THE BEE-KEEPERS' REVIEW

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Different Hives for Different Purposes; The Best Hive for Financial Honey Producers, For Wintering Bees, and for Summer Management; A Most Comprehensive Article.

E. L. TAYLOR.

HIVES must vary to meet the demand of various methods: and, as the methods of scarcely two honey producers are alike in all respects, it follows naturally that honey producers differ greatly in their ideas respecting the characteristics of the "best" hive. So, when one sets down a certain hive as the one to be preferred above all others, in order to judge of the validity of his claim, it is necessary to know for what purpose he wants the hive and how the necessities of his circumstances require him to handle it. Therefore, when I point out what seems to me to be the requirements of the best hive, I wish to be understood as giving my judgement in reference to those only who are in somewhat similar circumstances with myself. I pursue the business of honey production for financial profit. I keep a considerable number of colonies, so that, even with the hive that gathers the least propolis, and that requires the least handling of frames and dummies and other "conveniencies," I have sufficient scraping of bee-glue, handling of frames, etc., to do, so that it is not necessary for me to adopt a hive that gathers more bee-glue, or requires more handling of frames, merely because it is a pleasure to do that kind of work, as I already have a chance for all that kind of enjoyment that I have time for. Again, if, like the majority of so-called bee-keepers, I never made any pretence of intelligent management, never peeping into a hive except to ascertain if the colony were still alive, and only putting on and taking off boxes by guess, I should say that any kind of a hive was quite good enough. So, also, if it were my business to rear queens, or bees, or both queens and bees for sale, the character of the most desirable hive for that purpose would be determined by other considerations.

What are the characteristics of the hive adapted to the most profitable production of honey on a considerable scale?

I reply, first: It must be reasonably well calculated to secure the prosperity of the colony itself during the entire year.

Second: It must be well calculated to secure the largest possible amount of the most salable honey in the most salable condition.

Third: It should be so constructed as to require for necessary manipulating the least expense of time and labor. (a) In the moving of hives either with bees in them or when prepared for bees. (b) For the contraction and expansion of the hives. (c) In the finding of queens. (d) In the making of internal examinations.

In my opinion, after an experience of more than three years with the New Heddon hive, otherwise known as the sectional hive, beginning with a few but having now about four hundred occupied by bees, there is no other hive that, in answering these requirements, can at all compare with this hive. For present purposes it is only necessary to say that this hive has a horizontally divisible brood chamber. The sections are exactly alike, so that either may be placed above, and they may be interchanged at any time. Each section has a set of eight, closed-end frames, $5\frac{3}{8}$ in depth by 18 1-16 inches in length, thus giving it the capacity of five L. frames. The hive is 1-16 of an inch longer inside than the frames, and when the two sections are adjusted there is a bee-space between the two sets of frames, and the frames are firmly fixed by thumb screws operating through the sides of the hive against the centre of the closed-ends.

Beginning with the first of the above requirements, let me give the reasons which, to my mind, account for the superiority which I claim for the hive.

I have been especially pleased with its wintering qualities, which I attribute mainly to the bee-space between the frames of the two sections. It gives the advantages sometimes claimed for the old box hive. It is well known that bees are not adapted to living solitary, nor even in very small clusters; and the lower the temperature the quicker and more completely the vitality of the bees, either singly or in small groups, yields. Every experienced bee-keeper knows that the larger frames of eight inches or more in depth are veritable death-traps in the fall, winter and spring. At a high temperature the bees are dispersed through the hive, and when the temperature runs down, the bees seek the central cluster by the nearest way,

without reference to obstructions, and multitudes, particularly if the fall of temperature be sudden, bring up in the centre of the broadside of a comb outside the cluster, and soon perish, or at least lose their vitality. In our changeable climate this is repeated over and over again until the colony is greatly depleted in numbers and reduced in vigor. But in the sectional hive the direct way to the centre of the cluster is always open, so that the lives and vigor of adventerous bees are preserved. Colonies thus wintered build up with remarkable rapidity in the spring; not only by reason of unimpaired vigor, but also from the following fact, which should not be overlooked: In early spring, while cold nights are the rule, even when both sections are used, the colony has all the advantages of a hive contracted to the capacity of five L. frames; because the aforesaid bee-space facilitates the spreading of the brood *laterally* in the upper section, to which the heat of the cluster ascends. Thus the heat of the colony is used with much less waste than where it rises and spreads out at the top over unoccupied combs; while the bees are compelled, on deep combs, to force their brood *downward* against adverse circumstances. As a result, at the season of apple bloom a large proportion of the hives are so full of bees that the sections may be interchanged, which places the comb unoccupied with brood in the centre of the brood-nest, thus giving an impetus to brood rearing at a time when it will count in the time of white clover and basswood. At the same time, if any honey is being gathered, a case of sections may be put on: and they will be at once occupied, as the frames just below are full of brood.

In like manner, it is difficult to see how any hive constructed on different principles can equal this in the completeness with which it meets the demands of my second point. Properly handled, the bees always go into the supers promptly, if any honey is coming in: indeed, generally if it is not. It is well calculated for easily giving an impulse to brood rearing, as indicated above, when that means useful workers, and at a time when brood rearing means *useless* workers and a large curtailment of the surplus, it may be restricted by merely putting one section of the brood chamber anywhere above the queen-excluding honey-board; and whether full sized or contracted the brood chamber is always *as wide and as long as the super*.

But some one may ask, what of the bee-space through the centre of the brood-chamber? I have already given my reasons for considering it an advantage, but will reply by asking: What of the 150 cubic inches more or less between and outside the end bars of the hanging frames of other hives, for the bees to keep warm and in which to lounge and escape going into the sections?

It only remains to discuss this hive in its relation to economy of time and labor; and with a little thought anyone of experience will perceive its advantages without extended explanation. (a) The great gain arising from fixed frames is patent. There is no loss of time or temper in shipping bees to an outapiary, in moving hives, or in hiving swarms, arising from a necessity for opening the hives to adjust or to fasten the frames. (b) Contraction or expansion is accomplished by simply removing or adding a section of the hive—the work of a minute. (c) As a rule, queens may be found much more rapidly in this hive than in any other, and the hive need not even be opened up. A little smoke and two or three shakes will usually deposit her with the bees on the ground in front of the hive stand. (d) It is very seldom necessary to handle a frame in making any desired internal examination. Raise one end of the upper section and the secrets within may be read at a glance as from a book. All queen cells even, if the combs are good, may be easily destroyed with the blade of a knife; while honey for extracting may be removed and freed from bees as easily as cases of comb honey. Moreover, if desired, the frames are manipulated as readily as those of any other hive.

LAPEER, MICH., Dec. 20, 1888.

Inversion; Contraction; Interchanging; The "Shake-Out" Function; Honey-Boards; How all These fit the Heddon Hive.

JAS. HEDDON.

BY THE way bee-hive discussions have been carried on in the past, in other journals, you have, Mr. Editor, done a brave, yes, a daring deed, in making hives the subject for an issue of your paper. But, sir, do you stop to realize that the bravery demanded of a man who has invented, tested, found praise-worthy, and had the temerity to praise, a hive, must be far greater than yours when he writes about it, hewing to the line and letting the chips fall where they may?

Now, I suppose most of your readers are aware that a few years ago, (which might be called "recently," as applied to the invention of any hive that has come to stay) I discovered new methods and mechanical clothing for carrying out admitted valuable functions in bee-hives and their manipulation.

Believing as I do that these new functions are superior to all that have gone before, notwithstanding I have a patent in the United States and D. A. Jones has one in Canada upon the clothing of the functions, nothing is left for me but to hew to the line as I see it, and never mind the chips.

To begin with, I am confident I shall never use another brood-frame that is not reversible, separately, or in sets, by the case.

It pays to have them reversible if they are never inverted but once, for the purpose of having the combs solidly and completely fill the frames. Again, I would not think of raising either comb or extracted honey, without practicing the contracting system. That is, practicing contracting the hive at that season of the year when I don't want to rear bees to become well nigh useless after I had gone to the expense of doing so. There is

no system of contraction so perfect, rapid and safe as that made possible by the use of the horizontally divisible brood chamber which is of the capacity of the ten frame Langstroth hive and the exact length and width of the eight frame L. hive, composed of two cases, each containing a complete set of shallow frames resting upon a bottom board containing a bee space in its top surface, and perfectly interchangeable with each other. During the breeding season and the surplus honey season combined, that is, during that season when the two before mentioned seasons lap upon each other, when the complete brood chamber is used, a very important and most useful function rests in the ease with which we can alternate or interchange the separable halves of this brood chamber. This interchanging, gives us larger quantities of brood than can possibly be obtained in any other practical way.

By its use we can keep the brood always close up to the surplus receptacles, and when the upper half is found to contain considerable honey, alternating it to the bottom causes the bees to take the honey out of it and place it in the surplus receptacles, which gives more room for the queen, and stimulates her to renewed activity. The splendid practicability of this arrangement is that the manipulation can be performed so quickly that not even a robber bee, if such are about, can get a taste; and such manipulation in an apiary of two or three hundred colonies can be done in so few hours, by two persons, that the job has no terror for the bee-keeper.

But this is by no means all; because the brood chamber is thus divisible, all queen cells can be clipped out without removing a frame; queens can be found almost instantly without removing a frame or exposing any honey to the most determined robber. So quickly and safely can a case of this brood-chamber be divested of its entire force of bees by revolving and shaking in the hands, that we can work for extracted honey without exposure to robbers, and with nothing like the laborious work out in the sun to which we have hitherto been subjected: nearly all of the manipulation can be done in doors. Nor is this all. It is the first system of brood-chamber arrangement by which "fixed frames" that are always solid and in position can be used; offering to the apiarist the greatest comfort and safety when shipping bees or moving them in and out of repositories, about the yard, or in handling the hives in various other ways; not subjecting the bee-keeper to the serious objection of slow and tedious manipulation of the frames, crushing of bees, and other serious loss in frame adjustment, because of discarding the lateral movement of the frames. None of these objections exist with the arrangement above described. The screw pressure used in holding the frames in perfect position, aiding in the reversibility of the cases, is at once the cheapest and most perfect arrangement for frame compression yet discovered. The method of adjustment to the bottom board, and the bottom-board to the bottom-stand, gives the hive nearly every advantage of the tight bottom hive, while it has all the advantages of the loose bottom one.

