees are storing and sealing for their winter supplies; for you know those York State bee-keepers tell us that this early buckwheat honey is fine for wintering bees, and from what experience I have had with it I am satisfied it is all right; but I do not want any aster or late unsealed fall honey left in the hive for winter stores; so as fast as the stronger colonies—in fact, as fast as any of the colonies get their combs sealed up full of this early buckwheat honey—we gave them upper stories to catch this latter end of the flow or that part of the honey that is undesirable for winter stores.

A few years ago we used to get all the honey we could get put into the upper stories; then during the last half of September in this location, when the brood was pretty well hatched out, we fed granulated sugar syrup to make up any shortage in winter stores. This latter plan is very good indeed when one has but few bees and plenty of time; but when one begins to count his colonies by the hundred, and many of them are away from home, we find that many methods we used to tolerate and practice with one home yard are not practical when one is managing several out-yards. Then from a financial standpoint the difference in price between the buckwheat honey and granulated sugar is offset by the item of labor in extracting the honey and feeding back the sugar.

I told you above, there was one reason besides writing that called me to the bee-yard this beautiful August morning. It is this: The allowing of the bees to crowd their hives so full of honey has caused a very few to swarm; and to catch these stray swarms is the other reason. What I do with these late swarms is another subject.

By this time the reader will have a pretty good idea of the condition our bees will be in when the season closes, so I can now take up the main subject, the wintering of bees in clamps.

In the first place, the word "clamp" may confuse some. It is nothing more than a trench dug in the earth, about 18 inches deep, and wide enough so two rows of hives will go in nicely without crowding; then the length of the clamp will depend on the length of our 2x4 scantling which we place in the bottom of the clamp lengthwise to set the hives on. It may seem strange that the length of the scantling should have anything to do with the length of the pit. The fact is, it does not. We simply dig our pits this length for convenience, for we find that it does not make any difference about the length, only we had rather better results with from 20 to 35 colonies to the pit, so of late years we make three or four pits to the yard, of 20 odd colonies. Three scantling are laid in the bottom of the pits—one in the center and one at each side, flat side down, to set the hives on. The hives are set in without bottoms, or with the deep entrance open if the bottom board is left on. Then we think the combs come through the winter in better shape—that is, with less mold and dampness—if we raise the covers half an inch or so to provide upward ventilation through the hives. As we give no outside ventilation, the hives and combs are somewhat damp when we dig them out in spring. We have tried outside ventilation. While the hives and combs come through the winter in a little better condition, the bees did not come through quite as strong; for you see it is hard to arrange an outside ventilator in a clamp so it will not let in more or less light; and we lay it to this light that the bees worry and lose a larger per cent of their numbers than without ventilation.

When a pit is full of hives arranged as above, the top of the hives will be three or four inches below the surface of the ground our pit is dug in. We now throw on 18 inches of long straw, the same as if we were burying potatoes, apples, etc. Of course it will not be 18 inches deep when the earth is shoveled on, but it ought to be 18 inches when arranged with the fork ready for the earth. We now shovel on earth until we are sure no frost will reach them. It usually takes some more earth than we throw out of the pit to cover them properly.

They are now ready for their long winter sleep; and if it is your first venture in this way of wintering I know just how you feel when you are throwing on the last shovelful of earth, thus (to you) shutting off the last bit of air from them, as if you were glad it's only a few of your bees you are running the risk on. We used to call our first-buried pit of 22 colonies "the grave" and the neighbors would look dubious, and make remarks something like this: "He is a little off;" "one would think to look at him he had more brains;" "bull-headed people sometimes go wrong," etc.

Of course, we knew nothing of these sayings until years aftewards, when the success of this way of wintering was assured; then one and then another would speak out and say, "I did not think it possible to bury bees up excluding all the air, and have a single bee come through alive." Then he would tell of what Jones said when he first heard of my burying bees, something on the line of the quotations above.

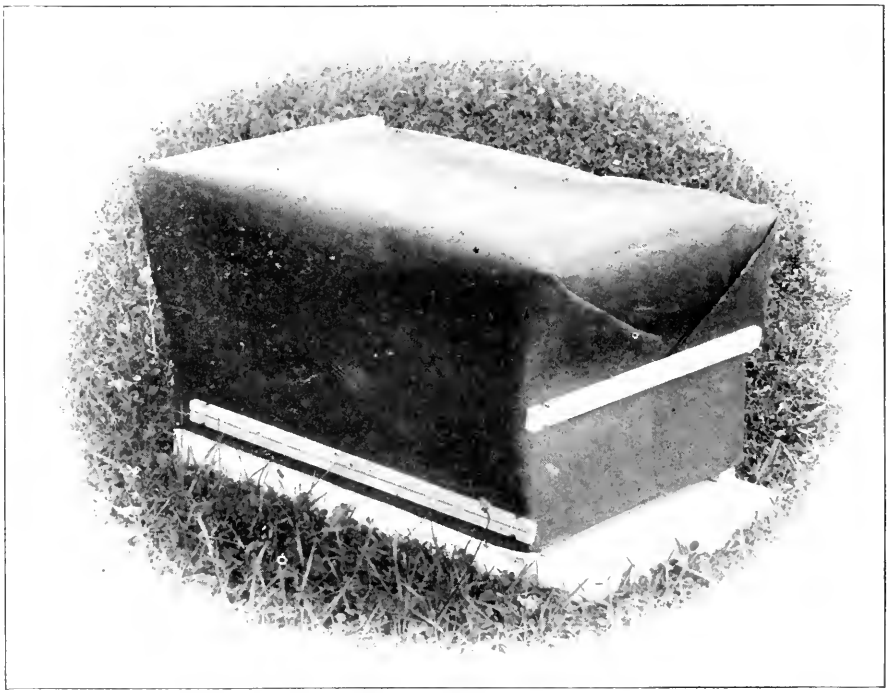
The soil ought to be of a loose sandy consistency. Keep throwing on dirt until no more will stay, as we depend on this steep slope of the pit to turn the water off. Then a good idea is to

have surface drains along each side of the pits to carry off any water that may come that way.

In this location we bury during the last half of November and dig them out as soon as the frost is out of the pits, usually the last week of March.

In uncovering the pits, shovel off all the earth except, say, two inches, leaving enough sand so the bees can not get out. Of course, this getting a whiff of fresh air will cause the bees to make quite a demonstration; but they will not leave their hives then. Just at night, when it is too late for the bees to fly, remove the rest of the earth and straw. Thus far the uncovering has been done the day before you expect a good day for them to fly. The next morning the bees will all be clustered in their hives, and can be set on their summer stands without a single bee flying. After trying several different plans of removing bees from clamps, the one described above is decidedly the best. It might give some timid bee-keeper courage to try this plan to know that we wintered 300 colonies last winter in clamps without the loss of a single good one, and that we will winter 450 of our 600 colonies this way next winter.

If you look at the accompanying half-tone, you will see our mode of protecting bees during spring with building-paper. The ideal way, and the way we do when we are supplied with those ⅜-thick board, brood-nest covers, is to remove the hive-cover and place one of these thin covers on, then fold the paper around the hive nicely, as the half-tone will show, then nail on four lath at the bottom. Put your hive cover on, held down with a stone or brick, as the wind is more likely to blow covers when prepared. With this protection, even in the coldest weather in April, the bees will be clustered clear across our ten-frame hives, just as they do in chaff hives, with the additional advantage over the chaff hive of the benefit of the sun heat during the day.



Hive Protected by Tarred Felt.

I have for several years wintered bees in clamps, and can most thor-

oughly endorse all that Mr. Townsend says regarding the wintering of bees in clamps. The first and most important requisite is a sandy hill side.

Without this, success is problematical. Clay is *death*. I have tried it repeatedly. No matter what you may think, or *feel*, no ventilation is needed in a sandy soil.

Bees can be wintered as perfectly in a clamp as in a cellar, but *no more so*, and, only the doubt of permanently occupying a location gives an excuse for employing the clamp method. I have this fall helped to build three cellars, each with a capacity for 200 colonies, and the cost was about $50.00 for each cellar. The interest on this sum, even at 10 per cent, would be only $5 00 a year, and 200 colonies could not be buried and dug out for much less than five times that amount. Another point: A cellar allows the bees to be hustled in, if the season is late, and winter coming on, while the clamp method takes some little time with large numbers In my opinion, only the uncertainty of occupying a location justifies the use of the clamp.

WINTERING BEES.

Some Excellent Advice From an Excellent Man.

In many locations in the North, the real problem of successful bee-keeping lies in the successful wintering of the bees, and I know of no one who has been more successful in this line, in a large way, especially in out-door wintering, than my old friend N. E. France, who contributes the following article to Gleanings :

In the Northern States successful wintering of bees is quite a problem. The more I study this as I visit apiaries, the more I believe the bee-keeper is to blame for losses. How, then can they be prevented ?

1. I want, early in July, more sealed honey in the brood-combs than is necessary to winter the colony. The unused honey in the spring will all be used to feed early-hatched brood, and I often find weak colonies or dead ones, as I go over the State in the spring, that are starved or nearly so. Starving colonies in spring are seldom profitable. This shortage also causes the bees to eat too much pollen, and dysentery will follow.

2. During the latter part of the honey harvest I remove every queen, and at the same time replace, with new queens, either those which I buy or some raised in the apiary for the purpose. This will leave the hives soon after the honey-flow with fewer old bees to feed during the fall, that would die before winter anyway, thus saving winter food. The new queen will fill the hives in the fall with young workers that will live through the trying months to maintain heat and care for early brood in the spring. In this northern climate where winters are hard, I do not dare to winter queens twice, for they are liable to die in the spring, leaving queenless colonies that are of little value.

3. The location of the apiary often decides success or failure, especially if bees are wintered outside. The apiary should be well sheltered from cold winds, the hives provided with young queens and an abundance of young workers, and well filled with honey in the fall. It is well to allow a free flight of bees twice during the winter, on warm days; the hives should be protected from the outside air with heaving building paper, or by an outside casing. If the above conditions are met I would rather winter the bees on summer stands. It is much less work, and the amount of extra food consumed (not over 10 lbs.) will not pay for the extra labor. The illustration (see next page) shows such an apiary of over 100 colonies, protected with building-paper, in a sheltered location; the winter loss, including spring dwindling, is never over 2 per cent. The hive in the foreground has the outside paper removed, showing the brood-chamber and the super of sealed combs for winter food.

As I go among hundreds of apiaries inspecting bees I find a large portion of the apiaries are not so located as to be protected, and outside wintering results in heavy loss. Cellar wintering then must be resorted to. Good results are obtained where the bees are

Hives Protected by Being Wrapped in Building Paper.

From annual report of National Bee-Keepers' Association.

wintered in a so-called root-cellar, dug back into a sandy hill-side. Some bee-keepers wall up the sides with good stone, leaving everything covered with soil for protection. Others stand posts near together to keep the sand from caving in The ceiling is built of heavy sound timbers, over this, at least 3 feet of sand or soil, then a foot of straw under the board roof, which conducts all storms away. There shonld be a ventilating tube at least a foot square from near the bottom of the cellar, with a damper that can be closed any time. This tube can extend above the roof, with an elbow on top, so as to point downward.

It is a good thing to have a thermometer in the cellar where it can be read frequently, and the temperature kept uniformly at 45 degrees. Double, tight-fitting doors at the entrance are necessary, and should swing out. In the spring if the cellar gets too warm, and the bees restless, I open the doors at early evening, closing them early the next morning. If frost is creeping in, and the room getting too cold, a small stove can be put in between the doors; and when the air is warmed there, the inside door is swung open. Well-built cellars will keep about the same temperature without all this manipulation.

The more the cellar is back in the bank, the better. There is a perfect wintering cellar in Wisconsin, made by blasting out the sand rock, forming a cave the size and shape wanted, there being several feet of stone and soil roof. A cellar under a dwelling house is often the place for a farmer to keep his bees, if what space is wanted for the hives is partitioned off so it can be kept dark and undisturbed. This cellar can be easily ventilated, if necessary; but the frequent going in and out, opening doors above, often gives all that is necessary.

Noise above the bees does not seem to disturb them much. I know a successful cellar within a few feet of a railroad where trains are frequently passing. The bees get used to it.

Again, if I could have all my desires granted for an outside cellar I would want a dug out cellar in a sandy hill, with a stream of spring water running through to purify the air and keep it the same temperpture. If mold gathers on a cut piece of potato in the cellar it means that ventilation is needed in some way. Have the bottom of the cellar covered with dry sand or sawdust; and if air gets bad, some air-slacked lime on the floor may help it.

But wintering with many is not half the problem. To keep the colonies gaining every day after being taken from the cellar is often the trying question. Let me suggest that such parties try to protect each hive as it is set on its summer stand, with some heavy building-paper, keeping it there until settled warm weather. If you have not tried it do so. Also soon after placing the bees outside in the evening of a cool day, some time, weather permitting, open each hive just long enough to know the amount of honey; if short, mark it at once on whatever record you keep of each hive, and see to it that each gets some feed. I prefer sealed combs of honey; but if out of those, I have used freshly filled combs from the bee-house. If the bees need feeding later, use something that can be given in a wholesale way. I now use gallon syrup-pails or friction-top pails, with cover punched full of small holes, like a pepper-box lid. Set it on top of the brood-combs and place, for a day, an upper story around it to keep it from robbers, covering the vacant space around it with cloth. The gallon or more of feed will be taken into the combs inside of a day, with no robbing or exposure of brood. The pails can be used later with new covers to sell honey in, thus costing one cent for each gallon feeder.

That a sheltered location is of great importance in the wintering of bees there is no question, illustrations of its value are almost numberless, but whether such a location, would allow of perfect success, in a *severe* winter, with building paper, or tarred felt, alone for protection, I have my doubts; that is, as far north as Wisconsin or Michigan—but I am willing to have those doubts removed.

However, there is no doubt as to its value as a *spring* protection. This value is not so apparent some springs as it is others, but it has always been a great help whenever I have seen it tried, and occasionally there comes a spring when it is almost the salvation of the apiary—when fine weather of weeks' duration is followed by a hard freeze, lasting possibly several days.

FOUL BROOD.

A Comprehensive Review of the Cheshire Theory.

That there are at least two diseases of the brood of bees there is no possible doubt. For years we here in America have been puzzled at the decisions and conclusions of European scientists and bee-keepers regarding foul brood, or what we have called foul brood, but, since the scientific investigations have shown that black brood (so-called) and European foul brood, or at least, *some* European foul brood, are similar, much of this mystery has been cleared away. I have already gone over the ground at some length in the Review, but I think Jas. A. Green, State Inspector for Colorado, has put the matter in the best possible shape in an article in the American Bee Journal. Mr. Green says:—

For a number of years bee-keepers have accepted the theory of Cheshire as to the cause of foul brood, and have assumed that there was only one form of foul brood, alike in all countries where bees are kept. There were some inconsistencies. Cheshire's theory, or, perhaps, I should rather say the conclusions he drew therefrom, did not always fit the facts. Several, I believe, have called the attention to this. I myself in an article published about 15 years ago, expressed my doubts that the true cause of foul brood had been discovered. But in the main there was no opposition to the acceptance of the Cheshire theory. The disease was of bacterial origin, and *Bacillus alvei* was as convenient a one to lay it to as any other bacterium. Very few had the facilities to make microscopic investigation on their own account, so for lack of anything better, Cheshire's theory as to the cause of the disease had full credence, though practical men, in this country at least, had been compelled to discard his conclusions in regard to the transmission of the disease, its character and its cure.

Let us review briefly some of these. First, that foul brood is not simply a disease of the brood, but a chronic disease of the blood, affecting queens, workers and drones. He found *Bacillus alvei* in the ovaries of the queen as well as in eggs not yet laid. If a queen were infected to this extent, it would hardly seem that she could ever again lay healthy eggs. Yet the queen may be removed from a infected colony, placed in a healthy colony, and the brood that hatches from the eggs she lays therein, will be healthy. I have done this a number of times myself as have many other bee-keepers—probably hundreds of times in all—and if any one has ever brought forward any proof that the disease was ever transmitted thereby, it has escaped my notice. Moreover, by the McEvoy method of cure, which has been successful in thousands of cases, the queen of the diseased colony is, only 3 or 4 days later, laying eggs in a colony that is thereafter healthy, all trace of the "chronic blood disease" having vanished in the meantime.

If the mature workers of an infected colony are diseased, it is certainly very remarkable that all of the many thousands comprising a colony are cured, or, at least, made incapable of transmitting the disease by the simple process of building a few square inches of comb.

It is well known that drones are "free commoners," going from one hive to another. If it were true that they were diseased in themselves, would not this frequent interchange of visits result in spreading the disease to a far greater extent than is known to be the case? No proof has ever been brought forward that the disease has ever been transmitted from drone to queen by the act of mating, as claimed by Cheshire, and all experience is distinctly against the supposition that such is ever the case.

Perhaps the strongest proof that the workers are not diseased, or are incapable in themselves of transmitting the disease, is furnished by the Baldridge method of cure, which was described on page 469 of the American Bee Journal for 1905. The principle involved in this plan, which is one of the most practical and valuable methods of cure, is that foul brood is conveyed only by means of the honey, and that an undisturbed bee leaving its hive does not carry any honey with it, and may therefore enter any hive without any danger of transmitting the disease. The bees leave the infected hive through a bee-escape, and, being unable to return, go into a hive alongside. Bees are thus leaving a diseased

colony and entering a healthy colony to become members thereof, daily, for a period of several weeks. Is it conceivable that they could do this without infecting the colony they enter, if they were themselves diseased? Yet I can testify, as can many others, that this is a practical method of cure. I have tried it in a number of cases without a single failure.

The same principle is involved in the plan of R. C. Aikin, whereby the diseased colony is moved several times, at each move losing its flying bees, which enter the hives nearest its old stand Care being taken not to disturb the bees at the time of moving them, which is best done in the evening, the returning bees will enter healthy colonies without conveying the disease. These facts show that the contagion is not conveyed by the bees, queen or drones.

When curing bees by the McEvoy plan, shaking them from their old combs and compelling them to build a new set, the old hive may be used, disinfection being entirely unnecessary. I have Mr. McEvoy as authority for this, and numerous trials in my own practice have shown that he is correct

Finally, it is claimed by some that there is no danger of the operator carrying the disease from one hive to another, if he is careful not to carry any honey on his hands or tools. At any rate, his disinfectants are not necessary I personally know of large apiaries where many cases of foul brood have been successfully handled, the only precaution against conveying the disease being to wash the hands and tools with soap and water after handling a diseased colony.

If you will consider the foregoing facts, which may be supported by any necessary amount of evidence, you will see that the only remaining sources of contagion are the diseased brood itself, or the honey infected therefrom. Although Cheshire concluded, because he could not find *Bacillus alvei* in honey, that the disease could not be conveyed thereby, and even went so far as to declare that bacilli could not multiply in honey, all practical experience with the disease as we know it in this country shows that ordinarily honey is the sole medium of contagion. All successful methods of cure are based on this theory, and the various methods of cure by medication, which have been imported from Europe from time to time, have proven utterly useless, or at the best, only palliatives of the disease they can not cure.

We have come to the point where a re-organization and re-adjustment of our ideas in regard to foul brood seem inevitable. There has been for a long time a curious difference between the experiences of bee-keepers in this country and those of Europe. This led to the belief in the minds of many here that foul brood in Europe was of a milder form than what we had here. Some explained this by saying that bees there had been subject to foul brood for so much longer a time that they had become more immune to it. Just how time can operate to render anything immune to a disease that once well established is invariably fatal unless cured by a man, does not appear to me. No evidence has ever been presented to show that a colony that has been cured of foul brood is any less likely to contract it again.

Then came the investigations of the bacteriologists of our Department of Agriculture, in which they were unable to find *Bacillus alvei* in any sample of foul brood, as we know it in this country, while every sample of what we know as black brood contained *Bacillus alvei*. This would indicate strongly that what has been known as foul brood in Europe is identical with what we know as black brood here. At least it would go to show that it was black brood and not foul brood, that Cheshire experimented with.

Evidence going to show that black brood exists in Europe is given by the fact that the treatment found by Alexander, of New York, effective in curing black brood has been recommended by Simmins, of England, for curing foul brood, but which I think no one who has ever had experience with the genuine foul brood of this country would consider in the least likely to be effective in that disease.

Of course, even if it is true that much of the European experience has been with something other than what we know as foul brood, it does not necessarily follow that the genuine article does not exist there. It is quite probable that there are two brood diseases there, the same as here. It is difficult to get around the evidence brought forward by C. P. Dadant on page 719, that the real foul brood exists there. It may be that they have simply never been differentiated, and that Cheshire's error has prevented an earlier recognition of the facts.

SELLING HONEY.

Sell Early; Keep Old Customers; Advertise; How to Utilize the Honey from Cappings.

Let us never forget, let us keep it ever in mind, let us repeat it over and over, that the selling of the crop is fully as important as its production Nearly every veteran, successful bee-keeper has developed some system or method of disposing of his crop, and Mr. E. W. Alexander, of New York, is certainly a veteran and successful, and here is what he writes Gleanings on this all-important subject.

This is a very important part of our business—one which we should look at from several different points. First, we should take special care in producing either comb or extracted honey so that it will be of the very best quality; and we should put it up in the most convenient and salable package possible. Then we should have it ready for market as soon as the market is ready for it.

Here is a point that many are very negligent about. They have other work to attend to, and think their honey can wait until they can do their odd jobs, and foolishly they try to make themselves believe the price will rise, and they will get more later on. I have never known this to be so. On the contrary, the price is sure to decline until it is hard to sell at any price, Now, *don't* allow valuable time to slip by, leaving your honey on your hands, and then complain that there is no money in bees. Just watch a successful manufacturer or merchant and see how he is ever on the alert for any thing that can be turned to advantage; and if you expect to succeed as they do you must also watch these points.

In regard to sending your honey to commission men to sell for you, I must say that many times their returns are far from satisfactory. When you find a square commission man it is a very good way to dispose of your crop. But I pity you if you are caught as I have been by different parties. Before we commenced to sell our honey direct to dealers I thought seriously of going out of the business, as we could not produce extracted honey for the returns these men sometimes made. One lot in particular, of about four tons of as nice clover honey as I ever saw, he claimed to have sold at four cents per pound. Another lot of nearly a carload to another party brought us only three cents net, and I have good reasons for believing that each lot in question was sold for a good price. So, from past experience my advice is to be careful where you send your honey. If you are a little short of customers, just advertise it in our bee journals and you will soon have chances to sell at a fair price; then you will know what you are to have, and when to expect it; and, as a general thing you will be better satisfied with the result.

Another important part is, don't try to sell your honey for more than it is worth in the common markets. Here many make mistakes. Some years ago we made this mistake, and lost a customer who had for several years bought quite a large amount. This time he paid us one-fourth cent per pound more for nearly five tons than he could get for it, losing about $25.00 thereby, when he expected to make that amount, and we lost a customer who at that time was worth nearly as much annually to us. If you can sell your crop in a small retail way I can see no reason why you should not have the same price as any other retailer. But when you sell in large quantities to parties who sell to those who have to retail it out in small packages, then remember that they must have a margin of profit to induce them to invest their money in it. This matter of holding a customer is well worth our consideration.

No man in business can afford to lose one if he can help it. Since we have given this part of our business especial attention we have had no trouble in selling our honey at a fair price early in the season. We think this a better way, and have the money soon on interest, than to hang on trying to squeeze out the last cent from a dealer who will never buy from you again if he can help it. I always like to have a pleased customer, for such are sure to buy another year. We have been censured many times by some honey producers for selling our honey at the price we do; but I like to see the summer work all finished up before bad weather comes, and know that everything is prepared for winter; then we can turn our attention to other matters for a few months.

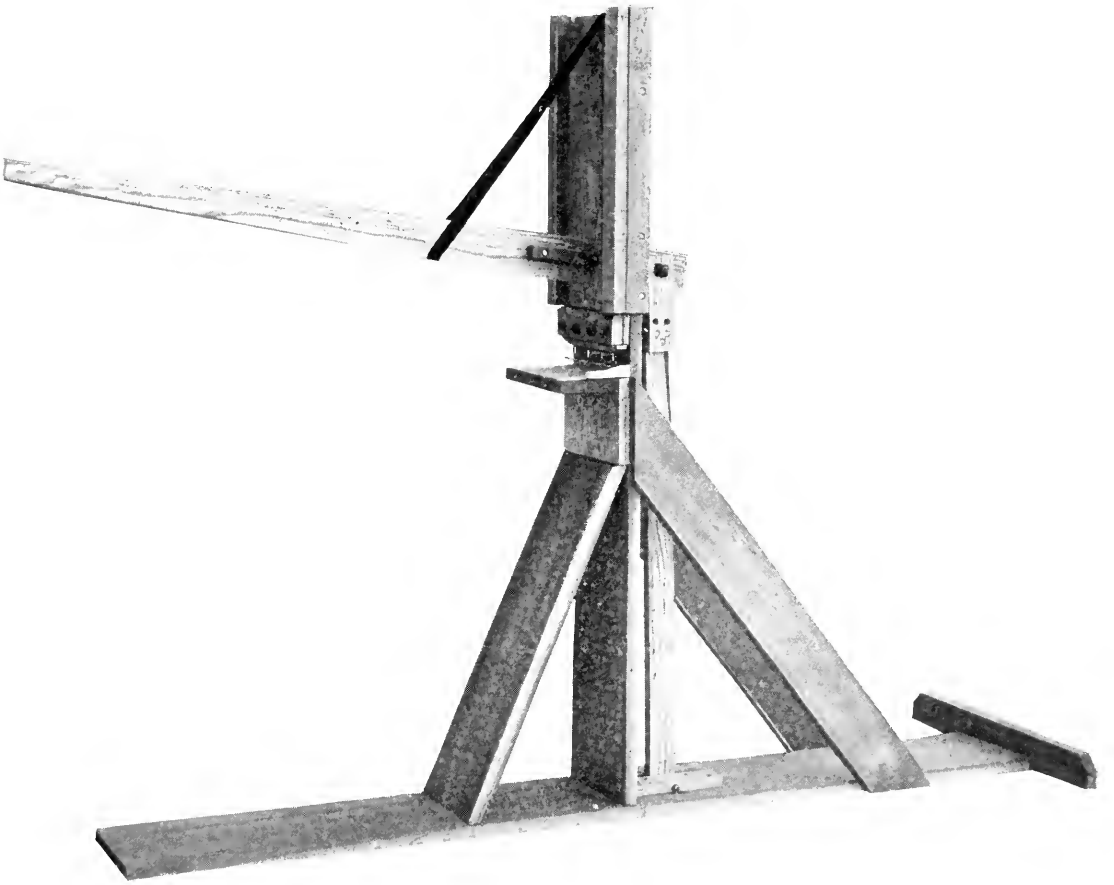
During this winter season is a fine time to visit distant friends and make our plans for the coming summer. I think it does man good to have a rest from hard labor and mental anxiety. In natural law nearly every thing has a rest during part of the year except poor man; and he toils on until the worn-out body is lowered into the grave. But I will stop my sermonizing and call your attention to another part of our business.

It is the caring for the cappings when extracting. I see many recommend rinsing them so as to save the honey that will not drain out, and then make this sweet water into vinegar. I used to try this plan, but I could never make a vinegar but that had an unpleasant odor and taste, and was nowhere when compared to cider vinegar. Then later we used to let the bees clean them up; but this had its bad features and we were glad to adopt the following way of handling them. We now use an old honey extractor with the basket and reel taken out for an uncapping can. We put in the bottom a screen of coarse open wire cloth for the honey to drain through, which keeps the cappings back while the honey goes out at the open faucet into the same pipe that conveys our honey from the extractor to the tanks. When this can is full we empty the cappings into a tight barrel and set them away until spring; then when we wish to feed our bees we turn boiling water upon these cappings until they are melted, and the wax rises to the top, which we remove and then use the sweetened water to feed. Sometimes we add a little granulated sugar if we have used water rather freely, and it makes the finest feed to stimulate early breeding that we ever tried In this way you save every bit of the honey from the cappings, with but very little trouble. I think if you will try this another season you will never again set out your cappings for your bees and your neighbors' bees to clean up, nor go to the trouble of making (to my mind) a very poor substitute for vinegar. I will admit that honey vinegar is sour enough but I for one cannot go that unpleasant taste.

Still another subject I wish to speak of is this: During those cold stormy days of winter, when time hangs heavy on your hands, and especially winter evenings, get out a lot of those old back numbers of bee jonrnals and look them over. You will be surprised to see how many good ideas you can pick up from them, especially the summer numbers that came when you were so hurried about your work that you hardly took the necessary time to read them, and still less time to remember and put those good points into practice. To sum it all up in a few words, don't waste any time in worrying about good or bad luck, but put yourself at the head of your business and realize that it is according to your skill and intellect that you either succeed or fail.

One of the most important points in the foregoing, is that of holding old customers year after year. It costs to find customers, and, when found, they should be so treated that they will return time and again. Counting the cost of advertising, and the expense of sending out samples and the correspondence, it is possible that, although I sold my honey at an advanced price, I may not have made much more money than I would have made to have sold the honey to some jobber, but I have tried to so treat customers that they will come back to me another year—at no cost to me.

Mr. Alexander's plan for utillzing the honey left in cappings certainly seems practical, and, as we have several barrels of cappings to render we may give it a trial.



Home Made Machine for Piercing End Bars.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

$1.00 A YEAR.

W. Z. HUTCHINSON, Editor and Proprietor.

VOL. XIX. FLINT, MICHIGAN, DEC. 15, 1906. NO. 12

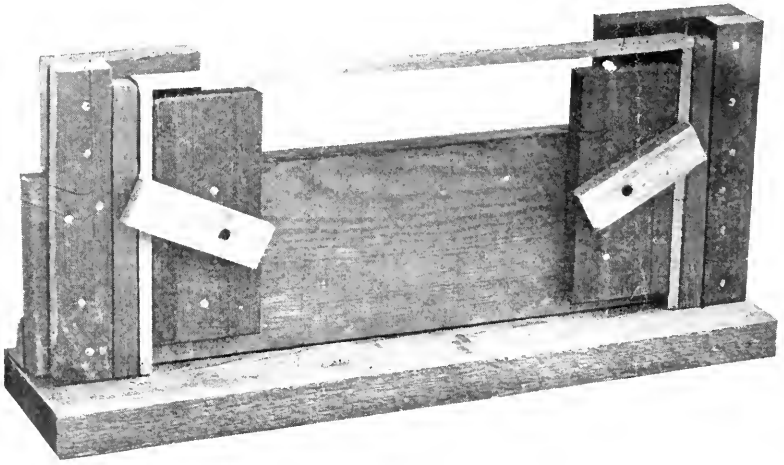
Making Good Brood Frames for Only One Cent Each.

W. Z. HUTCHINSON.

I DON'T urge that everybody make their own hives and fixtures. Hives, supers, frames, etc., need not be as nicely finished as cabinet work, but ought to be exact in dimensions, and all interchangeable. If this condition of affairs can be secured only by the the purchase of factory-made goods, then use that kind of goods; but many bee-keepers are good mechanics, and located near planing mills that do good, accurate work. Such men can save money by making their own frames, hives, supers, etc. To be sure, there are some frames on the market that can't be cut out at an ordinary planing mill—special machinery is needed for cutting out Danzenbaker frames, for instance. But, as most of you know, my preference is for a plain, so-called, all-wood frame, that can be cut out of a ⅞ board with a common buzz saw. I don't want any staples, nor nails, nor any other self-spacing arrangements. I want no attachments on a frame—just a plain, straight, smooth, even, ⅞ frame all around. It seems a pity to me that bee-keepers will pay for these extra fixings on frames, when said fixings only make the frames less easy of manipulation. Self-spacing frames, staples, etc., are all right when an apiary is to be moved, but I would rather fasten the frames, even with nails, if necessary, when the bees are moved, if they are to be moved, than to be pestered all the season with all of these contogglements.

Holding the foregoing views on frames, being "handy with tools," and living near a mill where good and accurate work can be secured, it will be seen that I am in position to make my own frames and hives at considerable saving. My frames are the Langstroth, the end bars are ⅞ in thickness,

the bottom bar is ¼ thick, and the top bar 7-16 thick. The bottom bar of a frame does not need to be very strong, as its only object is to keep the end bars in place, from spreading, or from swinging in when the frame is wired. For this reason ¼ inch in thickness is enough. The bottom bar is nailed to the ends of side bars—not placed between them. A top bar of soft pine, only ⅜ thick, may sag at times, but I had mine made of whitewood, and 7-16 thick, and, out of 3,000, not one sagged a particle.

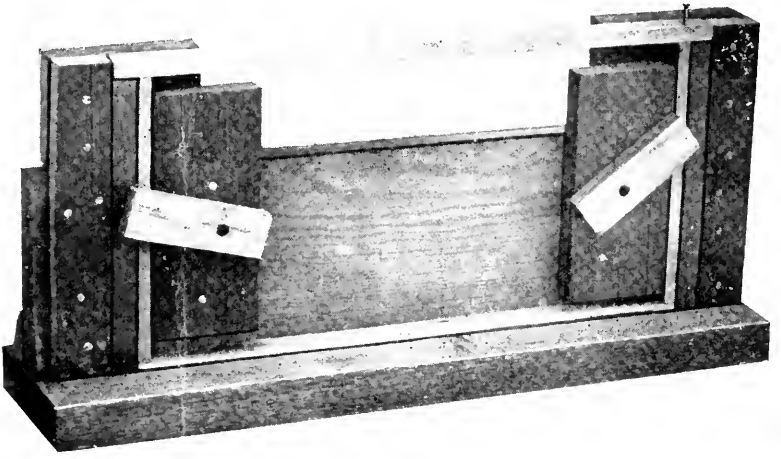


Nailing on the Bottom Bar.

I got the plain sticks sawed out at the mill for only 65 cts per 100 frames. But let me tell you how I secured this price. I did not go to the mill and give my order to have them cut out of clear lumber, and insist that they must be done next week. I gave my order at least six weeks before I wanted the goods, and this allowed them to be cut out at odd spells, out of *waste*. It is quite an advantage to the owner of a small mill to have some such job that a man can be set at when waiting for other regular work.

To the man who wishes to wire his frames, the one great obstacle in making home made frames is the piercing of the end bars, but, if he has sufficient ingenuity and gumption he can rig up some kind of a machine that will do this work. The frontispiece shows a machine that I had for this purpose. First, there is a plain, flat board, about a foot wide and six feet long laid upon the floor as a foundation. There is a cross piece at the back end to keep it from tipping over. In the middle, at right angles with the board on the floor, is nailed another board of the same width, in an upright position, and firmly held in place with braces. About the middle of the upright board is firmly nailed a little shelf upon which to place the end bars that are to be pierced. Just above this shelf is a sliding board of hard wood, that is held in place by cleats screwed to the edges of the upright standard. Across the front side of the lower end of the sliding board, is bolted a piece of hard wood, and between this piece of hard wood, and the sliding board, equally distant apart, (about two inches) are placed four, large, harness makers' awls. A neat little groove is cut, with the point of a knife, in each piece of

wood to receive an awl; and, to keep the awl firmly in place, from being forced farther into the socket, or from being pulled out, the back end of the shank is heated red hot, bent at right angles, and then driven down into a hole made with a brad awl in the back, or long piece of wood. To do this bending of the shank I drove the point of the awl into the end of a soft piece of pine stick. This held the awl, and still farther, prevented the point from becoming heated, and thus losing its temper. I then thrust the point of the shank into the hot coals of the coal fire, took it out quickly and bent it with a pair of pliers. If it is not bent sufficiently at the first trial, re-heat the shank, as it is quite likely to break unless it is red hot when the bending is done. After the bent portions of the shanks of the awls have been driven in, the crosspiece of wood that goes on over them is put in place, and the nuts of the bolts screwed up tight, which holds the awls firmly in place. A mortise is made through both the sliding piece, and the board back of it. The mortise in the sliding piece is only long enough to admit a lever, but that in the board back of it is several inches longer, which allows the lever to be raised up and down. Four nails are driven part way into the upright board just about ⅛ above the little shelf, and when an end bar is put in place to be pierced, it goes under those projecting nails, which hold it down when the awls are withdrawn. A piece of wide elastic (rubber) extends from the lever to the top of the machine to hold up the lever while an end bar is being put in place. An end bar is put in under the awls, the lever depressed, and then raised, when the end bar can be re-removed. All of this seems like a lengthy description, yet I made the machine in a day, and one of my daughters has pierced 800 end bars in an hour. If any of my readers should try piercing end bars with awls, let me tell them to be sure and have them made of soft white pine. While the awls will pierce Norway pine, or whitewood, there is too great a tendency to splitting.



Nailing on the Top Bar.

After the end bars are pierced, then comes the nailing up of the frames, and the only way in which frames of this style, those made of just plain, square ended sticks, can be nailed up, is by the use of a form or rack in

which the pieces are held in place while being nailed. To make such a form take a piece of board, say, a foot wide, and two feet long, lay it down flat, and along its center nail the edge of a board nearly as wide as a frame is tall. To the sides of this upright board nail four strips, two near each end, and just far enough apart and in the right positions so that an end bar may be slipped between each pair of sticks, and be held in place by a wooden button that may turn over the end bars. When the end bars are in place lay on the bottom bar, when the outside, upright pieces ought to be of such a height that the side of the bottom bar now uppermost will just come even with their tops. After the bottom bar is nailed on (one nail in each end is sufficient) turn the frame over, bringing the bottom bar down against the bed-piece of the form, when the ends of the end bars then uppermost will come flush with the upper ends of the outside uprights. The top bar is now laid on, and is held in exactly the correct position by an *additional* strip of wood nailed on at each end just outside the other two parallel strips. Two nails in each end are sufficient. I use inch nails (cement coated) for fastening on the bottom bar, and inch and one-fourth for the top bar.

When finished I have a frame costing a little less than one cent, that is simply perfect from my standpoint. It is plain, simple and strong, and, when wired, and filled with a sheet of foundation, will result in a comb that has no superior. I'll tell you next month about the wiring and putting in the foundation.

FLINT, Mich., Dec. 14, 1906.

Feeding Bees in Winter and Ventilating Hives.

WALTER HARMER.

I HAVE just hauled in my Mason Co., out-apiary of 65 colonies, 13 miles, with three horses, one team and one single rig (sleighs). I am one of those contrary mortals, and am putting them into the cellar without giving them a flight. Father once said: "Walter will have his own way any way." Well, I am not worrying about the result, as I have not noticed any bad effects from so doing on previous occasions.

About 50 per cent. of these colonies need more or less feed to carry them through until May next. I could not feed earlier, as in the case of the home yard. I have often fed sugar syrup in the cellar; one winter feeding about 500 lbs., without any bad results; in fact, they seemed to be healthier and cleaner than when no feeding had to be done. I use the so-called pepper box feeder, and would say that nearly every colony can take down a pint of syrup before it gets cold, and a great many can take a quart at a time. If they quit taking it, warm it up, or give them a rest. They will not be in immediate need if they leave it when in a comfortable cellar.

Some may ask what becomes of the *ruinous moisture*? Well, I would say that since I have practiced ventilating the hive I have no more mouldy combs.

If I wanted bees to breed in the winter and did not care whether I had mouldy combs or not, I would advocate tight covers; then the bees could have all the moisture they wanted, as, if they did not reach up and take down the big drops as they hung on their ceiling, the drops would fall down upon them whether they approved of it or not; but with the flat reversible cover drawn forward so that there is from ¼ to ½ an inch space across the top of the hive at the back, there is perfect hive-ventilation; and no matter how much thin sprup is fed, there will be no large drops of water falling on the bees, killing them and destroying the combs.

I have very little to say about the temperature of my cellar. Sometimes it down near freezing, and, at other times it is near 50 degrees; but I think the bees are better at 40 degrees than at 50; that is, for the early and middle parts of the winter.

Notwithstanding what I have said about having hives and combs dry in the cellar, I am sure there are times when the bees need more moisture, or water, and without much experience in watering bees in the cellar, I can not think at present of a more practical way than a little shallow receptacle, kept supplied at such times, on the alighting board close to the entrance. Last winter my bees went into the cellar very heavy with natural stores, but they seemed more uneasy than when put in with less stores, and fed syrup. I watered or moistened them by sprinkling water over the hives, cellar and floor. In January I opened up two colonies; they both had little patches of brood in the center of the cluster, in about equal amounts. One colony was considerably affected with dysentery, having begun to spot up the hive and combs, while the other was as sweet as a new pin.

MANISTEE, Mich., Dec. 4, 1806.

Helpful Talks on Extensive Bee-Keeping.

E. D. TOWNSEND.

IT HAS now been three years since I wrote a series of articles for the Review, giving an outline of my method of producing honey, and caring for bees; three eventful years, during which time my bees have been increasing, more yards have been established, and, as more bees are added, I find myself changing the methods of management to quite an extent. To be sure, many of the old, tried methods are still kept in use, but every year finds me whittling down, or cutting out entirely, some manipulation that I used to think *absolutely necessary*.

The editor, knowing of these many successful changes during these three years, has asked me to go into detail, and describe my methods of management clear through the season; or, in other words, bring everything up to date; the fact is, he has asked me to write 100 columns for the Review during the season of 1907.

THE EXPERIENCE OF WHICH MR. TOWNSEND IS TO TELL.

His knowing that we had produced, and sold $900 worth of honey and wax from one yard of 168 colonies, 105 miles from home, by rail, this poor season, and being convinced that the same management in a good season, would have swelled this amount to nearly $2.000, is one of the reasons for asking me to write for the Review again. Another reason is, this yard, 105 miles from home, was worked for both comb and extracted honey, 84 colonies for each, and a comparison of results between the relative cost of production will be given.

Then there are the four extracted honey yards here near home to talk about; but I think I have said enough along this line.

CUT OUT ALL UNPROFITABLE MANIPULATIONS.

In being able to distinguish between the paying manipulations and those that do not pay, lies much of the secret of successful, extensive bee-keeping. "Always in a mood to learn," should be our motto. We are too prone to hang on to the old methods. We become accustomed to doing things in a certain way, our hands become deft at this way of manipulating our bees. Right here is where most of us make a mistake. The new, and, perhaps, superior way is tried; everything seems strange; we don't get along very rapidly; everything feels awkward; and, if we are not clear sighted enough to see the advantage of the new way, we drop back to the old; likely never to try the new again, and an opportunity for progress is lost.

But what I will say in "Helpful Talks," will be more in the line of what not to do, rather than adding new manipulations, to the already too complicated systems in vogue, at the present time.

The system I am about to describe is an old tried one, one that has stood the test of years.

PREPAREDNESS A GREAT FACTOR OF SUCCESSFUL BEE-KEEPING.

It is now December; my bees are all in their winter quarters; 590 colonies; 155 are chaff-packed hives; the balance in clamps (buried); our season's work is finished, our crop of honey sold, and I am commencing to think about what supplies, etc., will be needed for another season; for I usually order my season's stock during January, and have them all nailed up and frames wired during winter, as I consider preparedness a great factor of successful bee-keeping.