This brood chamber is particularly adapted to the break-joint, bee-space honey-board, which I invented nearly ten years ago, and on which I have a patent in combination with the horizontally divisible brood chamber. The invention consists of the bee-space in its surface, and the arrangement of the slats and openings between them, so that they break joints with the top bars and the opening between them in the brood frames below. I have for several years made these boards queen-excluding, by slipping strips of perforated zinc in saw kerfs made in the edge of the slats forming the general surface, which arrangement makes a very complete honey-board.

Any of the surplus storing cases of the day are perfectly adapted to this hive.

DOWAGIAC, MICH. Dec. 18, 1888.

Detachable Bottom-Boards; Square Joints; Wide Hives; Eight L. Frames all the Year; No Use for Inversion; A Word in favor of Oil Cloths.

DR. C. C. MILLER.

I DON'T think it improper to discuss the subject of hives, although I don't suppose we can ever settle upon a hive that will suit all. I don't even know just the hive that would suit me, but I will mention some things that I like or dislike, premising that in a different place or with different plans I might like a different hive. The subject is too large to admit of full discussion in a single paper, so I'll just make a few sallies upon different points without pretending to any order. As I have out apiaries, I must have a hive that will bear transportation well, so I must have the bottom-board fast, but it is so important, I think, to have the bottom different in winter, that I believe I should prefer a bottom-board fastened on with clasps or screws, so that in winter a space of two inches or so could be under the frames.

I want square joints, and think it desirable to have hives halved at the corners, or better still, double-halved.

I don't know what width is best. On some accounts a brood chamber measuring fifteen inches or more inside is desirable. Especially is this the case in spring, when a division board can be put in and two colonies can be put in one hive till warmer weather comes, or till they need more room. I am, however, growing toward a preference for a hive that will hold eight Langstroth frames, twelve inches or less in width, and if I had a few hives of that size I think I should try leaving them full size, summer and winter; for it is a question in my mind whether, take it all in all, we gain enough to pay for the trouble of of changing the capacity of brood-chambers at any time in the year.

If eight frame hives are used, a single board, strongly cleated at the ends, makes a good cover. If the hives are much wider I think I should prefer tin over the cover, having the cover made light and I'm afraid it would have to telescope on the hive.

Some cheap and convenient way of fastening a cover on a hive is a desideratum. Possibly the old plan used by Mr. Root—having the cover hinged on—might answer.

I don't think I want to make any provision for inversion. I don't know of any special need for it, except getting frames filled out and that can be done by having foundation come down to the bottom-bar.

If I could winter bees in a chaff-hive as successfully as they are wintered in other localities—at Medina, for instance—I should use chaff-hives, for the inconvenience entailed by their use would be overbalanced by avoiding the necessity of bringing them home every fall.

Returning to bottom-boards: mine project in front to make the alighting-board, and, as the grain of the bottom runs cross-wise, I have been much annoyed by the alighting-board splitting off. Unless there were some provision against its splitting, I would not have it project more than an inch or so.

No bevel-joints for me.

You say, Mr. Editor, "There is no excuse for raising the cover." Do you mean that you want nothing between the top-bars of the brood-frames and the cover? I couldn't endure it to be obliged to break apart the brace-combs every time I wanted to open a hive; so I must have at least a sheet of some kind between the top-bars and the cover, having a bee-space between the top-bars and the cover.

Thoroughly seasond stuff is important, and I don't know of any wood better than pine.

MARENGO, ILL., Dec. 24, 1888.

Trials of Hive Inventors; Size for Hives; Vertical Contraction Preferable; Hive Protection; Get Away Quilts; A Kick at the Shake-Out Function.

J. H. MARTIN.

THE EDITOR of the REVIEW has, indeed, a delicate task upon his hands, in the discussion of hives, but, if the writers will follow the liberal ideas he has outlined, there will be no animosity raised, and there may be closer friendships in the future.

We do not hear so much as formerly about the "coming hive." And, judging from the experience of those who have lately brought new hives before the public, there seems to be written over the door of the hive department of the Temple of Apiculture the following weird inscription:

BEWARE!

Leave all Peace Behind Who Enter Here.

If the writer of this had the coming hive completed, he would hesitate long before hurling it into the arena of contention. A new hive, whatever its merits, is sure to awaken the animosity of other hive manufacturers. And, in our discussions, if manufacturers could discuss the question with the same impartiality that the users do, there might be some hopes for an early adoption of more uniformity and the discovery of the coming hive. The users are, however, the tribunal before which the fate of these various improvements will, eventually, be decided: and though the judgement may be delayed, it is nevertheless sure to come.

Without entering into minute details, let us see what principles have been most thoroughly established.

For the most economical production of comb, or even extracted honey, a brood chamber of not far from 1000 cubic inches, with provisions for enlargement or contraction, is an accepted, settled principle: as to the methods of adjustment, the two principal, lateral and vertical, have their strenuous advocates. The writer prefers vertical because more simple and the work more rapidly accomplished, and he finds the most enthusiastic advocates of lateral adjustment can go no further than the removal of their clumsy, sticky dummies, and *then*, for surplus, either comb or extracted, adopt vertical adjustment. The vertical principle does not contract the surplus surface, and allows the use of the queen-excluding honey-board with better effect.

After we get above the brood chamber there is no principle more thoroughly established than tiering up. The side storing relic of the past has a few advocates, but they are mostly those who run a few colonies for comb honey and have time for manifold manipulation. Their occassional fusilades do not affect the great army of large producers who keep step to the simple tiering up principle.

Another principle begins to loom up, and will in the near future occupy more of our attention; it is migratory bee-keeping, or the moving of bees a few miles to catch a particular honey flow. The hive in this case will play an important part, and must admit of rapid preparation for shipment. The closed-end frame admits of this as no other can, and it seems there is to be a verification of Father Quinby's prediction that a closed-end frame would be the frame of the future.

In relation to the minor points of bee hive construction, I prefer rabbeted corners as being adapted to more firm nailing. I would not dispense with a loose bottom board, for with it a rim can be put under the brood chamber, which I regard as most essential for safe wintering in any style of hive. In cellar wintering many object to the carrying in of many colonies. The hive in weight and construction should be adapted for this purpose: and the work can be rapidly done. A person might reasonably growl over carrying his bees in and out every day. Still, the labor of carrying in ten colonies of bees each day is no greater than caring for ten cows: and the latter are cared for with no thought of complaint.

The principle that the bees need protection either from cellar or packing, has also been most thoroughly established. Chaff, shavings, sawdust, etc. are largely used for packing, but the times demand a packing more conveniently applied, and which will admit of the easy manipulation of the hive.

The writer of this is experimenting with hair felting. This material is used extensively for retaining heat in steam pipes, boilers, engines, etc. As everybody knows from from practical experience, our dumb animals are securely protected by their extra growth of hair for winter, and we humans are made most comfortable with fur gloves, and caps and hair overcoats. This felting is manufactured in thickness from one-half to one inch, and I think a bee hive enveloped in the inch felting would be as securely protected as if enclosed in three inches of chaff.

If the bees are wintered in the cellar it is a question whether this felting would benefit the colony while in the cellar. I think it would. But if wintered out of doors, or, to retain heat after setting out in the spring, it would be necessary to have an outside case. This I cheaply supply with a new manufacture of oilcloth, light and flexible and thoroughly water-proof. The advantages of such packing and covering are obvious. It can be stored compactly, and all litter avoided. Though now only in an experimental stage, I hope good results therefrom.

There is another thing we are happy to see, and that is that the progress of the age is relegating to the waste heap all quilts, rags and enameled cloth. The two former are breeding and lurking places for ants, bugs and other vermin. A simple board with bee-space is more economical in material and manipulation.

Now, on the next point, I am going to kick. The shake out principle of a shallow frame hive is a delusion and a snare. When every frame is full of honey, and weighing over thirty pounds, I defy the Editor, or any other advocate of a shallow frame hive, to *shake out* the bees. Mr Editor did you ever do it? Yea, Mr Editor, did you ever see any one do it? And, if you did once, do you think you would have any arms left if you followed it all day? Smoke will drive them nearly all out, but *shake* never, except in brood cases and cases of empty comb.

When I see the REVIEW, I hope to receive much enlightenment upon this hive question, and am not so bigoted but that I am willing to receive instructions from its many able correspondents.

HARTFORD, N. Y. Dec. 18, 1888.

The Best Hive Wanting—The Heddon Hive—The Ten-Frame L. Hive a Favorite.

OLIVER FOSTER.

I HAVE bees in about 275 modified L. hives, and in about 30 of the new Heddon hives. I have used some the latter two years. I have used the L. hives eleven years; and, during this time, I have also tried five or six other kinds.

I am like Dr Miller, in that I never saw a hive that suited me. I am inclined to think that neither the hive nor the system of management of the honey producer of the near future have yet appeared. While it is true that we already have too many different hives, until we get one that is better adapted to the honey producing specialist than any we now have, we should do all in our power to encourage invention in this direction.

Were it not for the expense of the Heddon hive, and the difficulty in handling the frames, we could hardly ask for an improvement while we follow the system for which it was intended. It is best adapted to those who produce comb honey exclusively and do not care to keep up the grade of their stock; but where a bee-keeper rears all his queens from his very best, which is very desirable, he hardly finds it praticable to "handle hives instead of combs."

Should foul brood break out in an apiary of 200 or 300 of these hives the apiarist would almost helpless, owing to the extra time it would take to make thorough examinations.

Making the brood frames shallow and spacing them at a fixed distance apart is a move in the right direction; but, in my judgement, the Langstroth method of hanging the frames in the hive, has never been improved.

The closed ends I find objectionable. If we shove them together squarely, bees are crushed between them. If we slide one down against the side of the other, and there are protuberances of honey or brace combs, bees are ground together between the projecting surfaces. I think the end bars should have bee spaces between them and some sort of projections to hold them at the proper distance apart. I see no reason why the shallow frames cannot be so made that they can be as easily handled as the L. frames and yet retain all their real advantages.