THE ADVANTAGES OF INTERCHANGEABILITY.

I am thoroughly convinced that the best is none too good, so I buy factory made goods. I believe in specialism. Specialism in queen rearing; specialism in the production of honey; and specialism in the manufacture of hives and implements pertaining to our pursuit. We want every hive in a yard just like every other hive; then we want every yard to have hives and fixtures just like every other yard; everything interchangeable. To illustrate: I contract the entrances of my hives during the cold spring months; if I had only a few bees, say in a home-yard, it would not make much difference whether the entrances were all alike or not. I could with a saw, hammer and nails, a few laths and jacknife, take measnrements and cut lath the right length to fit any kind of an entrance, but with several hundred colonies *in out-yards*, scattered around the country, this would be quite a long drawn out job; but with every entrance in all our yards exactly alike, the entrance blocks are cut in the shop, during odd spells, with one-twentieth of the time and expense,

This is only one of the many manipulations in the producing of a crop of honey, and one can easily figure out how it would be possible to so work our bees, that the item of labor alone, would eat up all of the profits of the business. I have been in the yards where a good crop of honey was produced each year, one in particular, where nearly 100 colonies were kept, where it did not seem as if there were any two hives or supers alike. Well do I remember being at this particular yard one day during our main honey flow in June. This man was putting on comb honey supers. His hives were numbered, *had to be*, and each super was also numbered, to correspond with the hives. In other words, the supers were not interchangeable; each super worked to the best advantage only on a certain hive. We were going down through the yard, and he says "No. 36 seems to be in need of more super room." The cover was lifted off. Yes, they needed another super. I went with him to the honey house, after the super. Says he: "No. 36." "No. 36," "I think it must be in that pile back there." Two or three piles of supers were shoved to one side, when, sure enough, there was "No. 36," next to the bottom of the pile, and seven or eight supers were piled over to get "36." Then I noticed he had a box on his wheelbarrow with several lengths and thicknesses of splints and small sticks. After finding the right super, we went back to the hive, where I saw the splint act worked; for, sure enough, he needed them, as, after placing the super on the hive there was a crack clear across one side, that had to be calked up. I don't know how long it took this man to give this super, but one thing I was sure of, it took him altogether too long for practical honey production. How much more business like it would have been to have had every hive in this yard just alike, then, of course, every super just right to fit every hive, then it would have been possible to load up the wheelbarrow with supers, go to the front row and give room, then the second row, etc., until super room had been given to the whole yard. You will notice that, with this business system, last described, there is no hunting for some special super, to fit some ill-shaped hive; the first super you can get hold of is sure to fit. Now, I do not think it is any exaggeration when I say ten of the latter well-fitting supers could be given the bees to one of the first; in that case, if it took the man with the old rickety hives all his time to attend 100 colonies, don't you see, with the last, everything-fit-plan, it would be possible for a man, with everything modern, and up to date, to work, say, five yards with the same labor that this man gives his one yard. This use any-old-kind-of-hive, or implement, man, is the one who says any one working more than one yard of bees, cannot work them well. Still, further, don't you see that this system, if it could be called a system, is one that no one except himself can understand? Hired help (?) Well I guess not. Hired help would not have the patience to go through all of these *manoeuvres* even if it were possible to understand them.

AN OUTLINE OF THINGS TO BE TOLD.

In the January Review, I will talk about hives and fixtures; tell which hive is best for out-yard work, and why; and why I have adopted a different hive for comb, than for extracted honey. This will likely take all the the space I have in that number; then will come the location, and the locating of yards; then spring-work and then the busy season, with too many headings to mention here, and then last but not least, the turning of the crop into cash to the best advantage.

REMUS, Mich., Dec, 11, 1906.

Kinks in Rendering Wax and Making Foundation.

C. W. DAYTON.

I NOTICE your account on page 307 of Mr. Rickert's rendering wax by the use of a cider press; and, that it worked like a "charm."

Now what puzzles me is to know what is meant by "charm." How much of a "charm ?" I see that the presses may be had of Sears, Roebuck & Co., for $3.37. I might have engaged some of your convention folks to have brought a press as baggage as far as San Antonio, and then sent it on to Los Angeles by some one coming this way, but, really, I have not yet decided about ordering it. I have not figured out the "charm." I was at a neighbor's recently, and he had just gotten through rendering his wax and was also quite "charmed." He had about 30 pounds of slum gum ready for the stove. I paid him 30 cents for it—30 pounds. At the first melting I got 12 pounds, or $3.00 worth. In a few days I will give it another turn, and I ex-expect to get 10 to 12 pounds more. I want to get enough to pay fair interest on my speculation; see ?

WHAT REPEATED MELTING WILL DO.

I had almost finished rendering my own wax, consisting of cappings, old combs and a quantity of old slum gum, and there were 220 gallons, or about 1,200 pounds. There were about 70 gallons of honey that was in it that had been too dry and hard to drain out. When I got out all the clear yellow wax, there were about 20 gallons of slum gum. It showed no wax until it was dry. Then it showed wax by rubbing on a board with a knife. I put it to melt again, and got about 50 pounds of darker wax. It would answer very well for brood foundation. Then there were about eight gallons of slum gum; still it showed wax. So I melted it up and got out six pounds more of wax that would do for fastening foundation to top bars. There were about 6 or 7 gallons of slum gum and it still showed wax. Another melting turned out about 3 pounds of very dark wax. There were at this time, about 6 gallons of slum gum which weighed 8 pounds when dry. Well that is now. It is not quite dry yet or it would weigh less. I expect to get more wax at the next melting. Possibly a pound or more. *I have not used any sort of pressure at any time.* Now I would ask Mr. Rickert if his "charm" is equal to this ? Of course it always charms to have things work out nicely. But my neighbor is sort of "blue" since I got $5 00 off from him for 30 cents.

This is not the end of my story. It is not a very good story either, unless it is clinched somewhere.

When I first melt up the comb and honey I pour it out together in a dish. The honey goes to the bottom and the wax stays at the top. I get lumps of wax weighing from 5 to 7 pounds out of a 5-gal. can of comb and cappings; when there is enough of these to make a cake the size of a 5-gal. can, or nearby, I melt them all together.

Here is a kink, now don't miss it. I own a foundation mill, in fact, three of them. They eat only once a year. In the spring, about swarming time. There is no law yet against feeding wax to foundation mills. So I am "strictly in it," for awhile, at least, until more laws come.

DRIPPING SHEETS FOR FOUNDATION WHEN MAKING WAX.

When the tank of melted wax is set off the stove I have six or seven dipping boards ready, and as soon as the wax approaches the proper temperature I begin to dip sheets of wax for foundation. By the time it becomes too cool to dip any more, I get out 12 to 20 pounds of sheets cut to the right length and edged for the foundation mill. It is rather lively work. A few notches below real lightning. As the boards are raised out of the tank of wax they are hung upon a rack to drain off the surplus wax, and I keep on dipping with other boards. But the sheets on boards must not get too cool before the second dip. I dip twice for medium brood foundation. My dipping boards are not three feet long—only 10 inches. Then they are handled by the use of a wire attached to the middle of each side or edge—bail fashion.

WHAT MAY BE ACCOMPLISHED BY ROLLING SHEETS OF WAX, BEFORE MAKING FOUDATION.

Dip first one end and then the other end. This makes both ends of the sheet thick while the middle is thinner. Now look out for a kink. I put the sheets through between two smooth, steel rollers like those the tinner rolls eave troughs on. In fact, that is what mine were intended for and I gave $2.50 for them, second hand. I roll the sheets through five times. Roll them down gradually so as not to break the grain of the wax. First put one edge through, then the other; sidewise of the sheets. By the way, they are not rolled until a month or so after dipping—time enough to evaporate the moisture all out. The more rolling they get the tougher they become. The thicker ends are rolled down to about the thickness of the middle. Roll 200 or 300 sheets at a time and set the rolls anew for each time through. Roll the middle of the sheet twice but not enough to stretch the wax. When the sheets are put through the foundation mill, the rolls are exactly set so as to use up all the wax in the cell walls but not to stretch the sheets. I have told you how the center of the sheets not stretched and the grain of the wax is left unbroken. Now foundation made by this process does not sag. The ends of the sheets might sag if they came in the middle of the brood frames. But therein lies one of the great unfathomable laws of philosophy—the bringing of the ends and the middle to be situated at the same identical point. The longer these sheets remain (up to six months or so) the easier it becomes to run them through the rolls of the foundation mill. The less they stick.

ADVANTAGES OF A SLIGHT CHANGE IN THE SHAPE OF THE BASE OF THE CELLS.

I have made foundation some 20 years or more, with a new kink every now and then.

One of the first was to cut away the corner of the cell base on the foundation rolls. The corner that comes out behind as the sheet goes through. This made a cell base which has four sides instead of three. It added one-sixteenth of an ounce of wax to each pound of foundation. That was one-eighth of one cent out lay but reduced the labor of making 3 or 4 cents per pound. It would be run through the mill rapidly as there is no such thing as "picking" for the end or pulling off the sheet. I took off the hand crank and put a pulley in its place. Attached power. Put through 40 sheets per minute.

Now look sharply. There is a kink or two here. I will try to fix it up so you can see it. All foundation mill makers spoil the facility of foundation making by trying to make a natural

or perfect cell base. They try to leave nothing for the bees to do. Is it not astonishing how man tries to supplant nature? I have seen persons in propagating plants and trees try to do the things the plants and trees ought to do themselves. The reason the "fool" boy could set the hens so much better than his smart brother was because he gave the hens their own way. He let the hens manage the nest making. My system of swarm control allows the swarms to control affairs. We read of bees being provided with new, clean hives with nice, drawn combs and such, but the bees do not *stay* in such hives. The bees prefer an old, weather worn box with no combs at all. They take a nice hive and drawn combs to be a *huge joke*. It has always been my wonder that they did not learn to come out and go to the woods without ever stopping to alight. I do not leave the foundation as perfectly finished as some other systems of foundation making, but the bees finish it up more perfectly than any. That is the kink. Do not make the sheets of foundation so perfect as it is possible. It makes very little difference with the bees but it counts a whole lot in the making.

Here is another kink. I put the sheets of wax into the mill or rolls from the same side from which they are withdrawn. The sheets are held straight as they go in and withdrawn straight. Some consider this working backward. In comparison to a clothes wringer it *is* backward, but if it is compared to taking a proof of type on a printing press it is working in the forward direction. In order to make this kink possible, the rolls must be separated a space, and the pressure applied after the sheet is put in between them. At first thought one would think this operation would disarrange the rolls so that the cell-forming projections would become mutilated. But not so. The cog wheels at the ends govern the mesh of the rolls, as they need to be separated only one-eighth of an inch, while the cogs are one-fourth inch deep and remain in mesh all the time.

In handling the sheets of wax it is done with the "pulling out" gripper. Picked up from off the pile with the gripper. And the grip is not released until after the sheet has been rolled. That leaves a one-fourth inch strip across one end of the sheets without indentations (but not necessarily so) and is to be cut off. Thus the end which usually sticks to the rolls is picked up before the sheet is put in. The greatest drawback to foundation making is entirely eliminated. The reason the sheets run crooked when in the rolls, break, stick, etc., by the old way, is because the rolls wade through a great surplus of wax. By my process every part is reduced to an exactness and it is easier (not to mention the certainty of it) than guess work. There are no slow, painstaking moves. They all admit of lightning rapidity of working. Yet it is all simple, inexpensive machinery.

A FEW LAST WORDS ON "DIPPING."

One more kink before closing this already too lengthy description. About dipping the sheets. My dipping boards are 10 inches long. I use a five gallon kerosene can which costs 5 cents for a dipping tank. I have several specially made dipping tanks, but they are out back of the barn in the weeds. In good order. My frames are 13 inches long, and the 10-inch sheets roll out to sufficient length. If I were to start anew I would adopt a 12 inch top bar. Not to be odd but for convenience and utility. As the dipping tank is 14 inches deep, I can dip out 3 inches in depth of wax. Then I drop into one side of the tank a flat shaped can of water. This raises the wax up to the top again. If we put water into the wax, the wax will get water logged. If we put in more melted wax it dis-

arranges the temperature and makes uncertainty. The can of water can be tempered before it is put in. As the wax gets lower again I put in another tank of water on the other side of the wax tank. Keep on this way until four tanks of water have been put in; at which time there will remain only about a 1½-inch space of wax in the center. The temperature of the water should be slightly above the melting point of wax.

When the comb and honey is melted, at first it is necessary to set the can into another larger can containing water. It takes from three to five hours with a hot fire to melt a batch in the usual way. It takes me from 20 to 30 minutes to accomplish the same thing. The bottom of my comb-can has 60, ⅞ tubes extending upward containing hot water. It would require two or three days to form these tubes by hand and then the result would be a "botch job." I made a machine in four hours that will make 400 of these tubes in one hour, and be a very neat job, entirely finished, while a dozen tinners in Los Angeles say it is impossible.

CHATSWORTH, Calif., Nov. 10, 1906.

Editorial

Northern Michigan, with its wildness, and the establishment and management of apiaries there, will certainly add to my length of days It drives from my ears the din of town; it soothes my nerves; fills my soul with a quite joy—takes me back to the days of my childhood.

The Review does not have so many pages and pictures, nor so full convention reports, as do some of the journals; in short, it does not attempt to pattern after any of them, excellent though they be; it simply tries to be *itself*; and, in *its* way, make itself helpful to those who are keeping bees as a *business*. To that class I believe it is worth many times its cost, regardless of whether the other journals are read or not.

M. V. Facey, of Preston, Minn., has not written very much for publication, but in a quiet way, he has, for several years, been making money producing and selling extracted honey; now he is to tell the readers of the Review how he does it. His first article will appear in January.

An Agreeable Experience is one that I enjoyed coming home from the Chicago convention—that of sitting in a smoothly gliding dining car, a feast of good things spread out on the table in front of me, while the swirling flakes of a snow storm whitened the fields outside.

E. F. Atwater of Idaho, has, for several years, made his living entirely from bee-keeping, running a series of outapiaries, some of them many miles from home, and, in the January Review, he will begin a series of articles giving his experience in producing both comb and extracted honey, particular attention being given to the management or control of increase.

It is Better than anything else, that the world should be a little better because a man has lived—even ever so little better.

The Washington State bee-keepers will hold their annual convention at the State Agricultural College, in Pullman, Jan. 7, 8 and 9. Several prominent bee-keepers have promised to be present, and a stereopticon lecture will be one of the features. There is a cordial invitation to all.

The Foul Brood laws of the different States are, occasionally, of special interest—where an effort is being made, for instance, to secure such laws. When the occasion arises, it may be well to know that the U. S. Bureau of Entomology, at Washington, D. C. has issued a bulletin (No. 61) entitled "State and Territorial Laws Relative to Foul Brood." This bulletin gives the foul brood laws of all the different States and Territories.

The National election of officers resulted as follows :—

Whole number of votes cast for President, 752, of which L. A. Aspinwall receives 403, M. A. Gill 340, and scattering 9 votes.

Whole number of votes cast for Vice-President 797, of which Geo. E. Hilton received 315, E. W. Alexander 299, W. H. Laws 179, and scattering 4 votes.

Whole number of votes cast for Secretary 801, of which Jas. A. Green receives 436, George W. York 306, W. Z. Hutchinson 56, and scattering 3 votes.

Whole number of votes cast for General Manager 807, all of them being cast for N. E. France.

Whole number votes cast for Directors 2283, of which G. M. Doolittle receives 620, Jas. A. Stone 515, R. A. Holekamp 442, Wm. Russell 303, J. J. Cosby 243, E. E. Pressler 164, and scattering 6 votes.

The Kansas State bee-keepers will hold their annual convention at the National Hotel, in Topeka, Dec. 27th and 28th. Subjects of interest to bee-keepers will come up, and all are invited to attend.

A Special Feature af the Review for the coming year will be accounts of my own work with the bees—just as I tell, in this issue, for instance, how I make brood frames. Last year my time and energies were largely devoted to finding locations, moving bees, fixing up and building up honey houses, cellars, etc.; now things are all nicely settled, and I can turn my whole attention to actual work in the apiary; and all my mistakes and successes shall be faithfully reported.

E. D. Townsend, of Remus, owns the most bees of any man in Michigan, and I believe that he is making the most clear money of any bee-keeper in the State. He has a system of his own that is peculiarly adapted to the management of bees in large numbers. He has written more or less of this system, perhaps as much for the Review as for any journal, but his writings have been broken and fragmentary—a glimpse here and there, published in this journal and that, but now he is going to write for the Review in a consecutive manner—just as though he were writing a book, beginning at the beginning, and going on and on until he has told the whole story. His opening article appears in this issue.

Of course, there will be more or less of a repetition of some things that he has already written, it can't be otherwise, but, considering the advantages of having his methods described consecutively, from beginning to end, I feel that even the older readers will hail them with delight, and read them with profit, while to new readers about to engage in extensive bee-keeping, they will come as a Godsend.

Three Men Townsend, Facey and Atwater, who are to be regular contributors to the Review the coming year, all keep bees to the entire exclusion of other pursuits.

Quilts over frames are something I have never used. The tops of my frames are bee-space below the top of the hive, and I use a flat cover. If any one thinks I ought to use them, I wish he would write me.

Write me a Letter when sending in your renewal. Let it be a long, chatty, visiting letter. Tell me how you are situated; how you are succeeding; where you have failed; and what are your difficulties. Give me a glimpse of yourself and your surroundings. I may not be able to write anything in reply, but the reading of such letters helps me to make the Review better—brings me closer to my readers and their needs.

The Pennsylvania State Bee-Keepers' Association will hold its annual meeting in Harrisburg, January 17th to 19th, 1907, in the Capitol building. On the evening of the 17th, beginning at 7:30, there will be the Annual Address of the President, illustrated by lantern slides; report of the Secretary, amendment to constitution, and election of officers. On Friday and Saturday there will be papers by practical and scientific bee-keepers and full discussions. Among the speakers will be Dr. E. F. Phillips, of Washington, D. C.; N. Y. Inspector of Apiaries, Chas. P. Stewart; E. R. Root, of Medina, O.; E. L. Pratt, of Swarthmore, Pa., and other prominent speakers.

For card orders and excursion rate of one and one third fare, write to the Secretary or President.

H. A. Surface, President,
R. L. White, Secretary,
Harrrisburg, Pa.

Morley Pettit, of Canada, has lost his suit on appeal. I am sorry to learn this, as I believe he was not to blame. Across the highway from his apiary, a man drove his team into an oat field, and then turned back to close the gate. When he reached the team again a crowd of bees had attacked them, and attacked him and drove him away, and finally stung the team to death. I have always believed that he disturbed a small swarm of bees that were clustered in the oats. The jury brought in a verdict of $400 damages; and the National Association helped to appeal the case, but the finding of the lower court was sustained. It is believed by many that local prejudice against the bees and their non-resident owner had much to do with the verdict.

Extracting Honey in a Cellar.

I would like to know if any of my subscribers have had any experience extracting honey in a cellar.

At one of our Northern apiaries, the honey house is quite a distance from the bees, and we would be glad to avoid wheeling the combs so far to extract, by using the new cellar that we have just built. Is there any objection to such use? There is a ventilator nearly two feet square in the top of the cellar, and the door is nearly four feet wide, by six in height. The wooden door could be removed and a screen substituted. The query in my mind is, wouldn't the cellar be *too* cool a place in which to work in the summer? If a man should work out in the hot sun, and then come in and extract, wouldn't the great change in temperature be injurious? But suppose one man works in the cellar all of the time, and the other in the hot sun, how would that be? Who can advise us, from actual experience?

Is there any other difficulty about using a cellar for this purpose?

Caucasian Bees receive some words of commendation, through the American Bee Journal, from the pen of J. J. Wilder of Georgia. Among other things, he says they are gentle and excellent workers, in fact the best workers he has. They are great gatherers of both propolis and pollen, good home defenders, great cell builders, and not much given to robbing. Crossed with the Italians their temper is spirited—with the blacks it remains about the same. It is difficult to distinguish them from the blacks.

The Rural Bee-Keeper has "quit," and turned over to the American Bee-Keeper its unexpired subscriptions. The Rural was one of the neatest and best of the lately started journals. Many new journals "fall down" typographically, but the Rural, in this respect, was the equal of any bee journal, while much of its contents were pretty fair, but it cost more money than it brought in.

The plain fact is that the field of apicultural journalism is now pretty well covered, and a new journal, to succeed, should need to be *different* from the others, have an editor of most decided ability, and "barrels" of money. It is true I started the Review 20 years ago, with neither the money nor the experience, and made a success of it, but there were a number of peculiar factors in the case that I won't take space to discuss; I'll say this, however, if I should sell the Review now for $5,000, I would not, with that amount of capital, and my 20 years of experience, think of such a thing as starting another journal. Don't think that I am not making any money publishing the Review. I am; but the same amount of money, time and energy, put into straight honey production, would bring a much larger profit. Why do I keep on publishing the Review? Because my heart is bound up in the work. I love it. Another thing: It is becoming more and more profitable as the years roll by, bringing a larger subscription list. But making a success of a journal already on a paying basis, and starting a new journal and making of it a financial success, are two different propositions.

A Hive Cover is a very important part of a bee-keeping outfit. During nearly all of my bee-keeping years I have used a flat cover—just a plain board with cleats on the end to keep it from warping. I know of no better cover, and doubt if anybody else does. Sometimes the cleats are simply nailed on the ends of the board, and sometimes there are grooves cut in the cleats into which the ends of the board can be slid before the nailing is done. Another plan is that of nailing the cleats on *top* of the cover, flush with its ends. The only disadvantage of the latter plan is that the cover can't be reversed. Sometimes a cover warps just a little bit, turns up at the edges, by turning it over it seems to fit better, and may be brought back straight. Aside from this, the advantages are with the plan of putting the cleats on top of the cover. First, the cover can be made a trifle shorter—takes less lumber. Then it can be twisted around cornerwise, to loosen it when there is a surplus of burr combs, without any danger of the cleats striking the hives, as is sometthe case with cleats nailed on the ends of the cover—if the cover is not long enough. And last, but not least, if it is desirable to cover, or protect, the hive in the spring by folding around it tarred felt, the shorter the cover, and the flatter, or lower, the cleats, the better can the hive be enveloped in the paper, and the less material will be required. So far as keeping the cover from warping is concerned, either style of cleat seems equally effective.

Back Numbers of the Review are wanted by Mr. Arthur C. Miller, Providence, R. I. Here are the numbers wanted: Vol. 1; Vol. 14; March, 1902, Aug. 1894; Feb., July, Aug., Sept., Oct., 1895; June, 1896; May, Aug., 1897; Aug. 1899. Anyone having any of these issues, and willing to sell them, will please write to Mr. Miller.

Then Mr. R. B. Ross, Jr., 412 Coristine Building, Montreal, Canada, would be very glad of an opportunity to buy a complete volume for 1904.

****

A Just Retribution has come upon the company that advertised Karo Corn Syrup as "better than honey for less money." The burden of all its advertising was that of comparing its product with honey to the disparagement of the latter. It was decidedly untruthful—just a plain out and out lie, as this Corn Syrup was simply a colored and flavored mixture of glucose and corn syrup; no better, nor so good, as a low grade of honey. Common sense ought to have taught these people that a fooled customer would not buy again. The advertising was excellent, provided it was true, and occupied generous space in leading periodicals, yet, Printers' Ink says that it was one of the most disastrous campaigns in the history of advertising—as it deserved to be.

****

Raise Better Honey.

The average bee-keeper does not produce honey that is good enough; neither does he grade and pack it properly. I never realized this so much as I have since I went into extensive production myself. When in Chicago attending the Northwestern convention, I called upon Mr. R. A. Burnett, and he laughed heartily as he said: "At last, after all these years, Hutchinson you have learned that there is really such a thing as honey of a superior quality. Keep on preaching high grade honey in the Review, and you will do a world of good." Right in this line I wish to make a short extract from a private letter written by an extensive retailer of honey in Pennsylvania. As I am giving this extract without permission, I withold the name. Among other things the writer says:—

"There is plenty of honey on the market, but lots of it not fit to use. The last lot of comb honey that I bought is candied, and so poor that I am bound to lose on it. I also bought 1,800 pounds of ———— of———— Michigan, two months ago, and lost ten per cent. on it. He misrepresented it. It was graded very low and lots of culls in it. I also got a shipment from Colorado that will hustle me to make good on. That last shipment from your neighbor is not what I want. It is too poor and not graded close enough. I tell you it cuts deep to work hard and then lose money on the work. The average bee-keeper don't know how to raise honey, nor how to prepare it for the market."

However, there *is* a man in Michigan who knows how to raise honey. He charges me the highest price for it, but he puts it up so that I can sell it fast, and *keep selling it*. The only fault with him is that he does not produce enough of it. I had his entire crop of comb honey this year, but it was not half enough. If he lives, and I live, another year, I want all the comb honey that he can produce, if it is 15 tons."

I'll tell this much—the man whose honey pleases him so well is none other than our friend and contributor, E. D. Townsend. I might add that I am already getting letters from retail dealers who bought honey of me this year, asking that they be given an opportunity to "bid" on my next year's crop when it is ready for the market.

Locating Apiaries in Northern Micnigan.

Since locating apiaries in Northern Michigan I frequently receive a request from some reader, asking if I can point out some good, unoccupied location. I can't do it. Although I had been about considerably in Northern Michigan before deciding to locate bees there, I was considerably at sea, as to where should be the exact spot. I felt sure I would locate in Missaukee, Kalkaska or Antrim counties, rather favoring Kalkaska, yet my brother and myself spent about two weeks looking about before deciding upon locations for the three yards; and, if we should now decide to start a fourth apiary we would have to start out and hunt a location for it. The difficulties to be encountered are given in detail in the Review for last May. There are plenty of good, unoccupied locations in the counties I have mentioned, there isn't a partical of doubt of that, but just *exactly* where I don't know.

Another thing, the desirability of the different raspberry locations are constantly changing—some are becoming too old—grown up with underbrush, or made into farms—and others are coming on from the new choppings. A man must have an eye to those things when he locates—must see if there are new pastures coming on, nearby, to take the place of the old ones as they "peter out."

If you wish to go into the bee business in Northern Michigan, you better come and look over the region for *yourself*, and take plenty of time. Come as soon as the snow is off and before the bushes and trees have put forth their leaves, as it is much easier to distinguish the berry briers when they are bare of leaves; their reddish brown color showing in great contrast with the gray of the other kinds of brush. When all are in their coats of green, all look alike.

The Hershiser Bottom Boardr.

I have a good friend down in Buffalo, New York, who has invented a bottom board. One feature of it is that it furnishes space below the hive in winter. This I know to be a good thing, but no better than the open space furnished by tiering up the hives by means of blocks between them. Another feature is that the bees are confined to the box-like space below the hive, and my friend thinks this is an advantage—that the bees that leave the hive are not lost on the floor, and that they are enabled to regain the cluster. On this point Mr. Morley Pettit, of Canada, in writing the American Bee Journal, says :—

We find it not practical to confine bees to the hive while in the cellar. Weak colonies and nuclei *may* be confined without serious loss. Though I doubt that. But where strong colonies are so confined there are sure to be some bees that fly to the screen, try to get out, and make noise enough to arouse the whole cellar. This is no theory, as my experience proves.

I have never tried confining bees to the hives in winter, either in-doors or out, and doubt its advisabilty. With such an ante-room as there is in the Hershiser bottom board it may do no harm, but it has always seemed to me that the bee that left the cluster in winter was either old or sick, and would not remain in the cluster even if it were returned to it and that it would soon die any way, and might just as well be down on the floor as boxed up in an ante-room of the hive.

It is claimed that this bottom board is an advantage when carrving out bees in the spring—that they can't annoy any one by coming out of the hive. This is true, but it is an easy matter to set a hive on a regular bottom board, and close the entrance, either with a strip of wood or a piece of cloth. The Hershiser bottom bottom board is a harmless invention, but I think it costs more than its advantages will warrant one to pay !

The Michigan State Convention.

The Michigan State bee-keepers will hold their annual convention in Big Rapids, Dec. 25th and 26th. The first session will be on the evening of the 25th. These dates were chosen because we could secure reduced rates on the railroad at that time. Mr. Geo. E. Hilton has been sending out some announcements. One has come to me, and it covers the whole ground so well, and tells you why you ought to come, that I copy it entire. Mr. Hilton says :—

My Kind Patron and Friend :—I want you to take this as a special and personal invitation to attend the State Bee-Keepers' Association, to be held at Big Rapids, Dec. 25 and 26. Special low rates have been secured at the Northern and Western Hotels with headquarters at the Northern, where probably the first meeting in the evening of the 25th will be held. After that we expect the attendance will be so large that we will meet in their beautiful Court House, which has been granted us free of charge by the city. You can get special Holiday rates on any train leaving your station on the 25th, but don't fail to start that day. And if you will drop me a card saying you will be there, I will see that you have a good room, and you may signify who if anybody you would prefer to room with, as we shall want to do lots of visiting outside the convention, which will hold all day and evening of the 26th. A good program is being provided, and many of the most prominent bee-keepers of the State, Canada and other States are expected. There will be one public meeting, in which Ernest E. Root, of Medina, Ohio, will give an exhibition of handling bees in a wire cage;—this to the novice is something wonderful, just put your foot down and say *I am going*, and then be there. Western and Northern Michigan Bee-Keepers will not have this opportunity again in a long time, and I invited them at Jackson last year knowing you would want to come. Now, don't disappoint me, but *come* and bring your friends, and ask your local newspapers to give notice of the meeting.

What I Wish the Review to Do and Be.

You know that I wish to teach you to be be better bee-keepers; to produce more honey with less labor, and sell it at a higher price; but through all of its pages I hope there will run a spirit of enthusiasm, encouragement, sympathy and friendship. I wish it to scatter sunshine where ever it goes. To the man bowed down with sadness, I would have it come like the arm of friendship laid lovingly over the shoulders; to him who has suffered losses, and for whom the future holds little hope, I would have its coming be like the morning sun, driving away the darkness, scattering the mists, and painting the hill tops with a rosy glow; to the man lacking in courage, who does not dare put his metal to the touch, fearing failure, I hope that the reading of the Review will fill him with enthusiasm, and rouse up his soul within him to do and to dare. The man who is hopeful, courageous, persevering and successful—with this man the Review would clasp hands in his happiness, and bid him Godspeed, that others seeing his achievements, may take courage and do likewise.

Not only do I wish the Review to point out the best course for the bee-keeper to follow, but, having pointed the way, I would have it encourage, inspire and cheer him until he *follows that course*.

Still further : I wish each of my readers to become a *man* in the truest and highest sense, and I would as gladly help him in this direction as I would to help him to become the best possible bee-keeper.

The Review has no room for bickerings, quarrels nor harshness; instead, it desires to draw its readers closer and closer together in the bonds of friendship, to rouse and cheer them, make them more successful bee-keepers, and happier, broader and better men.

EXTRACTED DEPARTMENT.

HONEY VINEGAR.

Some Complete and Specific Instructions for Its Making.

Honey from cappings, either from washing them or from rendering them into wax, may be made into vinegar. Off-grades of honey may also be made into vinegar at a profit; but it may not be generally known that odd bits of honey can not be thrown into a general receptacle, at intervals, as the housewife puts odds and ends into the rag bag. In the making of vinegar there are two processes of fermentation; first the alcoholic then the acetic. The putting of sweet into a solution that has passed the alcoholic fermentation upsets the whole business. But let me quote a most excellent article on this subject, from the pen of Jas. A. Green, and published in Gleanings. Mr. Green says:

I believe that a great many bee-keepers might very profitably engage in the manufacture of honey vinegar, at least to the extent of working up their waste and off-grades of honey. I know that many have tried it without satisfactory results, and have given it up in disgust in consequence. Indeed, it is not so long since I made a failure myself of my attempts to make honey vinegar. I think it is quite possible that a knowledge of what *not* to do is of quite as much importance to many as any further instruction in processes. If you have decided to make vinegar, the first step is to get something to make it in. Usually the best and most convenient receptacle for this purpose is a barrel, and here is where the first mistake is usually made. Nine out of ten people in getting a barrel to make vinegar in will select an old vinegar barrel, with the idea that something is necessary to start the vinegar-making process. To understand why this is wrong we must glance briefly at the chemistry of vinegar-making.

Ordinarily the process of vinegar-making consists of two distinct steps. In the first, sugar in some form is by fermentation changed into alcohol. In the second, this alcohol is by a somewhat similar fermentation changed into acetic acid. The alcoholic fermentation must always precede the acetic, and should be allowed to become complete before the acetic fermentation begins. They may be carried on together, but it is usually at the expense of both time and quality, as the presence of acetic acid in even a small quantity greatly retards the alcoholic fermentation, and sometimes a degenerative fermentation sets in and spoils the entire product.

Accordingly, your barrel should be one that has never contained vinegar. A whisky or wine barrel is good If it is necessary to use a vinegar barrel it should be scalded out very thoroughly before it is used. For a small quantity of vinegar a jug or jar is all right.

Next comes the question of the proper strength of the mixture to be made into vinegar. While this may vary considerably I think the best results will be obtained when there is not less than a pound and a quarter or more than a pound and a half to the gallon of water. If you have the honey in bulk, simply measure your water and add the proper amount of honey or *vice versa*. Usually, though, the bee-keeper will want to use the rinsings of cans or the honey soaked from cappings, etc., and for this some means of testing the strength of the solution must be used. A hydrometer is best and most convenient for this. One made for the purpose can be bought for about fifty cents. A photographic hydrometer can be had for half this. Any hydrometer will do, but you may need to test it by a solution of known strength, as they are graduated differently for different purposes. Mine was made for testing silver solutions, and on it a pound of honey to the gallon registers 20 degrees on the scale; and a pound and a half, which is the strength I prefer, 30 de-

grees, which makes it easy to judge of the amount of honey or water that must be added to make the solution the right strength. You can make a hydrometer of a homeopathic vial, or any tall bottle, corked and weighted so that it will stand upright in the solution. Mark with a file where it stands in a solution of known strength. Or make a ball of beeswax with a small piece of lead imbedded, so that it will just float in a solution of the right strength. Or you can use a fresh egg, which should float or show a spot not larger than a dime above the surface. I have always used rain water, and this is usually recommended.

Put your barrel in a place where a temperature of as near 80 degrees possible will be maintained. If the place is too hot, alcohol is wasted; but if too cool, fermentation is retarded.

Never add fresh solution to vinegar partly made. I think this is a very common cause of poor success. If you want to make additions to your vinegar stock, keep them by themselves until they have passed through the alcoholic fermentation.

For the alcoholic fermentation a barrel with one head out is best; if a closed barrel is used, there should be a hole in each end, and the barrel should not be quite full. All openings, of course, must be covered with cheesecloth or very fine screen, to keep out insects, and yet admit as much air as possible. If fermentation does not begin promptly, add about a quarter of a cake of yeast, softened in warm water, to a barrel of stock. When the alcohol fermentation is finished, which should be in from two to six weeks, you can use your old vinegar-barrel to good advantage. Or it will be well to add a few gallons of good vinegar, containing a little mother if you have it. Usually this is not necessary, but it hastens matters and insures good results. Give it plenty of air, keep it as nearly as possible at the right temperature, and you should have good vinegar inside of a year. When the vinegar is strong enough, pour it off from the mother and bung it up tightly, otherwise a degenerative fermentation may set in that will spoil the vinegar entirely.

I have just received from the Arizona experiment station a bulletin on the subject of honey vinegar, in which some ideas that are new to me are advocated. The writer, Prof. A. E. Vinson, considers hard water preferable to soft, if not too salty. He likewise thinks that fermentation is greatly aided and hastened by the addition of small amounts of ammonium chloride and potassium phosphate. In place of the latter, which is rather hard to procure, as well as somewhat expensive, we may use sodium phosphate and potassium sulphate. As the latter is likewise sometimes hard to get, we may use potassium bicarbonate in its place with nearly as good results. The formula he recommends is as follows: Honey, 40 to 45 lbs; water, 30 gals.; ammonium chloride, 4 oz.; potassium bicarbonate, 2 oz.; sodium phosphate, 2 oz.; yeast, ¼ cake.

BROOD DISEASES OF BEES.

Something from a Reliable Source.

It is doubtful if one man, in the same length of time, has ever rendered bee-keeping better services than has Dr. E. F. Phillips, since he became connected with the Bureau of Entomology at Washington. He has thrown his whole soul into the investigation of brood diseases of bees. He has not been contented to sit in his office and tell of what others have done, but he has been out in the field investigating all over the country from ocean to ocean, and the result is a Bulletin or circular (No. 79) which I consider of sufficient value to copy entire. It reads as follows:

In view of the widespread distribution of infectious brood diseases among bees in the United States, it is desirable that all bee-keepers learn to distinguish the diseases when they appear. It frequently happens that an apiary becomes badly infected before the owner realizes that any disease is present, or it may be that any dead brood which may be noticed in the hives is attributed to chilling. In this way disease gets a start which makes eradication difficult.

There are two recognized forms of disease of the brood, designated as European and American foul brood, which are particularly virulent. In some ways these resemble each other,

but there are certain distinguishing characters which make it possible to differentiate the two. Reports are sometimes received that a colony is infected with both diseases at the same time, but this is contrary to the experience of those persons most conversant with these conditions. While it may be possible for a colony to have the infection of both diseases at the same time, it is not by any means the rule, and such cases are not authentically reported. Since both diseases are caused by specific bacilli, there is absolutely no ground for the idea held by some bee-keepers that chilled or starved brood will turn to one or the other of these diseases. Experience of the best practical observers is also in keeping with this. For a discussion of the causes of these diseases the reader is referred to Technical Series, No. 14, of the Bureau of Entomology, "The Bacteria of the Apiary, with Special Reference to Bee Diseases." by Dr. G. F. White.

AMERICAN FOUL BROOD.

American foul brood (often called simply, "foul brood") is distributed through all parts of the United States, and from the symptoms published in European journals and texts one is led to believe that it is also the prevalent brood disease in Europe. Although it is found in almost all sections of the United States, there are many localities entirely free from disease of any kind.

The adult bees of an infected colony are usually rather inactive and do little toward cleaning out infected material. When the larvae are first affected they turn to a light chocolate color, and in the advanced stages of decay they become darker, resembling roasted coffee in color. Usually the larvae are attacked at about the time of capping, and most of the cells containing infected larvae are capped. As decay proceeds these cappings become sunken and perforated, and, as the healthy brood emerges, the comb shows the scattered cells containing larvae which have died of disease, still capped. The most noticeable characteristic of this infection is the fact that when a small stick is inserted in a larva which has died of the disease, and slowly removed, the broken down tissues adhere to it and will often stretch out for several inches before breaking. When the larva dries it forms a tightly adhering scale of very dark brown color, which can best be observed when the comb is held so that a bright light strikes the lower side wall. Decaying larvae which have died of this disease have a very characteristic odor which resembles a poor quality of glue. This disease seldom attacks drone or queen larvae. It appears to be much more virulent in the western part of the United States than in the East.

EUROPEAN FOUL BROOD.

European foul brood (often called "black brood") is not nearly as widespread in the United States as is American foul brood, but in certain parts of the country it has caused enormous losses. It is steadily on the increase and is constantly being reported from new localities. It is therefore desirable that bee-keepers be on the watch for it.

Adult bees in infected colonies are not very active, but do succeed in cleaning out some of the dried scales. This disease attacks larvae earlier than does American foul brood, and a comparatively small percentage of the diseased brood is ever capped. The diseased larvae which are capped over have sunken and perforated cappings. The larvae when first attacked show a small yellow spot on the body near the head and move uneasily in the cell. When death occurs they turn yellow, then brown, and finally almost black. Decaying larvae which have died of this disease do not usually stretch out in a long thread when a small stick is inserted and slowly removed. Occasionally there is a very slight "ropiness," but this is never very marked. The thoroughly dried larvae form irregular scales which are not strongly adherent to the lower side wall of the cell. There is very little odor from decaying larvae which have died from this disease, and when an odor is noticeable it is not the "glue-pot" odor of the American foul brood, but more nearly resembles that of soured dead brood. This disease attacks drone and queen larvae very soon after the colony is infected. It is as a rule much more infectious than American foul brood and spreads more rapidly. On the other hand, it sometimes happens that the disease will disappear of its own accord, a thing which the author never knew to occur in a genuine case of American foul brood. European foul brood is most

destructive during the spring and early summer, often almost disappearing in late summer and autumn.

The treatment for both American foul brood and European foul brood is practically the same. It is impossible to give minute directions to cover every case, but care and common sense will enable any bee-keeper successfully to fight diseases of brood.

DRUGS Drugs, either to be given directly in food or to be used for fumigating combs, can not be recommended for either of these diseases.

SHAKING TREATMENT—To cure a colony of either form of foul brood it is necessary first to remove from the hive all of the infected material. This is done by shaking the bees into a clean hive or clean frames with small strips of comb foundation, care being taken that infected honey does not drop from the infected combs. The healthy brood in the infected combs may be saved, provided there is enough to make it profitable, by piling up combs from several infected hives on one of the weakest of diseased colonies After a week or ten days all the brood which is worth saving will have hatched out, at which time all these combs should be removed and the colony treated. In the case of box hives or skeps the bees may be drummed out into another box or preferably into a hive with movable frames. Box hives are hard to inspect for disease and are a menace to all other bees in the neighborhood in a region where disease is present.

The shaking of the bees from combs should be done at a time when the other bees in the apiary will not rob and thus spread disease, or under cover. This can be done safely in the evening after bees have ceased to fly, preferably during a good honey flow. Good care should be exercised to keep all infected material away from other bees until it can be completely destroyed or the combs rendered into wax. Wax from diseased colonies should be rendered by some means in which high heating is used, and not with a solar wax extractor. The honey from a diseased colony should be diluted to prevent burning and then thoroughly sterilized by hard boiling for at least half an hour, if it is to be fed back to the bees. If the hive is again used, it should be very thoroughly cleaned, and special care should be taken that no infected honey or comb be left in the hive.

It is frequently necessary to repeat the treatment by shaking the bees onto fresh foundation in new frames after four or five days. The bee-keeper or inspector must determine whether this is necessary, but when there is any doubt it is safer to repeat the operation rather than run the risk of reinfection. If repeated, the first new combs should be destroyed. To prevent the bees from deserting the strips of foundation the queen may be caged in the hive or a queen-excluding zinc put at the entrance.

TREATMENT WITH BEE-ESCAPE The shaking treatment may be modified so that instead of shaking the bees from the combs the hive is moved from its stand, and in its place a clean hive with frames and foundation is set. The queen is at once transferred to the new hive, and the field bees fly there when they next return from the field. The infected hive is then placed on top of or close beside the clean hive and a bee-escape placed over the entrance of the hive containing disease so that the younger bees and those wich later emerge from the cells may leave the hive but cannot return. They therefore join the colony in the new hive.