At present I prefer the ten-frame L. hive, modified as I have it, for all purposes. I think with the proper managment, as good results can be secured with less capital and labor, but the system of management must be different. I have used with the best of satisfaction the Doolittle method of expanding the brood nest in the spring so as to keep all the combs nearly full of brood. I use a chaff filled dummy two or three inches thick and large enough to fit the hive loosely all around except at the rabbets where the bees pass. I keep plenty of honey on the outside of the dummy. By this method a weak colony, which would otherwise perish, may be saved with profit. When the honey harvest comes we have the brood just where we want it, in six to eight combs, with no necessity for contraction or removal of brood. It is at this point that economy of time is of greatest importance.

From this on I follow the plan given by Dr. Miller in his "Year Among the Bees."

I can see no objection to having the brood all under one side of the super. There is an advantage: when work is fairly begun in the side of the super over the brood, turning the super half way around accomplishes the same object as tiering up, starting the familiar impetus much sooner than would be possible by tiering up.

As for winter protection, whatever is used should be independent of the hive proper. We cannot afford to be cumbered with chaff or sawdust during the busy season. The chaff dummies, however, are just the thing for

gauging the size of the brood nest while the supers are on.

MT. VERNON, IOWA. Dec. 22, 1888.

Wide Frames in Full Hives.

H. R. BOARDMAN.

A BRIEF review of my experience in adjusting sections on the hives will show that I favor wide frames in full hives. Notwithstanding, you decide in your editorial introduction that this is not the best way. And now I am going to protest against your way of pre-judging a subject. It is not the way to get the fullest expression from your correspondents. It requires some courage in a modest man (like myself) to pick up the gauntlet and espouse a cause that has already been decided. (Lost)

As you say, the two principal methods of adjusting sections on the hives are by cases and by wide frames in hives full. The case to hold sections was among the first methods employed by me to secure honey in small frames or sections. This was before I had ever seen or heard of securing honey in sections. I used small frames, nailed. I called them frames as I had never seen them used inside of large frames which afterwards gave them the name of sections. They were of the same width as the brood-frames, and adjusted in a case the size of the top of the hive. Little did I then think that I was coming so near future methods that would compete for precedence. I afterwards used these sections in the brood frames in full hives, spacing them ⅜ apart, just the same as they were in the cases. Thus you see I had the open-side sections. But there being nothing to hold the frames at a uniform distance apart, I had some little trouble in geting the combs built uniform in thickness—separators being unheard of at this time—; but, with all the imperfections of this early method, I am doubtful if I have ever been able to secure as large yields of honey by any improvement since. This might be a suggestion favorable to open-side sections. Following the use of these sections in full hives I adopted the wide section in wide frames, with wooden separators, which has given me better results, under all circumstances, than any other style of surplus fixture that I have tried. But hearing so much in favor of the cases, and that, too, from prominent bee-keepers, I was not satisfied without giving them a trial. Accordingly, I procured a sufficient number to give the matter a fair test, and put them to use by the side of the wide frames. I was somewhat elated by the results of the first year's experiment; and the next year I procured more cases, so that I had 300 or 400. My home-apiary was run almost exclusively with the cases; while, in my out-apiaries I have, after a few unsatisfactory attempts with the cases, used the wide frames almost exclusively. I can easily understand how anyone who has used either system only could prefer it; but I am at a loss to know how any practical apiarist, after giving both methods a fair trial, could abandon the wide frame system in favor of cases; especially in large apiaries or where out-apiaries are managed by hired help. The wide frames in full hives, as I use them, require less attention during the honey and swarming season than the cases.

My surplus fixtures, whether in hives or cases, are all prepared early in the season and, as far as possible, adjusted upon the hives at the beginning of the honey season. And here appears one of the special advantages of the wide frames: I feel satisfied when a hive full of sections is adjusted upon each colony that, except in rare instances, no further attention in regard to surplus will be needed until the end of the season. That is, unless a colony swarms, when the surplus is to follow the swarm.

In order to get the benefit of the case system—tiering-up as needed and only as fast as needed—I found the management quite different. The crop of surplus is frequently all gathered in a few days; and often the swarming mania breaks out in perfect madness at the same time. Now, in order to do justice by the case system, I found it necessary to make examinations of the surplus departments almost constantly; and, in an apiary of 100 colonies, at such a time, the work and care of properly adjusting the cases on the hives would keep one man pretty busy most of the time. Of course, the cases could be piled on all at once without regard to the prospects, or the progress of the colonies; but, in so doing, the principal advantages of the case are defeated. With the wide frames in full hives, at such a time, the whole at ention of the bee-keeper can be given to the swarming; and I have often found that this alone furnished enough to do and to think of without watching the progress of the surplus. So I do not agree with you that the use of cases better enables the bee-keeper to manage an apiary during a regular "honey shower", as you term it, but the wide frame system does.

There was one important result that I felt quite confident of securing by the use of the case; I thought I should be able to have the sections all finished up more closely, and not have so many left unfinished at the end of the season to carry over to the next year. But in this I have been disappointed, as much the largest per cent. of unfinished sections have, each year, been from the cases. Again, in removing surplus from the colonies I defy competition with *wide frames by hives full* by any style of surplus arrangement with which I am acquainted.

I have always taken great pains with my surplus comb honey after it has been removed to the honey house, giving it all as good a chance as possible, but the surplus in the wide frames has always shown a decided advantage in *curing* and *ripening*, in the same room.

And now I have one more imperfection to point out in the case and a corresponding advantage in the wide frame. You know, and so does every practical bee-keeper, that the partly filled sections that are to be carried over to the next season must be extract-

ed and cleaned up by the bees before they are put away for winter, and the most ardent champion of the case does not pretend that sections in cases can be extracted as readily as those in frames. I have changed sections from the case to the frame and from the frame back again to the case until it seemed to me that this alone was quite enough to suggest a preference for the wide frame system.

I use wooden separators which are all removed from the frames and cleaned of propolis; as are also the frames, and the sections that are carried over.

I shall, for the present, adjust my sections on the hives in wide frames by hives full, and use wooden separators, until I learn of a better way.

I think, perhaps, that I would use cases, but not without separators, if I had only a small apiary and plenty of time to look after it; as, under the circumstances, by putting them on with sufficient caution, not getting more surplus room than needed; there would be an economy in surplus fixtures, especially in short or poor seasons like the last three.

I have no doubt but the kind of hives used, or the locality, has something to do with the success or failure of certain methods or fixtures; and it is not unlikely that my hive is better adapted to the methods and fixtures I prefer than some other hive would be.

EAST TOWNSEND, OHIO, Dec. 1, 1888.

While we sympathize most sincerely with our modest friend, it does not seem advisable to drop the introductory editorials, or "leaders." "Leader" is a very appropriate name, as they *lead* all the discussions in the proper direction. To simply announce the special topic in advance would be insufficient; as one correspondent would discuss it from one point, and another from a different one, while it is the mission of the REVIEW to bring together the views of the best bee-keepers upon the *same* points. As we strive most earnestly to be strictly impartial and honest in the writing of our editorials, so we sincerely desire that all correspondents will freely express their views, regardless of their agreement or disagreement with our own.

We are pleased to learn, from so good authority as Mr. Boardman, that no loss results from giving the bees an abundance of room, and that from the start. We have never used wide frames in full hives, but we have been led to believe that the bees would commence work first in the lower sections, and that in completing the upper sections these lower ones would become travel-stained. If the honey flow comes with a rush, and is soon over, it is quite clear that *all* the sections will be filled and completed so quickly that none will be stained. Neither is there any difficulty in comprehending how tiering-up, with cases, *might* result in more unfinished sections at the end of the season than the plan of putting on a full hive of sections and leaving them undisturbed until the end of the season. These matters must be managed with judgement. All the advantages claimed by Bro. Boardman for wide frames in full hives, unless it be that of extracting unfinished sections at the end of the season, can be secured with cases; while they are less expensive, easier handled, quicker emptied, better adapted to feeding back, they furnish the most practical means of tiering up, and, by putting two together, their capacity is equal to a full hive.

Moisture; Diarrhœa; Etc.

G. W. DEMAREE.

WHILE reading the November issue of the REVIEW, I felt inclined to make some observations on the above subjects. Referring to the question of "Moisture;" I believe that nothing that possesses life can exist without it. It is a question then, not of *moisture* simply, but of *normality* as pertains to bees in their winter confinement. What excess of moisture, above that of normal condition, becomes injurious to bees in winter confinement? This seems to me to be the question. And I think it is safe to say that an excess of moisture is injurious to bees at all times, and especially when in winter confinement. No doubt but temperature may be so regulated as to counteract the bad effects of too much moisture, but this does not change the facts. A cellar neither too dry nor too moist, that is, in a normal condition, must necessarily be best for the health of the bees and for the convenience of the apiarist; because such a cellar is more easily managed as pertains to temperature etc. But I may refer more particularly to the effects of excessive moisture under the heading of:

SO-CALLED DIARRHŒA IN BEES.

Some of our most accurate writers on bees object to the word "Dysentery" as descriptive of the winter troubles formerly known by that name. They insist that diarrhœa is the proper term. So far as my observations go I do not see how either of these medical terms can apply accurately to a case of simple *retention* on the part of the bees; voluntary on their part to the extent of their powers, to avert destruction as a resultant filthy condition of the brood-nest, and wherein, aside from the deadly effects of the filth, a simple discharge brings about a permanent cure. I am not to be understood as saying that long *retention* may result in poisoning the system, but no physician would call such a condition diarrhœa or dysentery. The retention of the fæces when in confinement is not a disease, it is natural with bees. Did

they not possess the power of retention to a very high degree, climatic causes would cut down their limit of operation to a small portion of the earth's surface. It is clear, then, that confinement necessitates retention of fæces; and must necessarily be at the bottom of all causes. Still, it is a fact that one colony will hold out much longer than another, and this proves that a number of causes contribute to aggravate the trouble. When bees consume pollen from any cause, it helps to load the intestines; and, as Messrs. Dadant say, it helps to make the retention of the fæces more difficult.