FALL TREATMENT If it is desirable to treat a colony so late in the fall that it would be impossible for the bees to prepare for winter, the treatment may be modified by shaking the bees onto combs with plenty of honey for winter. This will be satisfactory only after brood rearing has entirely ceased. In such cases disease rarely reappears.

In the Western States, where American foul brood is particularly virulent, it is desirable thoroughly to disinfect the hive by burning the inside or by chemical means before using it again. This is not always practiced in the Eastern States, where the disease is much milder. Some persons recommend boiling the hives or disinfecting them with some reliable disinfectant such as carbolic acid or corrosive sublimate. It is usually not profitable to save frames because of their comparatively small value, but if desired they may be disinfected. Great care should be exercised in cleaning any apparatus. It does not pay to treat very weak colonies. They should either be destroyed at once or several weak ones be united to make one which is strong enough to build up.

Recently some new "cures" have

been advocated in the bee journals, particularly for European foul brood, with a view to saving combs from infected colonies. The cautious bee-keeper will hardly experiment with such methods, especially when the disease is just starting in his locality or apiary, but will eradicate the disease at once by means already well tried.

In all cases great care should be exercised that the bee-keeper may not himself spread the infection by handling healthy colonies before thoroughly disinfecting his hands, hive tools, and even smoker. Since it takes but a very small amount of infected material to start disease in a previously healthy colony, it is evident that too much care cannot be taken. In no case should honey from unknown sources be used for feeding bees. Care should also be exercised in buying queens, since disease is often transmitted in the candy used in shipping cases. Combs should not be moved from hive to hive in infected apiaries.

"PICKLED BROOD."

There is a diseased condition of the brood called by bee-keepers "pickled brood," but practically nothing is known of its cause. It is characterized by a swollen watery appearance of the larva, usually accompanied by black color of the head. The larvae usually lie on their backs in the cell, and the head points upward. The color gradually changes from light to brown after the larva dies. There is no ropiness, and the only odor is that of sour decaying matter, not at all like that of American foul brood. In case the larvae are capped over, the cappings do not become dark, as in the case of the contagious diseases, but they may be punctured. So far no cause can be given for this disease, and whether or not it is contagious is a disputed point. Usually no treatment is necessary beyond feeding during a dearth of honey, but in very rare cases when the majority of larvae in a comb are dead from this cause the frame should be removed and a clean comb put in its place to make it unnecessary for the bees to clean out so much dead brood.

CHILLED, OVER HEATED, AND STARVED BROOD.

Many different external factors may cause brood to die. Such dead brood is frequently mistaken, by persons unfamiliar with the brood diseases, for one or the other of them. Careful examination will soon determine whether dead brood is the result of disease or merely some outside change. If brood dies from chilling or some other such cause, it is usually soon carried out by the workers and the trouble disappears. No treatment is necessary. Brood which dies from external causes often produces a strong odor in the colony, but wholly unlike that of American foul brood, merely that of decaying matter. The color of such brood varies, but the characteristic colors of the infectious diseases are usually absent, the ordinary color of dead brood being more nearly gray.

General Index to Volume XIX.

INDEX TO SUBJECTS.

INDEX TO CORRESPONDENTS.

JANUARY, 1906

Fifty Cents a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb. 2, 1888. Serial number, 217

Terms. $1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year, extra.

Discontinuances.—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued, will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, Jan. 15, 1906

Advertising Rates.

All advertisements will be inserted at a rate of 15 cents per line. Nonpareil space, each insertion 12 lines to the inch. 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; 12 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 (new)	$1.00	$1.75
American Bee Journal, (new)	1.00	1.75
Canadian Bee Journal	1.00	1.75
Progressive Bee-Keeper	1.00	1.35
Apiculture Bee Keeper	1.00	1.10
Rural Bee-Keeper	1.00	1.75
Western Bee Journal	1.00	1.75
Ohio Farmer	1.00	1.75
Farm Journal, Phila.	0.50	1.10
Rural New Yorker	1.00	1.85
The Country	1.00	1.75
Michigan Farmer	1.00	1.75
Prairie Farmer	1.00	1.75
American Agriculturist	1.00	1.75
Country Gentleman	0.50	1.35
Harper's Magazine	4.00	4.00
Harper's Weekly	4.00	4.00
Youths Companion (new)	1.75	2.75
Cosmopolitan	1.00	1.00
Success	1.00	1.75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer

J. F. HARRIS, Grand Junction, Colo.
President

C. P. DADANT, Hamilton, Ill.
Vice President

W. Z. HUTCHINSON, Flint, Mich.
Secretary.

N. E. FRANCE, Plattville, Wis.
Gen. Manager and Treasurer

Board of Directors.

WM. McEVOY, Woodburn, Ont.
R. L. TAYLOR, Lapeer, Mich.
THOS. TOLEFREE WILLIN, San Antonio, Tex.
R. C. AIKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
E. WHITCOMB, Friend, Neb.
WM. A. SELSER, Philadelphia, Pa.
G. M. DOOLITTLE, Borodino, N. Y.
E. A. HOLTKAMP, St. Louis, Mo.
J. M. HAMBAUGH, Escondido, Cal.
C. A. HATCH, Richland Cen., Wis.
C. C. MILLER, Marengo, Ills.

Names of Bee-Keepers
TYPE WRITTEN

The names of my customers and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged in alphabetically (in the largest States) and though this list has been secured at an expense of hundreds of dollars, I would furnish it to advertisers or others at $5.00 per thousand names. The former price was $7.50 per 1000, but I now have a type writer and by using the manifold process I can furnish them at $5.00. A manufacturer who wishes to a list of the names of bee keepers in his own State only, or possibly in the adjoining States, can be accommodated. Here is a list of the States and the number of names in each State.

Arizona	46	Ky.	18	N. C.	60
Ark.	52	Kans.	50	New Mex.	54
Ala.	80	La.	38	Oregon	109
Calif.	1,8	Me.	800	Ohio	1,300
Colo.	8	Minn.	3,4	Penn.	912
Canada	1,000	Mich.	1,750	R. I.	46
Conn.	40	Mass.	2,8	S. C.	40
Dak.	4	Md.	91	Tenn.	170
Del.	18	Maine	2,0	Tex.	270
Ill.	600	Miss.	0	Utah	68
Ga.	90	N. Y.	1,500	Vt.	208
Ind.	11	Neb.	248	Va.	182
Ills.	1,2	N. J.	1,0	W. Va.	178
Iowa	800	N. H.	188	Wash.	122
				Wis.	020

W. Z. HUTCHINSON, Flint, Mich.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1 dark," etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission, the balance being sent to the shipper. Commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

BUFFALO.—Really fancy honey is selling well and receipts are moderate. Other grades move fairly well. We [illegible] shipments of all grades. We quote as follows: Fancy white, [illegible] to [illegible]; No. 1 white, [illegible] to [illegible]; fancy amber, [illegible] to [illegible]; No. 1 amber, [illegible] to [illegible]; fancy dark, [illegible] and [illegible]; No. 1 dark, [illegible] to [illegible]; white extracted, [illegible] to [illegible]; amber extracted, [illegible]; dark extracted, [illegible] to [illegible]. Beeswax, [illegible] to [illegible].

BATTERSON & CO.

Jan. [illegible] 190[illegible]. Buffalo, N. Y.

NEW YORK.—Comb honey is pretty well cleaned up, and there is still a fair demand. We quote fancy white at [illegible]; No. 1 at [illegible]; amber at [illegible]; buckwheat at [illegible].

Extracted in fair demand, especially California, with [illegible] of supply. We quote [illegible] to [illegible]; light amber, [illegible] to [illegible]; amber, [illegible] to [illegible]; buckwheat, [illegible] to [illegible] per lb. Southern [illegible], not much demand, and [illegible] per gallon, according to quality. Beeswax firm and steady at [illegible].

HILDRETH & SEGELKEN,

[illegible] Murray St.

[illegible] 190[illegible]. New York.

CINCINNATI.—[illegible] different parts of the country [illegible] almost total [illegible] some point in the North [illegible] per lb. [illegible]

The [illegible] and extracted [illegible] equal to [illegible]. We [illegible] White clover [illegible] paying [illegible]

[illegible] the producer [illegible] must [illegible]

THE FRED W. MUTH CO.

[illegible] Walnut St., Cincinnati, Ohio.

KANSAS CITY.—The honey market is dull here [illegible] California [illegible] honey [illegible] amber and other [illegible] Beeswax is selling at [illegible].

C. C. CLEMONS & CO.

Dec. [illegible] 190[illegible]. Kansas City, Mo.

KANSAS CITY.—[illegible] steady with [illegible] many [illegible] on hand, both comb and extracted. We quote as follows: Fancy white, [illegible]; No. 1 white, [illegible]; fancy amber, [illegible]; white extracted, [illegible]; amber, [illegible]; beeswax, [illegible].

WALTER PEEASE [illegible] GROCER CO.

Jan. [illegible] 190[illegible]. [illegible] Walnut St., Kansas City, Mo.

CHICAGO.—The trade is steady with about the usual demand; the prices range from [illegible] for best grades of white comb honey. There is not an active demand for off grades, which usually sell at [illegible] per lb. less.

For extracted [illegible] demand exists for the best grades at [illegible] to [illegible], but for some of the off flavors there is [illegible] sale. Beeswax brings [illegible] per lb.

R. A. BURNETT & CO.

Jan. [illegible] 190[illegible]. [illegible] So. Water St.

CHICAGO.—Trade in both comb and extracted honey the past [illegible] has been quite brisk, stock moving readily at [illegible] prices quoted above. Comb honey is coming in [illegible] and stocks in Chicago not equal to [illegible]. Therefore [illegible] producers [illegible] honey [illegible] either in comb or extracted [illegible] we will purchase outright. We quote as follows: Fancy white, [illegible]; No. 1 white, [illegible]; white extracted, [illegible]; amber extracted, [illegible]; beeswax, [illegible].

S. T. FISH & CO.

[illegible] South Water St.

Jan. [illegible] 190[illegible]. Chicago, Ill.

A COMPLETE ESTABLISHMENT.

We say that we can supply ***everything*** for the bee keeper. It ***is*** a ***literal*** fact. Anything from bees to books, or hives to honey-boards. The completeness of our factory is not realized by most bee keepers. Below we give the main Departments of our business. Read them over and then we are sure you will understand when we say ***everything*** for the bee-keeper we mean it.

WOOD-WORKING DEPT.

This department occupies the [illegible] floors of the main building of the factory. It is equipped from top to bottom with the best machinery that brains can invent and money buy. Every detail in hive making has been figured out. Immense sheds covering acres of ground protect the lumber piles so that shrinkage is reduced to almost nothing. That accounts for the accurate fitting and clearness of stock of Root's wooden wares. The entire factory light, and machinery power is furnished by a great [illegible] horse power engine and [illegible] horse power dynamo.

WAX-WORKING DEPT,

We are leaders in buying wax and selling the famous Weed Process Foundation. Our Wax Department is furnished with tanks for refining, machines for sheeting, all sizes of mills, automatic papering machines, etc. Over [illegible] pounds of foundation is made, boxed and shipped all over the world every year.

TIN SHOP

Here are made the thousands of smokers that bear the Root trade mark of excellence. Here are made the cans for extractors and uncapping cans. Machines for cutting honey-boards, presses for stamping tin and iron into various forms.

MACHINE SHOP

Equipped with the most expensive machinery and manned by skillful employees. We make our own metal parts and much machinery for other factories. Powerful iron presses, iron cutting and drilling machines are in evidence everywhere.

APIARIES

We have scattered in and around Medina [illegible] apiaries devoted exclusively to bee and queen rearing, supplemented by [illegible] more in New York, Pennsylvania and Cuba, and we control the product of several other large queen breeding establishments. Our queens are bred with scientific care. We test every device we make before it is introduced to the public.

SHIPPING DEPTS

Two railroads run their cars to our doors. From a dozen to [illegible] men are kept busy loading and packing the [illegible] to [illegible] carloads we ship every year, besides the thousands of less than carload shipments. Eight express trains a day. With large warehouses packed full and a great factory, it is a little wonder that Root's have gained a reputation for promptness in filling orders for the hundreds of things in their catalog.

PRINTING DEPT.

Two large cylinder presses, [illegible] platen presses, paper folder, trimming, cutting and stitching machines, skilled typesetters, printers, book binders, all help to turn out semi-monthly the large issues of Gleanings in Bee Culture, the five to ten thousand A B C books every year, together with our [illegible] supply catalogs, not speaking of the numerous other catalogs, booklets, labels and all varieties of printing. Two carloads of paper required for our annual catalog, a half carload for our Christmas Gleanings alone.

BRANCHES AND AGENTS

Eight branches with large stock in the great centers. Numerous jobbing agencies and hundreds of smaller agents place our goods at your door at factory prices, with freight charges and the time taken in shipment reduced to the lowest possible point. We wonder if the bee keeper ever thinks of the many hands and brains that plan for him, of the hundreds of thousands of dollars and the hours consumed to make and deliver his supplies.

OFFICE

The office [illegible] the factory. Here are the executive, editorial, advertising and book-keeping [illegible]. Here the thousands of details are cared for. Root's office is as modern as you can find anywhere. Six typewriters are kept busy, adding machine, copying machine, vertical letter files, card indexes, etc., everything [illegible] for the half million dollars worth of business we do yearly. We have every interest of the bee keeper at heart. We are working for your good, for your [illegible] means ours.

The Compliments of the Season to Our Friends all Over the World.

Our Catalog for [illegible] is ready. Write for a copy if you want it now.

THE A. I. ROOT COMPANY, Medina, Ohio.

FEBRUARY, 1906.

Flint, Michigan, $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second class matter at the Flint Postoffice Feb 2, 1888 Serial number, 2[illegible]

Terms $1.00 a year to subscribers in the United States, Canada, Cuba and Mexico To all other countries postage is 24 cts. a year, extra

Discontinuances—The Review is sent until orders are received for its discontinuance Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued, will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued, and will pay for it soon Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with

Flint, Michigan, Feb. 15, 1906.

Advertising Rates.

All advertisements will be inserted at a rate of [illegible] 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, [illegible]0 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, (new)	($1.00)	$1 [illegible]5
American Bee Journal, (new)	($1 00)	1 75
Canadian Bee Journal	($1 00)	1 75
Progressive Bee Keeper	(50)	1 35
American Bee Keeper	(50)	1 40
Rural Bee Keeper	($1 00)	1 [illegible]5
Western Bee Journal	($1 00)	1 75
Ohio Farmer	($1 00)	1 [illegible]5
Farm Journal (Phila)	(50)	1 [illegible]0
Rural New Yorker	($1 00)	1 [illegible]5
The Century	($4 00)	[illegible]
Michigan Farmer	($1 00)	1 [illegible]5
Prairie Farmer	($1 00)	[illegible]
American Agriculturist	($1 00)	1 [illegible]
Country Gentleman	($2 50)	[illegible]15
Harper's Magazine	($4 00)	[illegible] 10
Harper's Weekly	($4 00)	[illegible] [illegible]0
Youths' Companion (new)	($1 75)	2 [illegible]5
Cosmopolitan	($1 00)	1 [illegible]
Success	($1 00)	1 75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer

J. U. HARRIS, Grand Junction, Colo, President

C. P. DADANT, Hamilton, Ill, Vice President

W. Z. HUTCHINSON, Flint, Mich, Secretary

N. E. FRANCE, Plattville, Wis, Gen. Manager and Treasurer

Board of Directors.

Wm. McEVOY, Woodburn, Ont
R. L. TAYLOR, Lapeer, Mich
UDO TOEPPERWEIN, San Antonio, Tex
R. C. AIKIN, Loveland, Colo
P. H. ELWOOD, Starkville, N. Y
E. WHITCOMB, Friend, Neb
WM. A. SELSER, Philadelphia, Pa
G. M. DOOLITTLE, Borodino, N. Y
R. A. HOLEKAMP, St. Louis, Mo
J. M. HAMBAUGH, Escondido, Cal
C. A. HATCH, Richland Cen, Wis
C. C. MILLER, Marengo, Ills

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1 dark," etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission—the balance being sent to the shipper. Commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

KANSAS CITY—We quote as follows: No. 1 white $3 [illegible] per crate of 24 sections; No. 1 amber $2.75; white extracted [illegible]; amber [illegible]; dark [illegible]. Beeswax at 25c [illegible].

C. C. CLEMONS & CO.,
Feb. [illegible], 19[illegible]. Kansas City, Mo.

BUFFALO—Really fancy honey sells quite well, but dark, poor and [illegible] is very hard to move unless sold very low. We quote as follows: Fancy white [illegible]; No. 1 white [illegible]; fancy amber [illegible]; fancy dark [illegible]. Beeswax 28 to 32.

BATTERSON & CO.
Feb. [illegible], 190[illegible]. Buffalo, N. Y.

NEW YORK—Comb honey pretty well cleaned up and there is still a fair demand. We quote fancy white at [illegible]; No. 1 at [illegible]; amber at [illegible]; buckwheat at [illegible].

Extracted in fair demand, especially California, with abundance of supply. We quote white at [illegible]; light amber [illegible]; amber [illegible] per lb. [illegible]. Southern in barrels not much demand and [illegible] per gallon according to quality. Beeswax firm and steady at [illegible].

HILDRETH & SEGELKEN,
[illegible] Murray St.
[illegible], 19[illegible]. New York.

CINCINNATI—At the present time the demand for honey is [illegible]; however, we fully believe [illegible] [illegible] better reports [illegible] season. [illegible] extracted in barrels [illegible] [illegible]. Comb honey is [illegible] [illegible] according to the quality.

Bee-keepers [illegible] [illegible] [illegible] beeswax [illegible] bright yellow grade [illegible] [illegible] here.

THE FRED W. MUTH CO.,
[illegible] Walnut St., Cincinnati, Ohio.

KANSAS CITY—[illegible] honey [illegible] [illegible] market. We quote [illegible]: fancy white [illegible]; white extracted [illegible]. Beeswax [illegible].

WALTER S. POUDER[illegible] GROCER CO.
Feb. [illegible], 19[illegible]. [illegible] Kansas City, Mo.

CHICAGO—[illegible] [illegible] honey [illegible] [illegible] white [illegible].

For extracted [illegible] [illegible]. Beeswax [illegible].

R. A. BURNETT & CO.
Feb. [illegible], 19[illegible]. 199 So. Water St.

CHICAGO—[illegible] trade [illegible] [illegible] dealers [illegible] [illegible] exhausted in the near future. [illegible] producers who [illegible] [illegible] forward [illegible] [illegible]. We quote as follows: Fancy white [illegible]; No. 1 white [illegible]; No. 2 white [illegible]; [illegible] white extracted [illegible]; amber [illegible]. Beeswax [illegible].

S. T. FISH & CO.,
[illegible] South Water St.
Feb. [illegible], 19[illegible]. Chicago, Ill.

A COMPLETE ESTABLISHMENT.

We say that we can supply *everything* for the bee-keeper. It *is* a *literal* fact. Anything from bees to books, or hive to honey-boards. The completeness of our factory is not realized by most bee keepers. Below we give the main Departments of our business. Read them over and then we are sure you will understand when we say *everything* for the bee-keeper, we mean it.

WOOD-WORKING DEPT.

This department occupies the 3 floors of the main building of the factory. It is equipped from top to bottom with the best machinery that brains can invent and money buy. Every detail in hive making has been figured out. Immense sheds covering acres of ground protect the lumber piles so that shrinkage is reduced to almost nothing. That accounts for the accurate fitting and clearness of stock of Root's wooden wares. The entire factory light, and machinery power, is furnished by a great, 300 horse-power engine, and 1 100 horse-power dynamo.

WAX-WORKING DEPT,

We are leaders in buying wax and selling the famous Weed Process Foundation. Our Wax Department is furnished with tanks for refining, machines for sheeting, all sizes of mills, automatic papering machines, etc. Over 150,000 pounds of foundation is made, boxed and shipped all over the world every year.

TIN SHOP

Here are made the thousands of smokers that bear the Root trade mark of excellence. Here are made the cans for extractors and uncapping cans. Machines for cutting honey-boards, presses for stamping tin and iron into various forms.

MACHINE SHOP

Equipped with the most expensive machinery and manned by skillful employees. We make our own metal parts and much machinery for other factories. Powerful iron presses, iron cutting and drilling machines are in evidence everywhere.

APIARIES

We have scattered in and around Medina 5 apiaries devoted exclusively to bee and queen rearing, supplemented by 5 more in New York, Pennsylvania and Cuba, and we control the product of several other large queen breeding establishments. Our queens are bred with scientific care. We test every device we make before it is introduced to the public.

SHIPPING DEPTS.

Two railroads run their cars to our doors. From a dozen to 20 men are kept busy loading and packing the 150 to 200 carloads we ship every year, besides the thousands of less than carload shipments. Eight express trains a day. With large warehouse packed full and a great factory, it is a little wonder that Roots have gained a reputation for promptness in filling orders for the hundreds of things in their catalog.

PRINTING DEPT.

Two large cylinder presses, 3 platen presses, paper folder, trimming, cutting and stitching machines, skilled typesetters, printers, book-binders, all help to turn out semi-monthly the large issues of Gleanings in Bee Culture; the five to ten thousand A B C books every year, together with our 400,000 supply catalogs, not speaking of the numerous other catalogs, booklets, labels and all varieties of printing. Two carloads of paper required for our annual catalog, a half carload for our Christmas Gleanings alone.

BRANCHES AND AGENTS

Eight branches with large stock in all great centers. Numerous jobbing agencies and hundreds of smaller agents place our goods at your door at factory prices with freight charges and the time taken in shipment reduced to the lowest possible point. We wonder if the bee keeper ever thinks of the many hands and brains that plan for him. Of the hundreds of thousands of dollars and the hours consumed to make and deliver his supplies.

OFFICE

The office is the brain of the factory. Here are the executive, editorial, advertising and book keeping heads. Here the thousands of details are cared for. Root's office is as modern as you can find any where. Six typewriters are kept busy, adding machine, copying machine, vertical letter files and indexes, etc. Everything to care for the half million dollars worth of business we do yearly. We have every interest of the bee keeper at heart. We are working for your good, for your prosperity means ours.

The Compliments of the Season to Our Friends all Over the World.

Our Catalog for 1901 is ready. Write for a copy if you want it now.

THE A. I. ROOT COMPANY, Medina, Ohio.


THE BEE-KEEPERS'
REVIEW
Published Monthly

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb. 2, 1888. Serial number, 248.

Terms—$1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year, extra.

Discontinuances—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for will please say so when subscribing, and the request will be complied with.

Flint, Michigan, March 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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; 12 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 (new)	$1.00	$1.75
American Bee Journal (new)	1.00	1.75
Canadian Bee Journal	1.00	1.75
Progressive Bee-Keeper	1.00	1.75
American Bee Keeper	1.00	1.40
Rural Bee-Keeper	1.00	1.75
Western Bee Journal	1.00	1.75
Ohio Farmer	1.00	1.75
Farm Journal (Phila.)	1.00	1.75
Rural New Yorker	1.00	1.75
The Century	4.00	4.50
Michigan Farmer	1.00	1.75
Prairie Farmer	1.00	1.75
American Agriculturist	1.00	1.75
Country Gentleman	1.50	1.75
Harper's Magazine	4.00	4.50
Harper's Weekly	4.00	4.50
Youth's Companion (new)	1.75	2.00
Cosmopolitan	1.00	1.50
Success	1.00	1.75

National Bee-Keepers' Association.

Objects of the Association

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer.

J. F. HARRIS, Grand Junction, Colo., President.

C. P. DADANT, Hamilton, Ill., Vice President.

W. Z. HUTCHINSON, Flint, Mich., Secretary.

N. E. FRANCE, Platteville, Wis., Gen. Manager and Treasurer.

Board of Directors.

WM. McEVOY, Woodbury, Ont.
R. L. TAYLOR, Lapeer, Mich.
EUGENE SECOR, San Antonio, Tex.
E. S. ATKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
J. WHITCOMB, Friend, Neb.
WM. A. SELSER, Philadelphia, Pa.
G. M. DOOLITTLE, Borodino, N. Y.
F. A. HOLTERMANN, St. Louis, Mo.
J. M. HAMBAUGH, Escondido, Cal.
C. A. HATCH, Richland Center, Wis.
C. C. MILLER, Marengo, Ills.

Honey Quotations

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

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

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

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

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission, the balance being sent to the shipper. The commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

KANSAS CITY.—We [illegible] as follows: No. [illegible] white [illegible] per crate of [illegible] sections [illegible] amber [illegible]; white extracted [illegible]; amber [illegible]; dark [illegible]. Beeswax [illegible].

C. C. CLEMONS & CO.

[illegible] Kansas City, Mo.

BUFFALO.—[illegible] honey sells quite [illegible] dark [illegible] very hard to [illegible]. We quote as follows: [illegible] white [illegible] Beeswax [illegible].

BATTERSON & CO.

[illegible] Buffalo, N. Y.

NEW YORK.—[illegible] We quote [illegible] white [illegible]

[illegible]

HILDRETH & SEGELKEN,

[illegible] Murray St.,

[illegible] New York.

[illegible]

[illegible]

[illegible] Cincinnati, Ohio.

KANSAS CITY.—[illegible] market [illegible] white [illegible] beeswax [illegible]

WALKER-BREWSTER GROCER CO.

[illegible] Kansas City, Mo.

CHICAGO.—[illegible]

[illegible] & CO.

[illegible] 199 So. Water St.

CHICAGO.—[illegible] white [illegible] Beeswax [illegible]

[illegible] & CO.,

[illegible] South Water St.,

[illegible] Chicago, Ill.

April, 1[illegible]

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second class matter at the Flint Postoffice Feb. 2, 1888. Serial number, 219.

Terms. $1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year, extra.

Discontinuances—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing and the request will be complied with.

Flint, Michigan, Apr. 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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; 12 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 (new)	($1.00)	$1 75
American Bee Journal, (new)	(1.00)	1 75
Canadian Bee Journal	(1.00)	1 75
Progressive Bee Keeper	(50)	1 35
American Bee Keeper	(50)	1 40
Rural Bee Keeper	(1.00)	1 75
Western Bee Journal	(1.00)	1 75
Ohio Farmer	(1.00)	1 75
Farm Journal (Phila)	(50)	1 20
Rural New Yorker	(1.00)	1 85
The Century	(4.00)	4 50
Michigan Farmer	(1.00)	1 75
Prairie Farmer	(1.00)	1 75
American Agriculturist	(1.00)	1 75
Country Gentleman	(2.00)	2 15
Harper's Magazine	(4.00)	4 10
Harper's Weekly	(4.00)	4 00
Youths Companion (new)	(1.75)	2 35
Cosmopolitan	(1.00)	1 90
Success	(1.00)	1 75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer.

C. P. DADANT, Hamilton, Ill.
President.

GEO. E. HILTON, Fremont, Mich.
Vice President.

W. Z. HUTCHINSON, Flint, Mich.
Secretary.

N. E. FRANCE, Platteville, Wis.
Gen. Manager and Treasurer.

Board of Directors.

WM. MCEVOY, Woodburn, Ont.
R. L. TAYLOR, Lapeer, Mich.
UDO TOEPPERWEIN, San Antonio, Tex.
E. C. AIKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
E. WHITCOMB, Friend, Neb.
JAS. A. STONE, Springfield, Ills.
G. M. DOOLITTLE, Borodino, N. Y.
F. A. HOFFKAMP, St. Louis, Mo.
J. M. HAMBAUGH, Escondido, Cal.
C. A. HATCH, Richland Cen., Wis.
F. WILCOX, Mauston, Wis.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1 dark," etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission, the balance being sent to the shipper. The commission is ten per cent., except that a few dealers charge only five per cent. when a shipment sells for as much as one hundred dollars.

KANSAS CITY.—Market on white comb honey [illegible] best white selling at [illegible] per case [illegible] amber [illegible] and other grades a little less. Extracted [illegible] Beeswax at 25c.

C. C. CLEMONS & CO.,
April [illegible] Kansas City, Mo.

BUFFALO.—Most kinds of honey is very well [illegible] up and selling very well at quoted [illegible] some fancy and No. 1 stock wanted here. We quote as follows: Fancy white [illegible] No. 1 [illegible] fancy amber [illegible] fancy dark [illegible] No. 1 dark [illegible] Beeswax 2[illegible]

BATTERSON & CO.
April [illegible] Buffalo, N. Y.

NEW YORK.—Comb honey is still in fair demand for white stock [illegible] demand for dark honey. Extracted [illegible] with abundant supply, principally from California. We quote fancy white at [illegible] No. 1 white at [illegible] fancy amber at [illegible] No. 1 amber at [illegible] white extracted [illegible] Beeswax [illegible]

HILDRETH & SEGELKEN,
[illegible] Murray St.,
April [illegible] New York.

CHICAGO.—The best grades of comb honey are [illegible] and sell at [illegible] off lots are of [illegible] ranging in price from [illegible] Extracted meets with [illegible] sale at [illegible] for white and [illegible] amber with off flavors [illegible] less. Beeswax sells at [illegible]

R. A. BURNETT & CO.,
April [illegible] [illegible] So. Water St.

CINCINNATI.—There is no material change in the honey market since our last quotation. The demand [illegible] expected [illegible] weather of the past month. We continue to quote [illegible] Beeswax [illegible] wanted [illegible]

THE FRED W. MUTH CO.,
April [illegible] Walnut St., Cincinnati, Ohio.

KANSAS CITY.—[illegible] comb honey [illegible] Extracted [illegible]

WALKER-BREWSTER GROCER CO.,
April [illegible] Walnut St., Kansas City, Mo.

CHICAGO.—[illegible] honey on the market [illegible] honey [illegible]

Extracted [illegible]

We quote [illegible] fancy white [illegible] No. 1 white [illegible] amber [illegible] white [illegible]

S. T. FISH & CO.,
189 South Water St.,
April [illegible] Chicago, Ill.

QUEENS.

[illegible] queens [illegible] and two frame nuclei [illegible]

[illegible] B. H. STANLEY, [illegible] Texas.

CALIFORNIA

Italian queens only. If you want queens for honey gathering [illegible] sage district [illegible] supply [illegible] untested [illegible] select tested [illegible] breeders [illegible]

[illegible] **M. D. WHITCHER, Los Olivos, Calif.**

Wanted: [illegible] white comb honey [illegible] shipping cases [illegible] white clover honey [illegible] cans and barrels. Please send samples and state your lowest price delivered here. We [illegible] goods.

GRIGGS BROS., Toledo, Ohio

QUEENS.

Northland Queens [illegible] the [illegible] honey [illegible] circular [illegible]

MENNIE & FENTON,
[illegible] **Pine Island, Minn.**

From Long-Tongued Imported Italians.

[illegible]

E. E. MOTT, Glenwood, Mich.

WANTED.—[illegible]

[illegible]

Bees for Sale [illegible]

[illegible] **L. J. BENJAMIN, Clio, Mich.**

A COMPLETE ESTABLISHMENT.

We say that we can supply ***everything*** for the bee-keeper. It ***is*** a ***literal*** fact. Anything from bees to books, or hives to honey-boards. The completeness of our factory is not realized by most bee-keepers. Below we give the main Departments of our business. Read them over and then we are sure you will understand when we say ***everything*** for the bee-keeper, we mean it.

WOOD-WORKING DEPT.

This department occupies the 3 floors of the main building of the factory. It is equipped from top to bottom with the best machinery that brains can invent and money buy. Every detail in hive making has been figured out. Immense sheds covering acres of ground protect the lumber piles so that shrinkage is reduced to almost nothing. That accounts for the accurate fitting and clearness of stock of Root's wooden wares. The entire factory light and machinery power is furnished by a great [illegible] horse-power engine and [illegible] horse-power dynamo.

WAX-WORKING DEPT,

We are leaders in buying wax and selling the famous Weed Process Foundation. Our Wax Department is furnished with tanks for refining, machines for sheeting, all sizes of mills, automatic papering machines, etc. Over 150,000 pounds of foundation is made, boxed and shipped all over the world every year.

TIN SHOP

Here are made the thousands of smokers that bear the Root trade mark of excellence. Here are made the cans for extractors and uncapping cans. Machines for cutting honey-boards, presses for stamping tin and iron into various forms.

MACHINE SHOP

Equipped with the most expensive machinery, and manned by skillful employees. We make our own metal parts and much machinery for other factories. Powerful iron presses, iron-cutting and drilling machines are in evidence everywhere.

APIARIES

We have scattered in and around Medina apiaries devoted exclusively to bee and queen rearing, supplemented by [illegible] more in New York, Pennsylvania and Cuba, and we control the product of several other large [illegible] establishments. Our queens are [illegible] with scientific care. We test every device we make before it is announced to the public.

SHIPPING DEPTS

[illegible] Kept busy loading and packing [illegible] we ship [illegible] besides the thousands of less than carload shipments [illegible] express [illegible]. With large warehouses [illegible] and a great factory it is little wonder that Roots have gained a reputation for promptness in filling orders for the hundreds of things in their catalog.

PRINTING DEPT.

[illegible] cylinder presses [illegible] platen presses, paper folder, trimming, cutting and stitching machines [illegible] help to turn out semi-monthly the large [illegible] ten thousand A B C books every year, together with [illegible] printing [illegible] paper required for our annual catalog [illegible]

BRANCHES AND AGENTS

[illegible] with large stocks in all great centers [illegible] and hundreds of small [illegible] our goods [illegible] factory prices [illegible] freight charges and the time taken in shipment [illegible] lowest possible point [illegible] the bee-keeper ever thinks of [illegible] brains that plan for him [illegible] hundreds of thousands of dollars and the [illegible]

OFFICE

[illegible] advertising and book-keeping [illegible]

The Compliments of the Season to Our Friends all Over the World.

Our catalog for [illegible] is ready. Write for a copy if you want it now.

THE A. I. ROOT COMPANY, Medina, Ohio.

MAY, 1906

Flint, Michigan, $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second class matter at the Flint Postoffice Feb 2, 1888 Serial number, 22[illegible]

Terms—$1 00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts a year, extra

Discontinuances—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, May 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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 12 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 (new)	($1 00)	$1 75
American Bee Journal, (new)	(1 00)	1 75
Canadian Bee Journal	(1 00)	1 75
Progressive Bee Keeper	(50)	1 35
American Bee Keeper	(50)	1 40
Rural Bee Keeper	(1 00)	1 75
Western Bee Journal	(1 00)	1 75
Ohio Farmer	(1 00)	1 75
Farm Journal (Phila	(50)	1 20
Rural New Yorker	(1 00)	1 85
The Century	(4 00)	4 50
Michigan Farmer	(1 00)	1 65
Prairie Farmer	(1 00)	1 75
American Agriculturist	(1 00)	1 75
Country Gentleman	(50)	[illegible] 15
Harper's Magazine	(4 00)	4 [illegible]
Harper's Weekly	(4 00)	4 [illegible]
Youth's Companion (new)	(1 75)	[illegible]
Cosmopolitan	(1 00)	[illegible]
Success	(1 00)	1 75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer

C. P. DADANT, Hamilton, Ill

President

GEO. E. HILTON, Fremont, Mich.

Vice President

W. Z. HUTCHINSON, Flint Mich

Secretary

N. E. FRANCE Platteville Wis

Gen Manager and Treasurer

Board of Directors.

WM. MCEVOY Woodburn Ont
E. T. ABBOTT? —

E. E. TAYLOR Lapeer Mich
UDO TOEPPERWEIN San Antonio, Tex
R. C. AIKIN Loveland, Colo
J. U. HARRIS? —

L. H. ELWOOD Starkville, N. Y
E. WHITCOMB, Friend, Neb
JAS. A. STONE Springfield, Ills.
G. M. DOOLITTLE, Borodino, N. Y
R. A. HOLEKAMP St. Louis, Mo
M. H. MENDLESON Ventura, Cal
C. A. HATCH Richland Cen, Wis
F. WILCOX Mauston, Wis

Honey Quotations

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

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

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

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

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission, the balance being sent to the shipper. Commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

KANSAS CITY.—Market is about cleaned up on honey. What is left is selling at $3 [illegible] per case for best fancy white; amber about [illegible] per case lower. Extracted is low at [illegible] and [illegible].

C. C. CLEMONS & CO.,
May [illegible], 1906. Kansas City, Mo.

BUFFALO.—Old honey is dull and slow at any price, no new. We quote as follows: Fancy white [illegible] No. 1 [illegible] fancy amber [illegible] No. 1 amber [illegible] fancy dark [illegible] Beeswax [illegible]

BATTERSON & CO.,
May [illegible], 1906. Buffalo, N. Y.

CHICAGO.—[illegible] honey is small [illegible] per pound. No. 1 [illegible] grades about [illegible] White extracted [illegible] per lb.; amber [illegible] Beeswax [illegible] per lb.

R. A. BURNETT & CO.,
May [illegible], 1906. 199 So. Water St.

NEW YORK.—[illegible] demand for comb [illegible] which we are selling [illegible] not in demand. Extracted [illegible] demand mostly for white with plenty of supply. From reports we are receiving [illegible] for another large [illegible] California [illegible] southern states [illegible]

HILDRETH & SEGELKEN,
[illegible] Murray St.
May [illegible], 1906. New York.

CINCINNATI.—[illegible] of the market [illegible] encouraging. Honey [illegible] regard [illegible] At the same time [illegible] an unusually good [illegible] making [illegible] market.

We offer amber [illegible] Beeswax [illegible] yellow grade [illegible] here.

THE FRED W. MUTH CO.,
May [illegible], 1906. [illegible] Walnut St. Cincinnati, Ohio.

KANSAS CITY.—[illegible] market [illegible] demand [illegible] Beeswax [illegible] demand. We quote [illegible] white [illegible] No. 1 white [illegible] amber [illegible] per [illegible] wax.

WALKER-BREWSTER GROCER CO.,
May [illegible], 1906. [illegible] Walnut St., Kansas City, Mo.

CHICAGO.—The [illegible] comb honey [illegible] exceptionally light [illegible] extracted moving slowly with lower tendency. We quote as follows: Fancy white [illegible] white [illegible] No. 1 [illegible] white extracted [illegible] dark [illegible]

S. T. FISH & CO.,
189 South Water St.,
May [illegible], 1906. Chicago, Ill.

SWARMING DONE AWAY WITH

In addition to continuing the several interesting articles by Alexander, and other noted contributors, which are now in GLEANINGS IN BEE CULTURE, the publishers announce as a special feature for the remaining issues of the year, a series of articles on the CONTROL OF SWARMING FOR COMB HONEY PRODUCTION. These by bee-keepers who have experimented to the point where experimenting is done, and the crown of success has been awarded.

If you have not seen the first installment of this series, send in your name for a three number trial subscription, which will be given free of charge. The April 15th, May 1st, and May 15th numbers will be mailed to you, and by June, you will undoubtedly be so interested, you will want to take a six months subscription at least. The special price for which will be 25c.

If you choose to remit at once, make your request for the above numbers in addition to the regular issues for six months beginning June 1st, and we will send them free.

GLEANINGS IN BEE CULTURE,

Medina, Ohio.

Flint, Mich., for $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb. 2, 1885. Serial number 221.

Terms.—$1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year extra.

Discontinuances.—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, June 15, 1906.

Advertising Rates.

All advertisements will be inserted at a rate of 15 cents per line. Nonpareil space—eight 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 (new)	$1.00	$1.50
American Bee Journal, (new)	1.00	1.75
Canadian Bee Journal	1.00	1.75
Progressive Bee Keeper	1.00	1.25
American Bee Keeper	1.00	1.40
Rural Bee Keeper	1.00	1.75
Western Bee Journal	1.00	1.75
Ohio Farmer	1.00	1.75
Farm Journal (Phila)	1.00	1.20
Rural New Yorker	1.00	1.85
The Century	4.00	4.50
Michigan Farmer	1.00	1.75
Prairie Farmer	1.00	1.75
American Agriculturist	1.00	1.75
Country Gentleman	2.50	3.15
Harper's Magazine	4.00	4.10
Harper's Weekly	4.00	4.20
Youths' Companion (new)	1.75	2.05
Cosmopolitan	1.00	1.00
Success	1.00	1.75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer.

C. P. DADANT, Hamilton, Ill.
President.

GEO. E. HILTON, Fremont, Mich.
Vice President.

W. Z. HUTCHINSON, Flint, Mich.
Secretary.

N. E. FRANCE, Platteville, Wis.
Gen. Manager and Treasurer.

Board of Directors.

WM. McEVOY, Woodburn, Ont.
E. L. TAYLOR, Lapeer, Mich.
UHO. TOEPPERWEIN, San Antonio, Tex.
F. C. AIKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
F. WHITCOMB, Friend, Neb.
L. A. STONE, Springfield, Ills.
G. M. DOOLITTLE, Borodino, N. Y.
E. A. HOLEKAMP, St. Louis, Mo.
M. H. MENDELSON, Ventura, Cal.
C. A. HATCH, Richland Cen., Wis.
F. WILCOX, Manitou, Wis.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be fancy white, No. 1 dark, etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission, the balance being sent to the shipper. Commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

KANSAS CITY.—Market is about cleaned up on honey. What is left is selling at $[illegible] per case for best fancy white; amber about 25c per case lower. Extracted is low at [illegible] and [illegible].

C. C. CLEMONS & CO.,
May [illegible] 1906. Kansas City, Mo.

BUFFALO.—Old honey is dull and slow at any price; no new. We quote as follows: Fancy white, [illegible] No. 1 white, [illegible] fancy amber, [illegible] No. 1 amber, [illegible] fancy dark, [illegible] Beeswax, [illegible]

BATTERSON & CO.
May [illegible] 1906. Buffalo, N. Y.

CHICAGO.—The supply of comb honey is small and only choice is being asked for, which brings 15c per pound; No. 1 [illegible] other grades about [illegible] White extracted at [illegible] per lb.; amber [illegible] Beeswax [illegible] per lb.

R. A. BURNETT & CO.,
June [illegible] 1906. 199 So. Water St.

NEW YORK.—There is some demand for comb honey, mostly for fancy grades, which are selling at from [illegible] cts.; off grades not in demand. Extracted in fair demand, mostly for white, with plenty of supply. From reports we are receiving the outlook is good for another large crop in California, and for a good crop in the Southern States. Beeswax firm at [illegible] to 30c.

HILDRETH & SEGELKEN,
[illegible] Murray St.
May [illegible] 1906. New York.

CINCINNATI.—The conditions of the market at the present time are not encouraging. Honey is offered from all sides at prices utterly regardless of the value of the article. At the same time all indications point to an unusually good honey crop, which aids in making it a drag on the market.

We offer amber in barrels at [illegible] Fancy white in crates [illegible] cans at [illegible]

Beeswax of the choice bright yellow grade is wanted at [illegible] delivered here.

THE FRED W. MUTH CO.
May [illegible] [illegible] Walnut St., Cincinnati, Ohio.