I know by experience and experimentation that, aside from confinement, a cold, damp atmosphere is, perhaps, the greatest *cause* of trouble. My experiments of last winter showed that my cold, damp, vegetable and fruit cellar would, in the short period of ten days, bloat the bodies of the bees; and I could reduce them to their natural size in about six hours by subjecting them to a high temperature in my office with no obstruction over the tops of the frames except a wire cloth cover. My experiments taught me that bees may "unload" by exhalation, in which case they manage all the pollen they may have consumed. That bees are under the necessity of exercising their powers of retention under certain conditions, when no pollen is near them, I know to be true; and this destroys the pollen theory, for its advocates, those who fully embrace it, assert that pollen is the *one* cause. On the 17th of last August I shipped, to an amateur bee-keeper, two extra fine queens. His P. O. is a fourth class concern, and the package was dumped into a drawer and forgotten by the P. M. until I traced it up at the expiration of 45 days. The package was returned to me unopened, and, upon examination, I found that the bees had consumed every grain of the soft candy and died apparently of dysentery. (?) Both cages were bedaubed with the "signs;" one of them badly. These bees were caged at the close of our summer drouth at a time when brood rearing had ceased and when little pollen was being used. The worst case of so-called diarrhœa I ever saw I discovered in a colony that had been fed on pure syrup late in November. After a long confinement they came out for a cleansing flight, and many of them came out dragging their bodies, as it were, and voiding, upon the front of the hive and on the alighting board, a mucilagenous, dirty-looking fluid, without the yellow stain of pollen. These cases, and those cited by Mr. Doolittle and others, are important because they disprove the pollen theory.

Now a few words in reply to my friend, the editor of the REVIEW. He asks what it is that the Judge of all the earth has furnished that causes dysentery? Here it would seem that friend Hutchinson believes that all suffering and misfortune come through or by reason of natural law. I have always thought that suffering and misfortune are the results or penalty of violated law. Bees are natives of a warm climate; and, if moved to a cold climate, with no compensation by artificial means, they suffer the penalty of violated law; and the penalty may be dysentery, or death in some other form. Reverse the matter friend Hutchinson, send your bees down to Kentucky, supply them with plenty of natural stores, and if a single colony out of 100, yes, or 1,000, is injured by dysentery it will be the only one ever known to perish from that cause in this part of Kentucky. Why the difference? The answer is *climate*.

CHRISTIANBURG, KY., Dec. 2, 1888.

It would seem that a warm, dry atmosphere in a bee repository, by facilitating the processes of respiration and perspiration, would lessen the likelihood of the bees' systems becoming clogged; but when their intestines become loaded—packed—with pollen the bees cannot "sweat it out under their arms."

While Mr. Demaree is probably correct in regard to the inaccuracy of the terms employed to designate the condition that arises from a long retention by bees of their fæces, it is doubtful if a more desirable term could be found; and certain that its adoption could not be secured. There is one comfort, a brand new, scientifically accurate cognomen would not rob this trouble of its terrors.

For years Mr. Demaree has combatted the pollen theory, pleading for natural stores. But now, when hard pressed by the force of stern, logical reasoning, he, in the excitement of defense, inadvertently lets fly a shaft of truth. He says: "Bees are natives of a warm climate; and, if moved to a cold climate, *with no compensation by artificial means*, (Italics ours. ED.) they suffer the penalty of violated law; and the penalty may be dysentery or death in some other form." This is *exactly* the ground taken by the advocates of the pollen theory. It is well known that bees in warm climates do not suffer from the retention of their fæces, simply because the frequent flights allow them to unload the intestines. In higher latitudes, where they are sometimes confined for months and months, their intestines become loaded to repletion, and disease is the result. Time and again has it been shown that the mass filling the intestines is almost wholly pollen; but the moment it is suggested that it is the consumption of pollen in confinement that causes dysentery, a few will hold up their hands in holy horror, exclaiming: "The Judge of all the earth makes no mistakes. In his all-seeing wisdom He has provided pollen and honey as food for bees, and bees feed on the food provided for them without harm."

The + Bee-Keepers' + Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor & Proprietor.

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FLINT, MICHIGAN, JANUARY 10, 1889.

CROWDED OUT.

That is what has happened to several excellent articles. The review that we hoped to begin, in this number, of Mr. Jones' series of articles on "Practical Bee-Keeping," will have to wait until next month. This subject of bee-hives is a large one, as, with all the space that has been given to its discussion, but little more has been done than the shedding of sufficient light to enable us to see in which direction the apicultural hive-finger is pointing. But that is something.

SECTION SUPERS AT THE MICHIGAN STATE CONVENTION.

Section cases were well represented at the last Michigan State Bee-Keepers' Meeting. There was the side-opening case of Frank A. Eaton. H. D. Cutting exhibited his side-opening case. There was a case from Dr. Tinker. W. D. Soper showed a T. super in which the wood separators were about ¼ inch thick. This places the sections so far apart that they may be of the same width all the way round. Our friend Cobb of Grand Rapids was present with his case which may be adjusted to any size, inverted by the case or by the single frame, or the outside rows changed to the inside.

VENTILATION—COST OF QUEENS—CONTRACTION —THE POLLEN THEORY.

We have again to thank Bro. Hill of the *Guide* for his interest in the REVIEW and its topics of discussion.

First, friend Barnum, of N. Y., sums up, in a very fair and sprightly manner, the views of our correspondents upon "Ventilation." Then the editor remarks that, as the result of theorizing, bee-keepers went too far a few years ago in the matter of ventilation—gave too much—and now there has come a re-action, and there is danger of their going too far in the opposite direction. We agree with Bro. Hill in thinking that too much ventilation was given in the past, but differ in thinking that the views expressed in the October REVIEW are the result of a re-action. They are conclusions resulting from actual practice, instead of from theorizing, and, as such, will stand the test of time.

The editor of the *Guide* objects to our suggestions in regard to preventing the accumulation of pollen in the brood-nest in the fall. He says queens cost so much that we can't afford to have no old ones; and that contraction of the brood-nest is an objectionable feature. Queens are not so very expensive when reared in the home-apiary and fertilized in the colonies of which they are to become sovereigns. Some of our best bee-keepers advocate keeping only young queens, and this upon other grounds than the one under discussion. "Contraction" is a debatable subject, but, as we expect to make it the special topic of an early number of the REVIEW, we will postpone all discussion upon this point until then.

Mr. Hill also has a few words to say about the "Pollen Theory;" but he does neither it nor its author justice when he intimates that Mr. Heddon's bees, fed on sugar, died of dysentery. Mr. Heddon lost sugar-fed bees, in an old cellar, from *cold;* but there were no signs of dysentery *whatever.*

MISTAKES IN BEE-KEEPING.

It is pleasant to tell of success. Mistakes are mentioned with reluctance. Yet, these acts may be of equal value for imparting information. Mr. J. M. Smith, of Wis., is noted as a horticulturist. The crops of berries and cabbages that he raises are something wonderful. His contributions to the press are valuable; but we never read one containing more information than the one in which he recounted the *mistakes* of his horticultural life. We can easily imagine with what pleasure and profit we could read similar "confessions" from our most successful apiarists. We believe that our readers are of the same mind, and we request that each bee-keeper who reads this will look back over his apicultural life, re-calling the mistakes, and if any are found, the publication of which would lead others to avoid them, let him send us an account of the matter, and we will gather together these accounts, and publish

them in the Feb. REVIEW: the special topic of which is to be: "Mistakes in Bee-Keeping." Remember this: the class of mistakes we wish to describe are those that are now being made, or likely to be made: a publication of the mistakes of a dozen years ago, mistakes that have long since been corrected, would be of little value. Should there be any in our ranks who have made no mistakes themselves, they may be able to point out the mistakes of their less fortunate brothers, and such accounts will be equally welcome. As a commencement, we will say that *our* greatest mistake has been in keeping too few bees. The next in order is that of rearing queens instead of devoting our whole energies to the production of comb honey. In our locality there is more money in honey than in queens, and we have known it for some time, but there is a fascination about queen-rearing that we have not yet been able to resist—may never be able to. We believe that many bee-keepers are now making the mistake of not keeping enough bees. We say, keep as many as it is profitable to keep; using such hives, fixtures and appliances as will allow the apiary to be managed with the least labor. There is another mistake made by many bee-keepers, that of judging by *results alone*. As that excellent bee-keeper, Mr. R. L. Taylor, said, in the April REVIEW, "The greatest actual results do not prove the method of management by which they were produced to be the best. Time, and labor, and thought, and care, and material, and capital, are all money, so the greatest results numerically may be obtained at a loss, while the least apparent result may yield a profit."

THE CHARACTERISTICS OF A GOOD HIVE.

Before saying one word in the way of summing up on the hive question, we wish to call attention to the fair, honest and gentlemanly way in which this discussion has been carried on; not only in our paper, but in the *Apiculturist*. If *bee-hives* can be discussed so harmoniously, we need not hesitate for fear of unpleasant strife, to take up any topic.

While there will probably always be users and advocates of large hives, of chaff hives, and of hanging frames, it is evident that the present tendency is toward shallow, *fixed* frames; small brood-nests; and a system of management that requires but little if any frame manipulation. With such hives the bees must be wintered in the cellar or the winter protection be such that it can be removed in the summer. Such hives allow the principle of tiering up to be carried to its highest perfection: contraction of the brood-nest is equally perfect, the top of the brood-apartment always being the same size; in short, such hives allow of "short cuts," of a sort of wholesale management that an attempt to follow with other hives brings in a whole lot of loose pieces and an endless amount of manipulation. It is pleasing to notice the unanimity with which beveled corners, telescopic joints, cloths and quilts, and fast bottom boards are being discarded. We wish to notice in detail a few of the points mentioned by our correspondents. Mr. Foster objects to the Heddon hive because it is more difficult to remove and introduce queens. We have never used a hive in which this can be accomplished more readily, and are at a loss to understand how Bro. Foster arrived at such a conclusion. Next he objects to it because of the difficulties attending examinations for foul brood. Admitting this to be true, what would our friend think if a hive were recommended upon the ground that: "It was an awful good hive to manage foul brood in." We would suggest that Dr. Miller make his bottom boards with the grain running in the opposite direction. A cleat across the front end will prevent warping. The Doctor also says that he would have something between the brood frames and the cover. He can't endure to break the brace combs every time he opens a hive. As a general thing, our honey boards are left on the year round, when, of course, there is no trouble in removing the cover. Whenever it is necessary to open the brood-nest, and this is seldom, then the honey-board must be removed; and its removal is essentially the same thing as removing a cover when no honey-board or quilt is used. We insert the blade of a pocket knife under each edge and give it a little twist to break the propolis, then the honey-board is given a little twist to break the brace combs, and off it comes. We don't know how our friend, the Doctor, removes quilts, but whenever we have witnessed the operation it is something as follows: Turn up one corner of the quilt, blow in a little smoke, turn it back a little farther, blow in a little more smoke, set down the smoker, strike a bent-over-straddled-out-at-

titude, then carefully, slowly, gingerly, peel off the quilt: every snap, and sputter, and tear, of the propolis and brace combs, as they give way, jarring and irritating the bees—why, we could take off three honey-boards to one quilt, and with less irritation to the bees. Perhaps our genial friend can do better with quilts than we can: we think he could, because we have never used them—seeing others use them satisfied us. J. H. Martin makes a few inquiries about the "shake-out" function. No, Bro. Martin, we do not walk up to a hive, grasp a super and proceed to shake out its inmates without first driving down most of them with smoke. We then *shake out* nearly all that remain: in short, a super of honey for the extractor is freed from bees in exactly the same manner as we perform the same act with a case of sections.