[illegible]

CHICAGO.—[illegible]

S. T. FISH & CO.
189 South Water St.
May [illegible] 1906. Chicago, Ill.

QUEENS.

SAY, do you know that I have plenty of good queens all ready for shipment? [illegible] me a trial order, and I will prove it [illegible] from under a [illegible]

[illegible] P. H. STANLEY, [illegible] Texas.

CALIFORNIA

Italian queens [illegible] honey gathering [illegible] made a great record in the sage districts. [illegible] supply from one to [illegible] tested [illegible] select tested [illegible]

M. D. WHITCHER, Los Olivos, Calif.

Wanted: Fancy white [illegible] white clover honey in [illegible] Please send samples and state your lowest price delivered here. We pay spot cash upon receipt of goods.

GRIGGS BROS., Toledo, Ohio

QUEENS.

[illegible]

MENNIE & FENTON,
Pine Island, Minn.

From Long-Tongued Imported Italians

[illegible]

E. E. MOTT, Glenwood, Mich.

Bees for Sale [illegible]

L. J. BENJAMIN, Clio, Mich.

SWARMING DONE AWAY WITH

In addition to continuing the several interesting articles by Alexander, and other noted contributors which are on in GLEANINGS IN BEE CULTURE, the publishers announce as a special feature for the remaining issues of the year, a series of articles on the CONTROL OF SWARMING FOR COMB HONEY PRODUCTION. These by bee-keepers who have experimented to the point where experimenting is done, and the crown of success has been awarded.

If you have not seen the first installment of this series, send in your name for a three number trial subscription, which will be given free of charge. The April 15th, May 1st, and May 15th numbers will be mailed to you, and by June, you will undoubtedly be so interested, you will want to take a six months subscription at least. The special price for which will be 25c.

If you choose to remit at once, make your request for the above numbers in addition to the regular issues for six months beginning June 1st, and we will send them free.

GLEANINGS IN BEE CULTURE,

Medina, Ohio.

JULY, 1906

THE BEE-KEEPERS' REVIEW

Published Monthly.

FLINT, M[illegible], $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb. 2, 1888. Serial number, 222

Terms—$1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year, extra.

Discontinuances—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued, will please send a postal at once upon receipt of the first notice; otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, July 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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 (new)	($1.000)	$1.75
American Bee Journal, (new)	(1.000)	1.75
Canadian Bee Journal	(1.000)	1.75
Progressive Bee Keeper	(1.50)	1.35
American Bee Keeper	(.50)	1.40
Rural Bee Keeper	(1.00)	1.75
Western Bee Journal	(1.00)	1.75
Ohio Farmer	(1.00)	1.75
Farm Journal, Phila.	(.50)	1.50
Rural New Yorker	(1.00)	1.85
The Century	(4.00)	4.50
Michigan Farmer	(1.00)	1.65
Prairie Farmer	(1.00)	1.75
American Agriculturist	(1.00)	1.75
Country Gentleman	(2.50)	2.15
Harper's Magazine	(4.00)	4.10
Harper's Weekly	(4.00)	4.10
Youth's Companion (new)	(1.75)	2.35
Cosmopolitan	(1.00)	1.90
Success	(1.00)	1.75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer

C. P. DADANT, Hamilton, Ill.
President

GEO. E. HILTON, Fremont, Mich.
Vice President

W. Z. HUTCHINSON, Flint, Mich.
Secretary.

N. E. FRANCE, Plattville, Wis.
Gen. Manager and Treasurer

Board of Directors.

WM. McEVOY, Woodburn, Ont.
R. L. TAYLOR, Lapeer, Mich.
PHIL TOLLEFERWIN, San Antonio, Tex.
R. C. AIKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
E. WHITCOMB, Friend, Neb.
JAS. A. STONE, Springfield, Ills.
G. M. DOOLITTLE, Borodino, N. Y.
E. A. HOLEKAMP, St. Louis, Mo.
M. H. MENDELSON, Ventura, Cal.
C. A. HATCH, Richland Cen., Wis.
F. WILCOX, Manston, Wis.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1, dark," etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission—the balance being sent to the shipper. Commission is ten per cent., except that a few dealers charge only five per cent. when a shipment sells for as much as one hundred dollars.

BUFFALO.—Old honey is dull and slow at any price; no new. We quote as follows: Fancy white, 14c to 15c; No. 1 white, [illegible] to 13c; fancy amber, 10c to 11c; No. 1 amber, 9c to 10c; fancy dark, 7c to 8c. Beeswax, 2[illegible] to 32c.

BATTERSON & CO.

May 8, 1906. Buffalo, N. Y.

CHICAGO.—Market is practically bare of comb honey, and while a little sells at about 15c per pound for the best white grades, there is little volume to the trade. Extracted in some demand at 6c to 7c per lb. for the sweet grades, but off flavors are about unsaleable at 5 to 5½. Beeswax, 30c per lb.

R. A. BURNETT & CO.,

July 9, 1906. 199 So. Water St.

NEW YORK.—We still have some demand for comb honey, mostly for white grades, which sell at from 13 to 14c, according to quality. A very limited demand for light amber, with sufficient supply and prices ruling at about 12c. Extracted in good demand, with sufficient supply to meet all requirements. Some arrivals from the South, and common grades are selling at from [illegible] to [illegible]c per gallon, and better grades at from [illegible] to [illegible]c per gallon. California strong, and white is selling at from [illegible] to [illegible]c, and light amber at from [illegible]. No nearby honey in the market as yet. Beeswax steady at [illegible] per lb.

HILDRETH & SEGELKEN,

[illegible] Murray St.,

July [illegible], 1906. New York.

CHICAGO.—There is [illegible] much activity up to this writing in the honey market. Especially [illegible] honey [illegible] closely cleaned [illegible]. We are in expectation to take care of [illegible] comb and extracted honey [illegible] with us [illegible] what they [illegible] to offer. Early consignments [illegible] and good prices on our market.

S. T. FISH & CO.,

189 South Water St.

[illegible] 1906. Chicago, Ill.

KANSAS CITY.—Market on fancy white comb honey [illegible] today [illegible] and we look for it to remain steady for some time. No new extracted in as yet, but old selling at [illegible] to [illegible]c per lb.

C. C. CLEMONS & CO.,

July [illegible], 1906. Kansas City, Mo.

KANSAS CITY.—Considerable new honey coming in. Prospects are for light crop in this section. Market is firm at these prices.

WALKER-BREWSTER GROCER CO.

July 10, 1906. 42 Walnut St. Kansas City, Mo.

CINCINNATI.—The conditions of the market at the present time are not encouraging. Honey is offered from all sides at prices utterly regardless of the value of the article. At the same time all indications point to an unusually good honey crop, which aides in making it a drag on the market.

We offer amber in barrels at [illegible] to [illegible]c. Fancy white in crates of [illegible] lb. cans at [illegible] to [illegible]c.

Beeswax of the choice bright yellow grade, is wanted at [illegible]c per lb. delivered here.

THE FRED W. MUTH CO.

May 8, 1906. 51 Walnut St. Cincinnati, Ohio.

SWARMING DONE AWAY WITH

In addition to continuing the several interesting articles by Alexander, and other noted contributors, which are running in GLEANINGS IN BEE CULTURE, the publishers announce as a special feature for the remaining issues of the year, a series of articles on the CONTROL OF SWARMING FOR COMB HONEY PRODUCTION. These by bee keepers who have experimented to the point where experimenting is done, and the crown of success has been awarded.

If you have not seen the first installment of this series, send in your name for a three number trial subscription, which will be given free of charge. The April 15th, May 1st, and May 15th numbers will be mailed to you, and by June, you will undoubtedly be so interested, you will want to take a six months subscription at least. The special price for which will be 25c.

If you choose to remit at once, make your request for the above numbers in addition to the regular issues for six months beginning June 1st, and we will send them free.

GLEANINGS IN BEE CULTURE,

Medina, Ohio.


THE BEE-KEEPERS'
REVIEW
Published Monthly.

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb. 2, 1888. Serial number, 423.

Terms. $1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts a year extra.

Discontinuances.—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued, will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, Aug. 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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; 12 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 (new)	($1.00)	$1.[illegible]
American Bee Journal (new)	(1.00)	1.25
Canadian Bee Journal	(1.00)	1.75
Progressive Bee Keeper	(.50)	1.[illegible]
American Bee Keeper	([illegible])	1.40
Rural Bee Keeper	(1.00)	1.[illegible]
Western Bee Journal	(1.00)	1.75
Ohio Farmer	(1.00)	1.[illegible]
Farm Journal (Phila)	(.50)	1.20
Rural New Yorker	(1.00)	1.85
The Century	(4.00)	4.50
Michigan Farmer	(1.00)	1.[illegible]
Prairie Farmer	(1.00)	[illegible]
American Agriculturist	(1.00)	1.[illegible]
Country Gentleman	(1.50)	[illegible]
Harper's Magazine	(4.00)	4.[illegible]
Harper's Weekly	(4.00)	4.[illegible]
Youths Companion (new)	([illegible])	2.[illegible]
Cosmopolitan	(1.00)	1.90
Success	(1.00)	1.75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer.

C. P. DADANT, Hamilton, Ill.
President.

GEO. E. HILTON, Fremont, Mich.
Vice President.

W. Z. HUTCHINSON, Flint, Mich.
Secretary.

N. E. FRANCE, Platteville, Wis.
Gen. Manager and Treasurer.

Board of Directors.

WM. McEVOY, Woodburn, Ont.
R. L. TAYLOR, Lapeer, Mich.
UDO TOEPPERWEIN, San Antonio, Tex.
R. C. AIKIN, Loveland, Colo.
E. H. ELWOOD, Starkville, N. Y.
E. WHITCOMB, Friend, Neb.
JAS. A. STONE, Springfield, Ills.
G. M. DOOLITTLE, Borodino, N. Y.
E. A. HOFFMANN, St. Louis, Mo.
M. H. MENDLESON, Ventura, Cal.
C. A. HATCH, Richland Cen., Wis.
E. WILCOX, Mauston, Wis.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be fancy white, No. 1 dark, etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage, and commission, the latter being generally ten per cent, except that a few dealers charge only five per cent when a consignment sells for as much as one hundred dollars.

BUFFALO.—[illegible] honey wanted [illegible] Fancy white [illegible]

BATTERSON & CO.

Buffalo, N. Y.

CHICAGO.—[illegible] fancy [illegible] dark [illegible] White extracted [illegible] dark [illegible] Beeswax [illegible]

R. A. BURNETT & CO.

199 So. Water St.

NEW YORK.—[illegible] Beeswax [illegible]

HILDRETH & SEGELKEN.

Murray St.

New York.

[illegible]

[illegible] & CO.

Water St.

Chicago, Ill.

KANSAS [illegible]

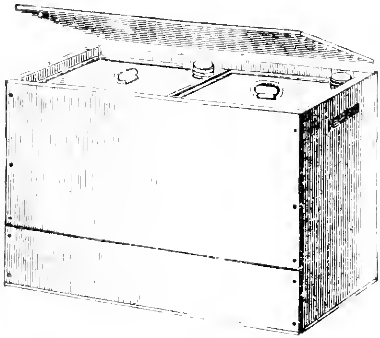
[illegible] Mo.

KANSAS [illegible]

WALTER [illegible] CO.

CINCINNATI.—[illegible]

[illegible]



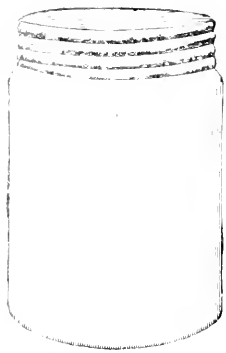
Five-Gallon 60-lb Square Cans.

[illegible]

Price List of Square Cans.

No. [illegible]	Capacity of [illegible]	[illegible]	Price of 1 box	10 boxes
1	5 gallon can [illegible]	[illegible]	[illegible]	[illegible]
2	5 gallon [illegible]	[illegible]	[illegible]	[illegible]
10	1 gallon	[illegible]	1.50	14.00
12	[illegible] gallon	[illegible]	1.50	14.00
24	[illegible] gallon	[illegible]	2.40	[illegible]

No. 25 Jars



[illegible]

Honey Labels.

[illegible]

A Complete Stock

[illegible]

Simplex Jars.

[illegible]

Half Pound Tumblers.

[illegible]

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

Flint, Michigan, $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second class matter at the Flint Postoffice, Feb. [illegible] Serial number [illegible].

Terms: $1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries, postage is 24 cts. a year, extra.

Discontinuances: The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued will please send a postal at once upon receipt of the first notice; otherwise it will be assumed that he wishes the Review continued and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing and the request will be complied with.

Flint, Michigan, Sept. 15, 1900.

Advertising Rates.

All advertisements will be inserted at a rate of [illegible] 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, [illegible] per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, [illegible] per cent; 6 times, 20 per cent; 9 times, 30 per cent; 12 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.

[illegible]

Gleanings [illegible]	[illegible]	$1 [illegible]
American Bee Journal (new)	[illegible]	[illegible]
Canadian Bee Journal	[illegible]	[illegible]
Progressive Bee Keeper	[illegible]	[illegible]
American Bee Keeper	[illegible]	[illegible]
Rural Bee Keeper	[illegible]	[illegible]
Western Bee Journal	[illegible]	[illegible]
Ohio Farmer	[illegible]	[illegible]
Farm Journal (Phila.)	[illegible]	[illegible]
Rural New Yorker	[illegible]	[illegible]
The Century	[illegible]	[illegible]
Michigan Farmer	[illegible]	[illegible]
Prairie Farmer	[illegible]	[illegible]
American Agriculturist	[illegible]	[illegible]
Country Gentleman	[illegible]	[illegible]
Harper's Magazine	[illegible]	4 [illegible]
Harper's Weekly	[illegible]	4 [illegible]
Youths' Companion (new)	[illegible]	[illegible]
Cosmopolitan	[illegible]	[illegible]
Success	1.00	1.75

National Bee-Keepers' Association.

Objects of the Association.

[illegible] promote and protect the interests of its members.

[illegible] prevent the adulteration of honey.

Annual Membership $1.00.

[illegible] Treasurer.

[illegible], Hamilton, Ill.

President

[illegible], Mich.

Vice President

W. Z. [illegible], Mich.

Secretary

[illegible], Platteville, Wis.

Gen. Manager and Treasurer

Board of Directors.

Wm. Mc[illegible], Woodburn, Ont.
E. [illegible], Lapeer, Mich.
[illegible], San Antonio, Tex.
[illegible], Loveland, Colo.
P. H. [illegible], Starkville, N. Y.
[illegible], Friend, Neb.
[illegible], Ills.
G. M. [illegible], N. Y.
[illegible], St. Louis, Mo.
J. H. [illegible], Cal.
[illegible], Wis.
[illegible]

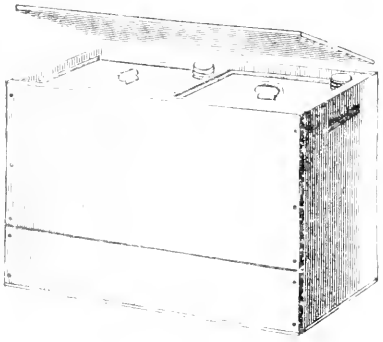
Honey Quotations

CALIFORNIA

M. D. WHITCHER, Los Olivos, Cal.

QUEENS.

MENNIE & FENTON,
Pine Island, Minn.



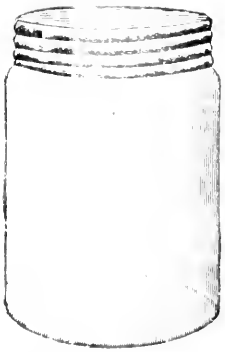
Five-Gallon 60-lb Square Cans.

[illegible]

Price List of Square Cans.

No. in a crate	Capacity of each can	Price of crate holding 6 cans	Price of 10 crates
1	5-gallon can boxed	60 lbs	$ 5 00
2	5-gallon " "	60 lbs	9 00
10	1-gallon " "	12 lbs	14 00
12	1-gallon " "	6 lbs	14 00
24	1-gallon " "	6 lbs	25 00

No. 25 Jars



[illegible]

Honey Labels.

[illegible]

A Complete Stock.

[illegible]

Simplex Jars.

[illegible]

Half Pound Tumblers.

[illegible]

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

Flint, Michigan, $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb. 2, 1888. Serial number, 225.

Terms.—$1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year, extra.

Discontinuances.—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued will please send a postal at once; upon receipt of the first notice; otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, Oct. 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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 (new)	$1.00	$1.75
American Bee Journal, (new)	1.00	1.75
Canadian Bee Journal	1.00	1.75
Progressive Bee Keeper	.50	1.35
American Bee Keeper	.50	1.40
Rural Bee Keeper	1.00	1.75
Western Bee Journal	1.00	1.75
Ohio Farmer	1.00	1.75
Farm Journal (Phila)	.50	1.20
Rural New Yorker	1.00	1.85
The Century	4.00	4.50
Michigan Farmer	1.00	1.65
Prairie Farmer	1.00	1.75
American Agriculturist	1.00	1.75
Country Gentleman	2.50	3.15
Harper's Magazine	4.00	4.10
Harper's Weekly	4.00	4.20
Youths' Companion (new)	1.75	2.35
Cosmopolitan	1.00	1.90
Success	1.00	1.75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer.

C. P. DADANT, Hamilton, Ill.
President.

GEO. E. HILTON, Fremont, Mich.
Vice President.

W. Z. HUTCHINSON, Flint, Mich.
Secretary.

N. E. FRANCE, Platteville, Wis.
Gen. Manager and Treasurer.

Board of Directors.

WM. McEVOY, Woodburn, Ont.
R. L. TAYLOR, Lapeer, Mich.
THOS. TOLEPERWEIN, San Antonio, Tex.
R. C. AIKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
J. WHITCOMB, Friend, Neb.
JAS. A. STONE, Springfield, Ills.
C. M. DOOLITTLE, Borodino, N. Y.
R. V. HOLTKAMP, St. Louis, Mo.
M. H. MENDELSON, Ventura, Cal.
C. A. HATCH, Richland Cen., Wis.
F. WILCOX, Manston, Wis.

Names of Bee-Keepers
TYPE WRITTEN

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged in alphabetically (in the largest sates) and, though this list has been secured at an expense of hundreds of dollars, I would furnish it to advertisers or others at $2.00 per thousand names. The former price was $2.50 per 1000, but I now have a type writer, and by using the manifold process I can furnish them at $2.00. 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. Here is a list of the States and the number of names in each State.

Arizona	46	Ky.	182	N. C.	60
Ark.	82	Kans.	350	New Mex.	54
Ala.	81	La.	38	Oregon	109
Calif.	578	Mo.	800	Ohio...	1300
Colo.	215	Minn.	334	Penn.	912
Canada	1200	Mich.	1750	R. I....	46
Conn.	106	Mass.	275	S. C.	40
Dak.	8	Md.	94	Tenn.	176
Del.	48	Maine	250	Tex.	270
Fla.	100	Miss.	70	Utah	68
Ga.	90	N. Y.	1700	Vt.	265
Ind.	744	Neb.	345	Va....	182
Ills.	1375	N. J.	130	W. Va.	178
Iowa	800	N. H.	188	Wash.	122
				Wis....	620

W. Z. HUTCHINSON, Flint, Mich.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be fancy white, No. 1 dark, etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission, the balance being sent to the shipper. Commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

CHICAGO—The receipts of comb honey are quite large and there is a good demand for it, so that prices are well maintained at [illegible] per lb. for No. 1 to fancy; anything short of these grades is not selling freely and ranges from [illegible] to [illegible] per lb. less; buckwheat 12½c; dark grades [illegible]. Extracted white [illegible]; amber [illegible]; dark [illegible]. Beeswax wanted at [illegible] per lb.

R. A. BURNETT & CO.,

Sept. [illegible], 190[illegible] — 199 So. Water St.

NEW YORK—Honey, both comb and extracted, in good demand with sufficient supply.

Beeswax rather quiet.

We quote as follows: Fancy white [illegible]; No. 1 white [illegible]; fancy amber [illegible]; No. 1 amber [illegible]; fancy dark [illegible]; No. 1 dark [illegible]; white extracted [illegible]; amber [illegible]; dark [illegible]. Beeswax at [illegible] per lb.

HILDRETH & SEGELKEN

82-86 Murray St.

Oct. [illegible], 190[illegible] — New York

CINCINNATI—We are receiving numerous shipments of comb honey at the present time and find ready sale here for fancy and No. 1 at [illegible] per lb. in a jobbing way. This is a [illegible] grade [illegible] than [illegible].

The receipts of extracted honey are normal although the demand is not so good as it was sixty days ago. Nevertheless there is no material change in prices. We are selling amber in barrels and cans at [illegible] to [illegible] per lb. Fancy white at [illegible] to [illegible].

For choice beeswax [illegible] but we are paying [illegible] per lb. delivered here.

THE FRED W. MUTH CO.

Aug. [illegible] — 51 Walnut St., Cincinnati, Ohio

KANSAS CITY—Demand [illegible] of [illegible] week. We [illegible] section cases [illegible] amber [illegible] white extracted [illegible] per lb. Beeswax [illegible].

C. C. CLEMONS & CO.

Sept. [illegible], 190[illegible] — Kansas City, Mo.

KANSAS CITY—Honey [illegible] supply [illegible] demand [illegible] comb honey [illegible]. Beeswax [illegible]. We quote [illegible]: No. 1 white [illegible]; No. 1 amber [illegible]; white extracted [illegible]; amber [illegible]. Beeswax [illegible].

WALTER BREWSTER GROCER CO.