We have still on hand several articles upon "Bee-Hives," some of which may appear in the Feb. REVIEW; in the meantime, if there are any who feel that the subject has not been exhausted, or that it has not been fairly handled, let them remember that the columns of the REVIEW are always open to any amount of logical reasoning; and let us *all* remember that the general purpose cow, the general purpose horse, the general purpose sheep, the general purpose fowl, the general purpose bee, the general purpose hive, the general purpose *anything* can never successfully compete with the *special* purpose article.

EXTRACTED.

"According to Nature."—Advantages of Shallow Frames.—Specialization.

BY A STRANGE coincidence the editor of the REVIEW and the *Apiculturist* both hit upon "Bee Hives" as a special topic for their January issues. This number of the *Apiculturist* is most excellent, and contains several articles that we would be glad to copy entire, but some short extracts from a few of them is all our space will allow.

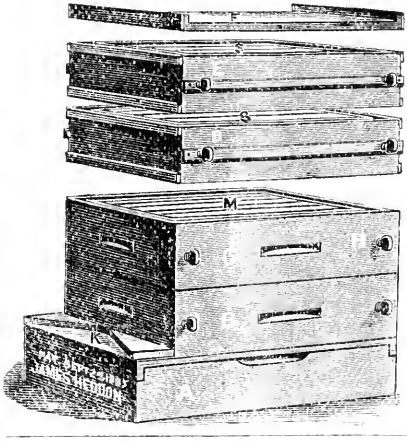
"Modern apiculture has been called unnatural. That is not the way to put it. By a *seeming* violation of Nature, man actually turns her to his advantage. He flattens the brood nest. Then the bees, to retain the natural form, fill the frames to the top bar. With the upper surface of the brood-cluster thus enlarged and pushed up to the top bar, the bees will enter the supers more readily. Bees work best nearest the cluster, and the only way to get rid of the honey they will store in the upper part of the frames, is to *flatten* the brood-nest. As a rule, this arbitrary shaping of the brood-nest will not interfere with brood production. If the queen cannot do as she would like, she will do the next best thing—go into the farthest verge of the hive if necessary. In cold weather bees draw up into a compact cluster, which six inches of depth accommodates. . . . . Six years of experience has taught me that $1\frac{1}{2}$ inches space per frame is too much. An inch in thickness for each comb and a bare bee space between them is right if we wish the combs filled with brood to the top bars."—*Geo. F. Robbins.*

"I began bee keeping with frames 16 inches deep; have gradually cut them down to $5\frac{3}{8}$. In doing so I have met numerous advantages and no very serious disadvantages. I think I have gone far enough, but do not care to go back. . . . . I like these shallow hives with frames at fixed distances, because by their use nearly all the operations of the apiary may be carried on without handling frames and without the use of superfluous fixtures. They can be carried, hauled or shipped from place to place without any fear that the frames will slide together, killing bees and queen, or producing crooked combs. They give that control over the size of the hive and the disposition of the stores that in other hives is only to be gained by the use of a multitude of appliances and the expenditure of much more time. No doubt some forms of such hives have been somewhat overpraised and advantages claimed that are not completely borne out in practice, but the principle is a valuable one and the shallow, fixed frame hive has come to stay. . . . . In wintering outdoors in these hives I use a rough outer box about eight inches larger each way than the hive, and pack with leaves. So prepared they have wintered bees even better than deeper hives under the same conditions. A great deal of paper and ink have been wasted in the effort to prove that bees ought to winter better in deep hives, but theory is one thing and fact another. My experience has been that bees wintered better in Simplicity frames than they did in deeper ones; and now actual comparison, side by side, shows that they winter still better in a shallow frame. . . . . Our business is not what it once was. In years of plenty we are met by a host of competitors that, ten years ago did not exist. . . . . The only chance for the specialist is in greater specialization. He must have his methods so simplified, so systemized, and his appliances so adapted to their purposes that he can do a larger business than now and yet neglect nothing. The use of the shallow hive, with frames at fixed distances is, I think, a long step in this direction."—*James A. Green.*

M. A. Kelley argues for closed end, standing frames. Z. T. Hawk says that specialists are a bar to the adoption of a "standard"

hive or frame. The L. frame is the next thing to a standard, but a large and growing number of apiarists believe that a frame of some other size and construction best answers their special needs. He is one of this number, preferring standing frames 7 inches deep and 16¾ long, used in a case. J. E. Pond stands up for the L. frame in a double walled hive. G. H. Larrabee uses and likes the L. frame and chaff hive, but some of the reasons given in favor of the chaff hives are not very weighty. Eugene Secor says that, all things considered, the eight frame L. hive is the hive for him. J. M. Hambaugh prefers large hives. The bees swarm less, and he gets more honey. G. W. Demaree explains the beauty of the tiering up system, with shallow supers. Dr. C. C. Miller favors the eight-frame L. hive. R. L. Taylor describes the "New Heddon Hive" and its method of management, in substantially the same manner as he does in this issue of the REVIEW, but, *mind you*, he doesn't *call* it the Heddon hive, he mentions it as the *sectional hive*. Considering that this hive has been written about, and described, and re-described, yes, and almost quarreled over, for the last two or three years, it is a trifle amusing, to say the least, to read the following from the editorial pen :—

"Mr. Taylor's opinion of what constitutes the best hive differs very much (?) from the other ten whose views are found in the list. If I understand the principle and construction of the hive as described by Mr. Taylor, it does not seem to me that it would do for general use. *However, we must credit Mr. Taylor with presenting something new (?) in bee-hives.*" Italics and ?'s ours.—ED.



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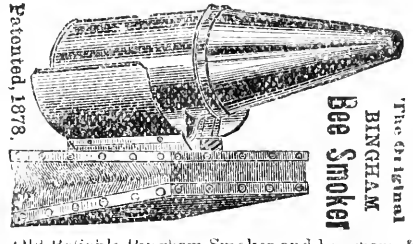

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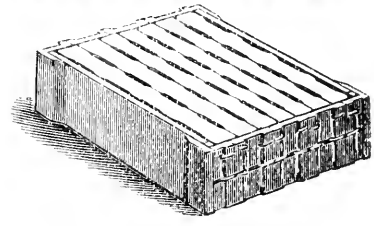

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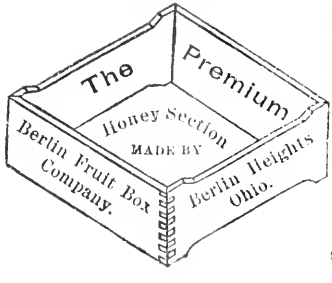

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THE BEE-KEEPERS' REVIEW

VOL. II. FLINT, MICHIGAN, FEBRUARY 10, 1889. NO. 2.

Too Large and Hasty a Venture with Cyprians and Foundation as the Result of Undue Confidence in Our Leaders.

E. M. HAYHURST.

FRIEND HUTCHINSON:—If I were to comply with your request, and recount my mistakes as a bee-keeper, for only the past five years, you would have trouble to find room for my paper. Alas! poor, weak humanity! How easy it is for us to look back and see how much better it would have been to have done thus, and so, instead of doing as we did.

Perhaps the greatest mistake I have made as a bee-keeper has been placing too much confidence in the judgment of our leading authorities, and not carefully experimenting for myself on a small scale first, before adopting their plans or suggestions. The latter course would have saved me some severe losses. In fact, I have met with such great disappointment in this way that I am likely to go to the other extreme, of being too incredulous.

As an illustration, take the Cyprian bee craze. I bought one of friend Jones' imported queens, and raised a number of fine queens from her. The first part of the next season I raised all my drones from these queens, so that nearly, if not quite all, of my early queens were mated by pure Cyprian drones. Of these queens I sold over three hundred Cyprians and about four hundred Italians, before I discovered, just as swarming commenced, that the Cyprian bees were the most vicious and vindictive stingers, instead of the "gentlest bees in the world," as had been stated, in substance, several times, over Mr. Benton's signature. So, right at the beginning of my heaviest trade, I had to stop nearly all shipping, take time to destroy all Cyprian drones, and raise Italians in their stead; also throw away hundreds of mature Cyprian queen cells, and re-stock entirely with Italians. The direct loss to me was over $350.00 in cash, besides contingent losses amounting probably to nearly as much more, saying nothing of the disappointment and inconvenience of my kind patrons, and the wear and tear of my own temper (no small consideration), I tell you I *was* in a "stew" for about six weeks. I cannot think of that time now without a shiver. Nearly all of this loss and vexation might have been saved if I had been a little more cautious. It would have been all right to have gotten a Cyprian queen and tried this variety—my own interests required this—but I should have carefully tested them myself before raising so many for the market. I now have no desire whatever to invest in any new race or strain, preferring to hold to the honest, steady-going Italians.

At a time when wife and I felt as poor as Job's turkey, and could ill afford the outlay, I sent to Bro. Root for over 100 lbs. of foundation. This was at the beginning of the foundation history. If I remember correctly, Bro. Root stated that his foundation was "*exactly worker size.*" I did not measure it, but put the whole lot into brood frames, and as as rapidly as possible gave them to the bees. I was surprised to find that the queens avoided the combs thus made, not laying an egg in them as long as they could find any unoccupied natural comb. I afterwards was greatly disappointed to find about as many drones as workers produced in them. By applying the rule, I discovered that the cells were neither worker nor drone size, but about half way between. All this big stock of combs was utterly worthless for the purpose I wanted them, and had to be melted and re-worked. How much more sensible it would have been if I had listened to Bro. Root's oft-repeated advice to his readers to go slow and experiment, buying only a few pounds of the foundation and carefully testing it to see if it were suitable for my purpose. But in recalling this bit of experience, I have this *immense* satisfaction: I rather got ahead of Bro. Root *that* time. The one lesson settled me; but it took him several years to learn that thirty cells, instead of twenty-six or twenty-seven, to each six inches was the natural size of worker comb, although I tried hard to convince him at the time.

By these and many minor crazy speculations, I am learning that it is best for me to observe the rule so often suggested by most of our best writers, namely, to demonstrate by careful experiment whether the ways given by them are suited to my ways and circumstances, before adopting them extensively.

By the way, where would we, the rank and file, be, were it not for the noble band of leaders, such as Langstroth, Root, Miller, Cook and others, who have so fully and almost gratuitously given us the benefit of

their costly experience. Without their help I would never have made a success of bee-keeping.

As I look at it now, it is a mistake for us to set our bees out of the cellar early in the day. For this reason: When they are taken suddenly, after a long confinement in the dark, cool cellar, into the warm, dazzling sunshine, they become so eager to get out of their hives, that they only slightly mark the location; and sometimes they will congregate in great numbers in a few hives, thus greatly weakening other colonies. One season I had a number of colonies nearly ruined in this way. Last spring I carried the bees out in the evening. That night the weather turned cool and they did not have a chance to fly for several days. But when they did, they started out gradually and in a *natural* way, carefully marking their locations; and I never had my bees in better shape than they were then.

KANSAS CITY, MO. Jan. 15, 1889.

Bee-Keeping no Bonanza—Reserve Funds Needed — Proposed Legislation Not Understood—Plans That Fail—Poor Queens.

DR. C. C. MILLER.

FRIEND HUTCHINSON:—Yours of Jan. 7 received. Your selection of "Mistakes" for Feb. REVIEW is an excellent one, and your selection of me to occupy that number and fill it with mistakes does credit to your judgement. In case the matter I send is found more than the February number will hold, you can add extra pages or run it over into March.

I made the mistake of supposing that I could make more money than I have done at raising honey.

I made the mistake of supposing that a year of poor yield in honey would bring up prices where they were a few years ago, when I could readily get 22 cents or more for all the honey I could put on the market.

I made the mistake of supposing that a man with a fair knowledge of bee-keeping and with enough ahead to carry him through one year, could safely give up all other business and depend entirely upon his bees for a living. An entire failure for the past two years, and a partial failure for the two years preceding, show that it would be less of a mistake to consider it necessary to have three years living ahead before giving up other business.

I made the mistake of supposing that the proposition of a measure intended for the benefit of bee-keepers and the public at large, would meet the general approbation of bee-keepers. I think *they* made the mistake of supposing that the measure was intended to be selfish, unfair and restrictive, and they in their liberality wanted nothing to hinder any one and every one from entering the ranks of bee-keepers.

After seeing how anxious they were that every one should be a bee-keeper, I made he mistake of supposing that they would be prompt in coming forward to the defense of any one in danger of being driven out of the ranks, but out of the thousands of bee-keepers only a few hundreds are willing to pay the small sum of one dollar each for the protection of their brethren, as shown by the reports of the Bee-Keepers' Union.

Several times I have studied out plans that I thought would work well with bees, and had such confidence in them that I did not wait to test them on a small scale, but put them in use on a large scale, and the plans didn't work out among the bees just as they did in my head, and I lost by it. It was a mistake not to try it first on a few hives, instead of on a hundred.

I have made the mistake of raising some very poor queens by giving the bees no unsealed brood whatever, except some just hatched, or eggs alone, and then supposing they could not raise queens from anything but very young larvæ. As a matter of fact, they are very likely in such a case to raise some queens from larvæ entirely too old. First they start some that are all right from part of the young larvæ, and the remainder of the young larvæ are continued as workers. In two or three days more they take a notion to start some more queen cells, and they may take that notion every day as long as they have anything unsealed. The remedy is to destroy all unsealed larvæ after 24 or 48 hours that have not already been started as queens—at least, that's one way of remedying it.

The idea that I could easily fill up a whole number with mistakes must have been a mistake.

MARENGO, ILL. Jan. 10, 1889.

Too Few Bees—Overstocking—Treating Foul Brood—Too Large Hives—Planting for Honey—Editorial Errors.

JAS. A. GREEN.

THE familiar adage of Josh Billings, that "Eggsperience is a good skule, but the tuishion is purty hi," shows the estimate the world has always placed on this way of acquiring knowledge. It is not the successful experience that is expensive, but the mistakes.

True, there are exceptions. Often an apparent success is proven by its results a costly failure. But the lessons that sink deepest into the mind are those of defeat.

We may, if we will, learn almost as much from the experience of others as from our own, and at much less cost. This is a practical age, and it is one of its special blessings that in almost any branch of industry we may so easily and cheaply learn from the experience of others what would cost us so much more to acquire from our own. So the topic chosen for discussion is a good one, and I trust will prove profitable.

With the editor, I am ready to confess that I have been making a great mistake in not keeping enough bees. With the appliances we now have one man can profitably care for a great many more bees than I would have admitted five years ago. In the

present condition of our business it is imperatively necessary for those of us who make our living solely by bee-keeping to increase in some way the net profit, if we would receive an adequate return.

To my mind, the only feasible way of doing this is by increasing the amount of business done. I have been aware for several years that I was not keeping bees enough, but with foul brood menacing me at every step, cutting down my numbers and making my work doubly arduous in almost every direction, there was little incentive to add to what might have to be destroyed. I am happy to say that I am now through with the pest, no signs of it having appeared the past season.

Right here I made a serious mistake in following the advice of those who taught that the disease could be cured simply by medical treatment. Costly experience taught me that safety lies only in the destruction or complete disinfection of hives, combs and honey.

Another mistake I have been making is that of keeping too many bees in one place. This decision is forced upon me against my will and contrary to experiments I once thought conclusive. Seasons and localities differ, but I now think that, taking the average of seasons, my locality will not profitably support over seventy-five colonies, and I may find a less number more profitable. By this I do not mean that this number will exhaust my field; but simply that I will get enough more honey to pay for dividing any greater number into two apiaries.

I have at various times met with loss from not having enough material made up ahead. As the fate of the battle may depend on the reserves, so the presence or lack of material ready for immediate use, may mean to the bee-keeper all the difference between success and comparative failure. Believing that bees will draw out foundation much quicker and better when it is freshly made than after it has been exposed to the air, even for only a few weeks, I have always tried to have my foundation made and placed in the boxes as short a time as possible before I expected it to be used. While I still think the fresh foundation much superior, I do not think the advantage sufficient to pay for the worry and chance of loss incurred by being obliged to make foundation and put it into the sections just before or during a honey flow.

In years past I am sure I lost a great deal of honey by using too large hives. These large hives, it is true, would sometimes show very large results when the colony had a prolific queen and did not swarm; but smaller colonies, or those newly hived, would show but small results compared with what might have been secured by proper contraction. On the other hand, I think I have lost heavily by improper contraction. In this locality we generally have a honey flow in September. Frequently this is the best of the season. To prepare for this, queens should be given ample room as soon as the early yield is over, and every effort made to build colonies up as strong as possible for the fall harvest. Because of this fall yield, too, I think I have done wrong in trying to prevent swarming as much as I have. Perhaps this was all right with the hives I once used, but with hives properly contracted at the right time, a honey flow of this character can be most profitably managed by allowing a moderate increase.

An error into which I never fell to any great extent is that of planting for honey. At one time I furnished neighboring farmers with seed buckwheat free. I soon found though that buckwheat and heartsease bloomed at the same time. Whenever these little patches of buckwheat yielded honey, so did the hundreds of acres of heartsease that cost me nothing. Moreover, the heartsease honey was so far superior to that from buckwheat, that I was not long in deciding that I would much rather not have any buckwheat planted near my bees.

When the Chapman honey plant was brought before the public, I lent myself anew to the delusion of planting for honey, sufficiently to try it on a small scale, but unless it turns out better the coming season than I expect, I will never bother with it again.

These are some of the most important mistakes I have made recently in bee-keeping. I trust their recital may be of value to others in enabling them to avoid these or similar errors.

Addenda—If the Editor please. As to what I consider the mistakes of others—such, for instance, as doing away with foundation in the brood-chamber, publishing favorable reports on feeding back, artificial comb, &c.—perhaps I had better keep still or I might get myself into trouble.

DAYTON, ILL. Jan. 18, 1889.

Nearly 3,000 copies of our little book on "The Production of Comb Honey" have been sold; and we have yet to learn of a person who has failed when *faithfully* following its teachings in regard to the non-use of full sheets of foundation in the brood-nest when hiving swarms. Friend Green, you will do us all a kindness by giving the details of your failure. If you have also failed in "feeding back," tell us about that, too. About artificial comb, see editorial columns.

Bee-Keeping a Real Business — Too Few Bees — Complicated Fixtures — Figuring Profits—Following Nature—Too Limited Experiments.

JAMES HEDDON.

IT SEEMS as though the genii must aid you, friend Hutchinson, in selecting those subjects for discussion which will prove of the most value to the practical bee-keeper. This one, "Mistakes in Bee-keeping," cannot be excelled, from that point of view. But about the first thing you do in your introduction is to steal all of our best thunder before we begin. But you say you don't want us to deal so much with the mistakes of the past as with those of the

present. Now, have not you forgotten that the mistakes of the past with us old specialists are the mistakes of the present, and perhaps of the future, with some of your readers? But this will do for the overture, and we will commence with what we believe to be the crowning mistake among bee-keepers, namely, that of looking upon the business as a kind of royal road to wealth: or, at least, a good living, with little labor, and, some believe, little brains, after they have once "caught on" to a few secrets. Honey production will be successful only with those who are wide-awake, both mentally and physically, and are best adapted to the pursuit.