Sept. [illegible], [illegible] Walnut St., Kansas City, Mo.

BUFFALO—Some really fancy honey wanted now to sell. Lower grades not wanted except at very low prices. We quote as follows: Fancy white [illegible]; No. 1 white [illegible]; fancy amber [illegible]. Beeswax [illegible].

BATTERSON & CO.

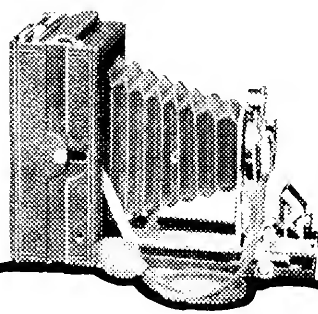
Aug. [illegible], 1906 — Buffalo, N. Y.

CHICAGO—Our first car of Colorado comb honey on track today, double-deck cases. We quote as follows: Fancy white [illegible]; No. 1 white [illegible]; fancy amber [illegible]; No. 1 amber [illegible]; fancy [illegible]; No. 1 dark [illegible]; white extracted [illegible]; amber [illegible]; 6½ dark [illegible].

S. T. FISH & CO.,

189 South Water St.

Sept. [illegible], 190[illegible] — Chicago, Ill.



The letter reproduced below from a well-known poultry man is representative of hundreds of unsolicited letters received annually, commending the Root goods. Whether you are a dealer in supplies or a bee-keeper, you will be interested in what Mr. Rigg says, especially if you have never used our supplies. In this letter we call your attention to three points:

1st. Mr. Rigg could get along without GLEANINGS, but could not afford to do so. Neither can any one keeping bees, even if only a single colony.

2nd. In purchasing bees, as with other stock, it pays to get select stock. See what results Mr. Rigg obtained from our red clover strain of bees.

3rd. We respectfully urge you to notice that Mr. Rigg used our Danzenbaker comb-honey hive. If you want to produce fancy honey, this is the hive to use.

WHITE WYANDOTTES [illegible]

HOUDANS
Line Bred Since 1874
Acknowledged Standard of Houdan Excellence in America

LE BOCAGE FARM

THOS. F. RIGG

Iowa Falls, Iowa Aug. [illegible] 190[illegible]

The A. I. Root Co.

Medina, O.

Gentlemen:

Find enclosed draft for $1.[illegible] for which [illegible] my subscription on account of Gleanings.

I could get along without Gleanings, but cannot afford to do so.

I want to tell you of the result secured from the [illegible] three-frame nucleus purchased of you. This was received early in [illegible]. It was given good care and has made me 64 pounds of surplus honey, and I will yet have to its credit nearly [illegible] pounds more. Is not that good for a "tenderhorn"? But it was all on account of the worth of that queen. An experienced bee man tells me that she was an exceptionally good queen. When he saw the immense swarm busy at work, and I told him that only a short time before it was only a small nucleus, he remarked, "Got them of Root, did you not?"

I give full credit to Root and the queen. I used the Danzenbaker hive according to Root's advice, and got exceptional fine results.

Yours respectfully,

Thos. F. Rigg

Flint, Michigan, $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb. 2, 1888. Serial number, 226.

Terms.—$1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year, extra.

Discontinuances.—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued, will please send a postal at once upon receipt of the first notice, otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, Nov. 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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, (new)	($1.00)	$1.75
American Bee Journal, (new)	(1.00)	1.75
Canadian Bee Journal	(1.00)	1.75
Progressive Bee Keeper	(.50)	1.35
American Bee Keeper	(.50)	1.40
Rural Bee Keeper	(1.00)	1.75
Western Bee Journal	(1.00)	1.75
Ohio Farmer	(1.00)	1.75
Farm Journal (Phila)	(.50)	1.20
Rural New Yorker	(1.00)	1.85
The Century	(4.00)	4.50
Michigan Farmer	(1.00)	1.65
Prairie Farmer	(1.00)	1.75
American Agriculturist	(1.00)	1.75
Country Gentleman	(2.50)	3.15
Harper's Magazine	(4.00)	4.10
Harper's Weekly	(4.00)	4.20
Youths' Companion (new)	(1.75)	2.35
Cosmopolitan	(1.00)	1.90
Success	(1.00)	1.75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

send dues to Treasurer

C. P. DADANT, Hamilton, Ill.
President

GEO. E. HILTON, Fremont, Mich.
Vice President

W. Z. HUTCHINSON, Flint, Mich.
Secretary.

N. E. FRANCE, Plattville, Wis.
Gen. Manager and Treasurer

Board of Directors.

WM. McEVOY, Woodburn, Ont.
R. L. TAYLOR, Lapeer, Mich.
UDO TOEPPERWEIN, San Antonio, Tex.
R. C. AIKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
F. WHITCOMB, Friend, Neb.
JAS. A. STONE, Springfield, Ills.
G. M. DOOLITTLE, Borodino, N. Y.
E. A. HOLEKAMP, St. Louis, Mo.
M. H. MENDELSON, Ventura, Cal.
C. A. HATCH, Richland Cen., Wis.
F. WILCOX, Mauston, Wis.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1, dark," etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission, the balance being sent to the shipper. Commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

CHICAGO.—The market is taking honey, both comb and extracted, in a very satisfactory way. The price of No. 1 to fancy comb is 16c to 16c; off grades 1c to 2c per lb. less. White extracted [illegible] to [illegible]; amber [illegible]; dark [illegible] to [illegible]. All of this is best quality. Beeswax [illegible] per lb.

R. A. BURNETT & CO.,

Nov. [illegible] 1906. 199 So. Water St.

NEW YORK.—Comb Honey.—Receipts will be lighter, bulk of honey being marketed. We quote fancy stock at 15c; No. 1, 13 to 14c; No. 2 white, amber and buckwheat at 10 to 12c, according to quality. Fair demand and sufficient supplies to meet same.

Extracted honey in good demand, principally California, and strictly white sage is now selling at [illegible] to [illegible]; light amber at [illegible], and amber at [illegible]. Extracted nearby New York state amber and buckwheat at 6 to 6½c, with fair demand. Southern in good demand at [illegible] to 65c per gallon, according to quality, for good average stock; 75c for fancy. Beeswax finds ready sale at [illegible].

HILDRETH & SEGELKEN,

82-86 Murray St.,

Nov. 20, 1906. New York.

CINCINNATI.—The honey market is rather quiet at this date, owing to the market being flooded with comb honey, selling slowly at from 14c to 16c. Extracted, amber honey selling at from [illegible] to [illegible]. White and fancy white grades find sale at from [illegible] to [illegible]. There is not so much moving as one might be led to believe. Beeswax is dragging, however; we continue to pay 26c and [illegible] for choice yellow article.

THE FRED W. MUTH CO.,

Nov. [illegible], 1906. 51 Walnut St., Cincinnati, Ohio.

KANSAS CITY.—[illegible] demand, [illegible]. We [illegible] white [illegible] fancy [illegible] white extracted [illegible] per lb. [illegible] dark [illegible] beeswax [illegible].

C. C. CLEMONS & CO.,

Nov. 2, 1906. Kansas City, Mo.

KANSAS CITY.—There [illegible] improvement in the honey trade, with [illegible] better inquiry, the market [illegible] form of quotations. We quote as follows: Fancy white [illegible] to [illegible] per case; No. 1 white [illegible]; white extracted, [illegible]; amber [illegible]; beeswax [illegible].

WALTER T. BREWSTER GROCER CO.,

Nov. [illegible], [illegible] Walnut St., Kansas City, Mo.

BUFFALO.—Some really fancy honey wanted now to sell. Lower grades not wanted except at very low prices. We quote as follows: Fancy white 16c to [illegible]; No. 1 white [illegible] to 13c; fancy amber 10c to 11c; beeswax [illegible] to [illegible].

BATTERSON & CO.,

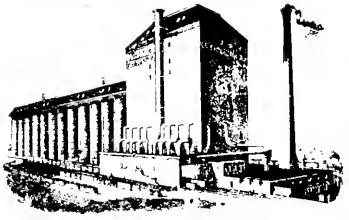
Aug. [illegible] 1906. Buffalo, N. Y.

CHICAGO.—Our first car of Colorado comb honey on track today, double deck cases. We quote as follows: Fancy white [illegible] to 16c; No. 1 white 15 to [illegible]; fancy amber [illegible] to 15c; No. 1 amber, [illegible] to [illegible]; fancy dark [illegible]; No. 1 dark, [illegible] to [illegible]; white extracted [illegible] to [illegible]; amber 6 to 6½; dark, [illegible] to [illegible].

S. T. FISH & CO.,

189 South Water St.

Sept. [illegible], 1906. Chicago, Ill.



Mueller & Young Grain Co.

BARLEY AND OATS.

A. I. Root Co
Medina Ohio

Gentlemen, I have just finished unpacking the last box of supplies and must say they are very satisfactory. The frames especially are extra fine, and I am just wondering how I was so foolish as buy the thousands I already have from that other firm after seeing yours I have made up my mind that I would much rather buy yours than take theirs for a gift.
This is no jolly but the simple truth

Very truly Yours
James C. Tough
1013 Clarence Ave
Oak Park
Ill.

Mr. Tough's Letter is One of Many We Could Produce.

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

Flint, Michigan, $1.00 a Year

Bee-Keepers' Review

PUBLISHED MONTHLY

W. Z. HUTCHINSON, Editor and Publisher

Entered as second-class matter at the Flint Postoffice Feb 2, 1888. Serial number, 22.

Terms. $1.00 a year to subscribers in the United States, Canada, Cuba and Mexico. To all other countries postage is 24 cts. a year, extra.

Discontinuances—The Review is sent until orders are received for its discontinuance. Notice is sent at the expiration of a subscription, further notices being sent if the first is not heeded. Any subscriber wishing the Review discontinued, will please send a postal at once upon receipt of the first notice; otherwise it will be assumed that he wishes the Review continued, and will pay for it soon. Any one who prefers to have the Review stopped at the expiration of the time paid for, will please say so when subscribing, and the request will be complied with.

Flint, Michigan, Dec. 15, 1906.

Advertising Rates.

All advertisements will be inserted at a 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, (new)	($1.00)	$1.75
American Bee Journal, (new)	(1.00)	1.75
Canadian Bee Journal	(1.00)	1.75
American Bee Keeper	(.50)	1.40
Ohio Farmer	(1.00)	1.75
Farm Journal (Phila)	(.50)	1.20
Rural New Yorker	(1.00)	1.85
The Century	(4.00)	4.50
Michigan Farmer	(1.00)	1.95
Prairie Farmer	(1.00)	1.75
American Agriculturist	(1.00)	1.75
Country Gentleman	(2.50)	3.15
Harper's Magazine	(4.00)	4.10
Harper's Weekly	(4.00)	4.20
Youths' Companion (new)	(1.75)	2.35
Cosmopolitan	(1.00)	1.90
Success	(1.00)	1.75

National Bee-Keepers' Association.

Objects of the Association.

To promote and protect the interests of its members.

To prevent the adulteration of honey.

Annual Membership $1.00.

Send dues to Treasurer

C. P. DADANT, Hamilton, Ill.
President

GEO. E. HILTON, Fremont, Mich.
Vice President

W. Z. HUTCHINSON, Flint, Mich.
Secretary,

N. E. FRANCE, Platteville, Wis.
Gen. Manager and Treasurer

Board of Directors.

WM. McEVOY, Woodburn, Ont.
R. L. TAYLOR, Lapeer, Mich.
UHO. TOEPPERWEIN, San Antonio, Tex.
R. C. AIKIN, Loveland, Colo.
P. H. ELWOOD, Starkville, N. Y.
F. WHITCOMB, Friend, Neb.
LYS. A. STONE, Springfield, Ills.
G. M. DOOLITTLE, Borodino, N. Y.
E. A. HOLTKAMP, St. Louis, Mo.
M. H. MENDELSON, Ventura, Cal.
C. A. HATCH, Richland Cen., Wis.
F. WILCOX, Manston, Wis.

Names of Bee-Keepers

TYPE WRITTEN

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged in alphabetically (in the largest Sates), and, though this list has been secured at an expense of hundreds of dollars, I would furnish it to advertisers or others at $2.00 per thousand names. The former price was $2.50 per 1000, but I now have a type writer, and by using the manifold process, I can furnish them at $2.00. 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. Here is a list of the States and the number of names in each State.

Arizona	40	Ky	182	N. C.	60
Ark	82	Kans	350	New Mex	54
Ala	80	La	38	Oregon	109
Calif	558	Me	500	Ohio	1300
Colo	228	Minn	334	Penn	912
Canada	1200	Mich	1770	R. I.	46
Conn	162	Mass	275	S. C.	40
Dak	35	Md.	94	Tenn.	176
Del	18	Maine	270	Tex.	270
Fla	100	Miss	70	Utah	68
Ga	90	N. Y.	1700	Vt.	205
Ind	744	Neb	345	Va.	182
Ills	1375	N. J.	130	W. Va.	178
Iowa	800	N. H.	158	Wash.	122
				Wis.	620

W. Z. HUTCHINSON, Flint, Mich.

Honey Quotations

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

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

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

In addition to this the honey is to be classified according to color, using the terms white, amber and dark. That is, there will be "fancy white," "No. 1, dark," etc.

The prices given in the following quotations are those at which the dealers sell to the grocers. From these prices must be deducted freight, cartage and commission—the balance being sent to the shipper. Commission is ten per cent, except that a few dealers charge only five per cent when a shipment sells for as much as one hundred dollars.

CHICAGO.—There is the usual dullness in the honey trade at this date owing to most of the retailers having stocked up sufficiently to carry them over the holidays, but the stocks in the hands of the trade generally are below the normal, hence prices are firm at 13c to 16c for No. 1 to fancy white comb, with off grades at 1c to 2c less; amber grades dull at [illegible]c to 12c. Extracted white firm at [illegible]c for clover and basswood; ambers [illegible]c to [illegible]c per lb. Beeswax [illegible] per lb.

R. A. BURNETT & CO.,
Dec. [illegible], 1906. 199 So. Water St.

NEW YORK.—There is a good demand for comb, also for extracted, all grades. Prices are firm, and likely to continue so. We quote as follows: Fancy white 1[illegible]; No. 1 white 1[illegible]; fancy amber 12c to 1[illegible]; fancy dark 10c to 11c; No. 1 dark 10c; white extracted 7½c to 8c; amber extracted 7c to 7½; dark extracted 6½c to 7c; beeswax [illegible]c to 31.

HILDRETH & SEGELKEN,
82-86 Murray St.,
Dec. 14, 1906. New York.

CINCINNATI.—The honey market is in a healthy condition, particularly for extracted honey, the demand being better than one year ago. This is probably due to the excitement among those holders who are trying to inflate the prices. We quote amber extracted honey in barrels at [illegible] to [illegible], according to the quality. Fancy table honey in barrels and cans at [illegible] to [illegible]c. The demand for comb honey has decreased somewhat owing to the season of the year when the sale of that article suffers. We offer fancy comb honey in a wholesale way at 15c to 16c. The above are our selling prices.

For choice, yellow beeswax we are paying 30c per pound delivered here.

THE FRED W. MUTH CO.,
Dec. [illegible], 06. 51 Walnut St., Cincinnati, Ohio.

KANSAS CITY.—[illegible] are for [illegible]. The [illegible]. Demand [illegible]. We quote [illegible]. Fancy [illegible] white [illegible] fancy [illegible] extracted [illegible]. Beeswax [illegible].

C. C. CLEMONS & CO.
Dec. [illegible] Kansas City, Mo.

KANSAS CITY.—There is some improvement in the honey situation with much better inquiry; the market is considered firm at quotations. We quote as follows: Fancy white [illegible] per case; No. 1 white [illegible]; white extracted, [illegible]; amber [illegible]; beeswax [illegible].

WALTER BREWSTER GROCER CO.,
Nov. [illegible] [illegible] Walnut St., Kansas City, Mo.

BUFFALO.—Some really fancy honey wanted now to sell. Lower grades not wanted except at very low prices. We quote as follows: Fancy white [illegible] to [illegible]; No. 1 white [illegible] to 1[illegible]c; fancy amber [illegible] to 1[illegible]. Beeswax [illegible] to [illegible].

BATTERSON & CO.,
Aug. [illegible], 1906. Buffalo, N. Y.

CHICAGO.—Our first car of Federal comb honey out [illegible] today, double deck cases. We quote as follows: Fancy white [illegible]; No. 1 white 15 to [illegible]; fancy amber [illegible] to [illegible]; No. 1 amber [illegible] to [illegible]; fancy dark [illegible]; No. 1 dark [illegible] to [illegible]; white extracted [illegible]; amber [illegible] to 6½; dark [illegible].

S. T. FISH & CO.,
189 South Water St.,
Sept. [illegible], 1906. Chicago, Ill.

Gleanings in Bee Culture Clubbing Offers

ALL OF THE FOLLOWING OFFERS INCLUDE GLEANINGS ONE YEAR.

		Our Price with GLEANINGS
Delineator	1 yr. $1 00	
McClure's Magazine	" 1 00	$3 75
World's Work	" 3 00	
Review of Reviews	1 yr. $3 00	
Success Magazine	" 1 00	3 60
Woman's Home Companion	" 1 00	
Cosmopolitan or Success	1 yr. $1 00	
Yachting or any Child's	" 00	4 00
Field and Stream	" 4 00	
American Boy	1 yr. $1 00	
Cassell's Little Folks	" 1 50	3 30
Metropolitan Magazine	" 1 00	
Recreation or Appleton's	1 yr. $1 50	
Metropolitan Magazine	" 1 50	
Review of Reviews	" 3 00	4 65
Woman's Home Companion	" 1 00	
Scribner's Magazine	1 yr. $3 00	
Suburban Life	" 1 50	6 65
House and Garden	" 3 00	
Independent	1 yr. $2 00	
Recreation or Appleton's	" 1 50	4 70
Outing or Reader Magazine	" 3 00	
Lippincott's	1 yr. $2 50	
Cassell's or Recreation	" 1 50	4 15
Cosmopolitan	" 1 00	
Ainslee's Magazine	1 yr. $1 80	
Metropolitan Magazine	" 1 80	4 50
Outing Magazine	" 3 00	
Outing Magazine	1 yr. $3 00	
Metropolitan Magazine	" 1 80	6 40
Harper's or Leslie's Weekly Or Scribner's	" 5 00	
American Boy	1 yr. $1 00	
Pearson's Magazine	" 1 50	3 30
Pictorial Review	" 1 00	
American Inventor	1 yr. $1 00	
Scientific American	" 3 00	4 80
Automobile Magazine	" 2 00	
World To-Day	1 yr. $1 50	
Etude for music lovers	" 1 50	3 65
Recreation or Pearson's	" 1 50	
Century Magazine	1 yr. $4 00	
Current Literature	" 3 00	7 65
Cassell's or Appleton's	" 1 50	
Putnam's Magazine	1 yr. $3 00	
Country Life in America	" 4 00	7 15
Good Housekeeping	" 1 00	
Children's Magazine	1 yr. $1 00	
Etude for music lovers	" 1 50	3 65
Appleton's or Pearson's	" 1 50	
Harper's Magazine	1 yr. $1 00	
Reader or Outing	" 3 00	7 40
Lippincott's Magazine	" 2 50	

		Our Price with GLEANINGS
Outing Magazine	1 yr. $3 00	
World To-Day	" 1 00	$4 15
Ainslee's Magazine	" 1 80	
Home Needlework Magazine	1 yr. $ 75	
Pictorial Review	" 1 00	2 65
Modern Priscilla	" 50	
Good Housekeeping	1 yr. $1 00	
Cassell's or Recreation	" 1 50	3 00
Ladies' World	" 50	
Independent	1 yr. $2 00	
Musician	" 1 50	4 70
Outing magazine	" 3 00	
Outdoor News illustrated	1 yr. $2 00	
Burr McIntosh	" 3 00	5 00
Woman's Home Companion	" 1 00	
Little Folks new subscriber	$1 00	
Woman's Home Companion	1 00	2 65
Modern Priscilla	50	
World To-Day	1 yr 1 50	
Recreation or Pearson's	" 1 50	3 30
Woman's Home Companion	" 1 00	
Music magazine or Etude	1 yr 1 50	
Home Magazine	" 1 00	3 00
McCall's Magazine	" 50	
The Reader or any class B	1 yr. $ 00	
Keith's or any class A	" 1 50	4 00
Success Magazine	" 1 00	
What to Eat	1 yr. 1 00	
Harper's Bazar	" 1 00	2 95
Pictorial Review	" 1 00	
American Boy	1 yr. 1 00	
National Magazine	" 1 00	3 40
Cassell's Little Folks	" 1 50	
Cassell's or Quiver	1 yr. 1 50	
American Magazine	" 1 00	3 65
Broadway Magazine	" 1 50	
Children's Magazine	1 yr. 1 00	
Home Needlework Magazine	" 75	2 30
Burr McIntosh	1 yr 3 00	
Scribner's Magazine	" 3 00	6 65
Metropolitan Magazine	" 1 80	
Suburban Life	1 yr 1 50	
McClure's	" 1 00	
Delineator	" 1 00	4 30
World's Work	" 3 00	
Suburban Life	1 yr 1 50	
Woman's Home Companion	" 1 00	3 65
Review of Reviews	" 3 00	
Suburban Life	1 yr. 1 50	
World To-day	" 1 50	2 95
Cosmopolitan	" 1 00	
Suburban Life	1 yr. 1 00	2 30
Woman's Home Companion	" 1 00	

All of the above offers include GLEANINGS one year.

SEND ALL ORDERS TO THE A. I. ROOT CO., MEDINA, OHIO.