Second: Keeping too few bees has really been quite a great error in the past, and will undoubtedly prove a great mistake with many in the future, if we ever have a good honey year and good prices.

Third: A terrible mistake is in adopting methods and implements which require much time and care in manipulation. The successful honey producer, in the future, will be found among those who use hives and lesser implements which can be successfully manipulated instantly.

Fourth: Another common error, and I believe I was the first one to point it out, some ten or twelve years ago, is in computing income from a hive or colony, or from the number of pounds of honey and price per pound. More than a dozen years ago, in a convention at Kalamazoo, I delivered nearly these words: "Now that I have found a field well stocked with honey resources, and with no other apiarist with which to divide these sources, how can I, with the least capital and labor, secure from this field the greatest amount of surplus honey, in the nicest marketable shape?" That is the question, and all other propositions not relating directly thereto are mistakes.

Fifth: A most common error is endeavoring to adapt hives to bees, to such an extent as to almost totally ignore the adaptability of the hive to the bee-keeper. Some of the laws governing the instincts of bees we must not violate. But scores of supposed necessities to these instincts are just as well violated, so far as the bees are concerned, and ever so much better so far as the bee-master is interested.

Sixth: One of the grossest and most expensive mistakes made by bee-keepers is in taking for the basis of their reasonings the idea that they must follow nature in order to procure the best results from bees. If nature showed a high degree of intelligence, and with that intelligence a special desire to create honey for the grocery store, the matter would be different: but as we know that certain violations of nature's laws, as we call them, have changed the little South American root into the fine Peachblow potato, the little bush hens into our elegant Plymouth Rocks and Cochins, the wild pony into the standard bred horses of to-day, and so I might go on through the vegetable and animal world, so we shall never have the best success until we learn just where we can advantageously, to a certain extent, cross nature's methods: transplanting them with those of man's intelligence (which, by the way, is also a part of nature), and bring about the splendid results with bee-keeping which has been brought about with other lines of animal and vegetable life.

Seventh: Another fatal mistake and one common with beginners in bee culture, at all times, is jumping at a conclusion that they can very readily make a great improvement upon some invention or device of older and more experienced bee-keepers. Well do I remember how myself and others went right at it to improve the Langstroth hive, and the first five or six alterations I made damaged the hive every time. Not until I had been a specialist ten or twelve years, and had made all of these mistakes, was I able to make even a slight improvement. Every bee-keeper should always be looking for improvements, but his modesty and good sense should teach him not to expect to find them until he knows considerable about the business, and when he thinks he has it, experiment very carefully, and repeat the experiments, before he flashes his new conceits upon the world.

Eighth: Egregious mistakes have been made, and erroneous conclusions arrived at, through experimenting on too small a scale. There are certain kinds of experiments which will demonstrate truths just as well upon a small, as upon a large scale; while there are others that nothing but a large scale and repetition of experiments will convey any definite knowledge to the experimentor.

Now, Mr. Editor, I have written about just a few mistakes, but I know that others will write about many that I have omitted, and no doubt to better effect than I could do, therefore I will close with what I have given above, hoping and believing that I shall receive more than I can give upon this subject.

DOWAGIAC, MICH. Jan. 10, 1889.

"Too Many Irons."—Lack of System.—One-Piece vs. Four-Piece Sections.

OLIVER FOSTER.

PERHAPS the greatest mistakes I am making are in getting "too many irons in the fire," in not using more forethought on my work, and in not being more systematic and methodical.

Where one has several branches of business in connection with bee-keeping, the demand for system is increased, while the difficulties in bringing it about are multiplied.

Those who make an exclusive specialty of comb honey, or of extracted honey, or of queen rearing, or bees by the lb. or supplies, can be very systematic about their work, especially if they settle down on some method and do not try to improve it. But those who, like myself, combine all these branches and are constantly experimenting on all lines and changing plans, often find the most carefully planned system demoralized.

My aim is toward a general plan that may be constantly amended without destroying its symmetry.

With a view to settling the question raised in the Dec. REVIEW as to the comparative strength of one-piece and four-piece sections, I asked for and received samples of the four-piece sections as used by the editor of this paper.

They are beautiful white poplar sections, the best I have seen. I think I venture nothing in saying that better four-piece, dovetailed sections cannot be made.

I concede that they are a little nicer looking than the basswood, but the fact that the honey does not look as white in them, offsets, to my mind, this advantage.

To test the strength, I hung the two samples of dovetailed sections over a horizontally projecting end of a 2x2 inch strip of wood and proceeded to hang weights from the centre of the bottom bar. They each pulled apart at 12 lbs. weight.

I then took three of my basswood one-piece sections (not selected), from a box where they had been made up and drying all summer. I nailed the one dovetailed corner and hung on weights as before—the weights being nails dropped into a pail which was suspended from the bottom bar of the sections by a hook.

One V groove corner gave away at 22 lbs. The other two sections supported a weight of 41 lbs. each, when the bottom bars broke in the middle.

What this has to do with "mistakes" I leave the reader to decide.

MT. VERNON, IOWA, Jan. 26, 1889.

Friend Foster suppose that, instead of hanging up a section on a peg and seeing how heavy a weight it will sustain, we try and see how far we can press it "out of square" without breaking it. Don't you see that such tests as these are of little value? The proof of the pudding is in the eating; so the proper test of a section box is its legitimate use in the apiary, the honey-room, and the market.

Non-Specialty.—Too Great Haste for Increase.—Too Much or Too Little Manipulation.

R. L. TAYLOR.

THE SUBJECT you have chosen for the February REVIEW is a very interesting one, and no doubt the discussion of it will prove very profitable. Lack of time prevents my taking such part in it as I would desire.

The point you make, that of keeping too few bees, is a good one; but you will observe that it is aimed straight at the non-specialist. Nevertheless, it seems undeniable that there is great economy in having as few things as possible to do and as much of them as can be managed. The per cent. of cost in doing a small amount of business in a given line is, as a general rule, much greater than in doing a large amount, and very frequently makes all the difference between success and failure; and, moreover, time is not long enough to do everything, nor to learn everything. He who is strictly a non-specialist is much of a slave. He has something to do every week of the year and scarcely gets time to lift up his head and look around to see what he is accomplishing and how he is doing his work. He does not get time to love and take pride in anything which, like a quarry-slave, he is driven to do. He does not work long enough at any one thing to learn to take delight in it. Everyone has the largest success as a specialist. Terry is known the world over because he is a specialist in the production of that plebian tuber, called the potato; the name of Cook is familiar everywhere because nothing avails to turn his eye from the one thing—entomology. There may be excuse for having many irons in the fire for reasons of *taste*, but none for reasons of *profit*.

But this very argument is perhaps likely to lead to the commission of another mistake which is often made by the enthusiastic and ambitious novice, that of attempting to increase the number of his colonies too rapidly. I suppose no other mistake is so disastrous as is this on account of its frequency and results. To the beginner this is very tempting ground, and numerous instances have come under my personal observation where from too much dividing all have been lost during the succeeding winter, and the business abandoned in disgust.

The beginning should be small, and practical knowledge and skill should keep pace with the increase of colonies.

Mistakes in the matter of manipulation deserve frequent notice. They are made both ways: they may be too little or too much. In my own practice it has been decreasing with each season; partly from necessity and partly for economy, and the question still is, am I not manipulating too much? That is, would it not be more profitable to increase the number of my colonies by fifty per cent and at the same time not increase the amount of labor bestowed upon them?

But, on the other hand, to the novice in bee-keeping, manipulation is a training-school, and he makes a fatal mistake when he concludes that the learning he may get from books can supply the place of that to be got from this school. By far the most practical and useful knowledge is that secured through one's own eyes in actual experiment. The learner must remember that he is a learner, and that thorough knowledge is the only guaranty of final success. To such an one there should be manipulation in season and out of season. For the present the object is to obtain knowledge, experience, and a taste for the business, not a money profit. Either from indolence, fear, or a pressure of other work, this is a very common mistake, and herein lies the reason that the non-specialist must, as a rule, fail in the business of bee-keeping.

I have only room to confess, in conclusion, that so late as a year ago I made the mistake of trying to winter over fifty colonies out of doors, but the lesson I got prevented a repetition. I must also, in fairness, admit that, as I now see it, I have not committed any other serious one for several years.

LAPEER, MICH., Feb. 1, 1889.

Getting Bees Cheaply from the South.

BYRON WALKER.

SINCE the last issue of the REVIEW we have passed two days at the hospitable home of that enterprising bee-keeper, Mr. Byron Walker, of Capac, Mich. Our readers will remember that he is the man who secures such wonderful yields of fall honey, but this same honey is death to his bees; and in the spring he finds it advisable to go South and bring home bees by the car-load: or else send them by express in light shipping boxes. At our request he furnishes an aticle on this subject; and any one who for any reason wishes to secure a large lot of bees very cheaply in the spring can do no better than to profit by the experience of our friend as given below:—

I will mention some of the most serious drawbacks that I have had to contend with in getting bees from the South. First, the cost of transportation. This is a serious objection; at least, where the shipper is obliged to ship full colonies by express; since Southern hives are commonly much heavier than those of Northern make. The cost of such shipment often equals the first cost of the bees. Of course, where light shipping boxes can be had, or a car-load is shipped, this item of freight can be cut down largely. In the one case, however, the cost of the boxes is in addition to that of the hives, which are likely to be of no use to the purchaser.

At this time of the year a difference of 60° in temperature in thirty-six hours of travel is not uncommon, hence it is obvious that the ventilation that might be all right for the colonies at the time of shipment, may be far too great before they reach their destination.

The difficulty of securing a large number of strong colonies on frames of a required size, and also of getting suitable help at points desirable for shipment, are other hindrances that the shipper is likely to meet. Then, too, there is often quite a variation in the size of frames and hives, that are *supposed* to be of one size. A difference of half an inch or more in one or more dimensions, is not an unusual thing. I will also mention the necessity of having help at the Northern home-yard to care for the bees as they arrive.

On the other hand, I will notice two important considerations that strongly favor the scheme in question. The first of these is, that strong colonies of bees can be bought in the South at one-half or less what they would cost in the North; prices ranging from $1.00 to $1.50 per colony in box hives; and from $2.00 to $3.00 in frame hives. As a great many colonies are kept throughout the South, notably in the states of Arkansas, Tennessee, Mississippi and North Carolina, and as but few Southern bee-keepers find their apiaries a source of much profit, there is no end to the bees that are offered for sale.

The second consideration arises from the fact, that for every hundred miles travelled South in the spring, other things being equal, there is a gain of from eight to ten days in the time when flowers begin to bloom, and bees to swarm. From twenty-four to thirty-six hours by rail, will show a gain of from six to nine weeks in climate. Last spring I found fruit trees in full bloom the first week in April, in the latitude of Memphis, and two months afterward I found them in the same stage of advancement five hundred miles further north. It is hardly necessary to point out the use that one shipping bees from the South can make of this fact. However, let us suppose that two persons, desiring to secure two hundred strong colonies, have finally bought one-half that number at some convenient place for shipment, where they can eventually take advantage of this difference in climate. And further, that they hold excursion tickets good for sixty days, that the privilege of the location, bee-house, and fixtures have been secured for that length of time, and that it is then about the middle or last of March. With favorable weather, the very strongest colonies will be preparing to swarm, and as increase is the chief object, the management must be such as to attain that end. The swarming tendency should be encouraged, and a large number of young laying queens secured as soon as possible; while the upper stories with combs are to be used in hiving natural swarms and building up artificial ones. Where the extra stories and combs, (common at the South where the L. hive is used), are not available, frames of wired foundation, and shipping boxes will have to be substituted. By this method the expert bee-master can double the number of colonies in five weeks or less, besides securing considerable surplus; and in the meantime preparations for shipping can be completed.

Certain points with regard to buying bees and preparing them for shipment deserve attention, as they have a bearing on the hindrances referred to above. The first step necessary where a man is planning a trip of this kind, is to make known his wants through the advertising columns of the bee journals, at least six weeks before the time fixed for starting, inviting correspondence with parties having bees for sale at the South. In conducting this correspondence he can't be too particular in having it cover every essential point that may enter into the value of the colonies offered for sale, the sources of honey flow, the facilities for handling and preparing for shipment, freight and express rates, the standing of the party with whom he is proposing to deal; and, (as strong colonies only will pay for the purpose wanted), let him insist on knowing how many frames of brood well covered with bees at a certain time, are to be considered a strong colony. It doesn't pay to travel 500 miles or more from home in pursuit of an unknown quantity. By this course a tolerably correct opinion may be formed of the inducements offered shippers in different localities. Having decided on a shipping point, and arranged for excursion tickets, it remains to secure a supply of wire-cloth,

smokers, and wire-nails of all sizes from one inch upwards.

Now, if the shipper aims to secure an early flow at the North from fruit or other bloom, but little attention can be paid to obtaining either honey or increase at the South, but preparations for shipping must be pushed to completion before the flow from poplar and the gums render it impracticable. In this case, the risk of shipping by car lot is much less than it would be after this flow. A stock car is commonly used in shipping bees, but for early shipment I think a box car with doors at the ends as well as sides preferable, as it affords protection from the cold, sure to be present at night, and likely to be met by day toward the northern part of the route. Such a car is also protection against the showers of cinders that come with an unfavorable wind. Of course, in loading, the combs must run parallel with the track, and it is very desirable that a space be left the whole length of the car rather wider than the width of a hive: then by having the second tier of hives rest on racks built clear of the tier below, it is possible to handle any colony that may need attention, and sprinkle them all when desired, by means of a fountain pump.

If the apiarist prefers to ship by express in small lots, he should endeavor to buy at enough lower prices to nearly cover the expense of hives, and ship in cages prepared for the purpose. If these are made of thin cottonwood, a timber plentiful in most parts of the South, they need not weigh over five or six lbs. complete, and yet be plenty strong enough to contain a populous colony with all its brood, and stores enough to last for a week. The cost of material for these, including wire-cloth for top and one side, is about 18c., while the saving in express charges is about 50 per cent. If the shipper were to begin shipping in lots of ten, at the end of the first month, and average five shipments a week, allowing one week for the return of cages, there would be time enough if fifty cages were used, to ship 200 colonies within the limit of a sixty days ticket; but it would be well to have an extra ten for use in emergency. The cages should be two inches deeper than the frames to be shipped, and part of one side, as deep as the frame, should be cleated and hinged as an aid to rapid handling at each end of the route. Where two or more persons are engaged in shipping in such cages, one can go north with the first lot, pave the way for the rest, and care for all on their arrival. Printed cards tacked to these cages requesting that the bees be sprinkled with water during the heat of each day, and that the wire-cloth sides of cages be turned *against* each other in case of cool weather, might serve a good purpose.

Whatever plan of shipping is adopted, where natural stores are used, too much pains can't be used to provide each colony with pure water. This can be supplied in combs. At least two should be given a colony. Care should also be taken that all combs are properly fastened to the frames to which they belong, as well as frames to their proper places. As a number of queens are likely to be lost in shipping, it is important that a supply of extra ones be kept constantly on hand.

In case the shipper has a good many weak colonies to build up in the home yard, or a quantity of combs to cover, a great saving in the first cost of bees, and also in cost of shipment, can be made by buying a lot of bees in box hives, shipping the natural swarms in cages, driving such colonies as fail to cast swarms, and taking all the bees left in the hives, as soon as the worker brood is all hatched, and shipping all in cages.

In conclusion, I will venture to estimate the cost of 200 colonies delivered at some point 500 miles north of the shipping point, ten days before clover bloom, where secured by the plan given above: First cost of 100 colonies, $300: freight by car lot, $70; railroad fare of two men, $50; board of same twelve weeks, $85; wire-cloth, nails, and cartage, $25; lumber and sundries, $20; total, $550. They would cost at the North $1,050. Besides the surplus, this would leave $500 as the wages of two men for two months.

CAPAC, MICH., Feb. 2, 1889.

A Light Shallow Hive for Summer Only.

CHALON FOWLS.

THE CAPITAL invested in my apiary is largely in the brood combs. I have more than one thousand fine brood combs built on foundation in Simplicity wired frames. I must therefore use hives that will take these combs as far as they go. I have chaff and Simplicity hives, but for convenience in raising comb honey I use the old style Heddon hive and case.

While I have practiced contraction for some years, and do yet with moderate sized swarms, I find that reversing the combs gives the most important result of contraction: viz., forcing the brood right up to the top of the frames. This may be done on the first day of the honey flow, and the sections will be entered promptly at the beginning of the season.

For new swarms I use a hive that I have tested during two seasons, and like very much. It takes eight frames $4\frac{1}{4}$ inches deep, made without bottom bars. In short, it is a Heddon case without the divisions. Of course, a queen-excluding honey-board is used.

I don't winter bees in these "flats." When the season is over I shake the queen and part of the bees into a hive having the regular sized frames supplied with stores. I then clap on a honey-board, then on top of that set the flat hive containing the rest of the bees, where it is left until all the brood hatches, when the "flats" are gathered up and put away to put new swarms in the next season.

Of course, where no increase is desired, it is an easy matter to unite with the old stock that has the young queen and stores.

To those who prefer a light, summer hive for new swarms, this hive has the following points in its favor: Cheapness, best method of contraction, and two of the small frames

will exactly fill an L. frame, in which shape they may be used for raising extracted honey, while the little hives are just right to hold packing on top of a Heddon hive.

OBERLIN, OHIO, Dec. 29, 1888.

Very well, Bro. F. and now let us have your objections to keeping the bees the year round in these "flats" as you call them, thus cutting down labor and expense, besides gaining various other advantages. Also, why not raise extracted honey in them by tiering up, instead of putting two in an L. frame?

Wanted, a Super for Open-Side Sections.

J. F. M'INTYRE.

SINCE the December REVIEW came to hand, I have been doing some hard thinking, trying to decide what kind of a case to use for holding open-side sections without separators. I was quite taken with Oliver Foster's excellent article, and concluded not to decide until I had seen his pamphlet, "How to Raise Comb Honey." I sent for it, and have studied it thoroughly, and to his case I find three objections. First, the absence of a bee-space; second, the necessity of applying the "clamp" to prevent the sections from falling out when removing supers; third, it is patented.

I will describe a case I have decided upon, and would like your criticism. It is a plain box, without top or bottom, the size of the top of the hive, and bee-space deeper than the height of the sections. Next, there are two pieces of tin $\frac{3}{4}$ of an inch wider than the height of the sections and as long as the inside width of the case. These pieces of tin go inside the case against the ends, the upper edges of the tins being turned back $\frac{1}{2}$ inch over the end pieces of the case, and tacked fast. The lower edges of the tins are turned up at right angles, $\frac{1}{4}$ of an inch, to form a support for the sections. These tins are not fastened at the bottom, and are expected to spring out sufficiently to press the sections snugly together. The other supports are U instead of T tins, turned with their open sides down, and resting upon wire staples driven into the sides of the case $\frac{3}{8}$ of an inch above the bottom. This leaves the bee-space below the sections, which may be a slight objection.

FILLMORE, CALIFORNIA, Jan. 14, 1889.

We are obliged to plead guilty to some very careless reading; for, until our California friend called our attention to the matter, we had supposed that Oliver Foster used cases having a bee-space. Friend Foster occupies a warm corner in our heart, but candor compels us to say that we believe that *the* case must have a bee-space, and that at the top. If our Iowa friend wishes to make any defense, his reply will find a welcome in the REVIEW. We are sorry to see the Foster case condemned because it is patented. We expect to see the day when bee-keepers will never think of bringing such an objection against an implement. A patent neither injures nor improves an article. Excuse us Bro. McIntyre, but, to us, it looks like selfishness to condemn an article because it is patented.

And now for a little criticism of the case proposed by our far away friend of the Pacific coast. We look upon the tins at the ends as a useless expense and complication. We think the sections can be brought close enough together without them. Next, we have a perfect horror of loose pieces about hives and supers. Were we using the T super we would have the T tins nailed fast; and, of course, we would have the U tins in this case securely fastened in some manner. Our next objection is, that the bee-space is at the bottom instead of the top. To raise honey in cases, by tiering-up, there *must* be a honey-board. To give this board rigidity and strength there must be a thick rim around the outside. This furnishes a bee-space; hence, the bee-space in the cases must be at the *top*. Again, when the bee-space is at the top, there can be no better cover than a simple, plain board; while if the bee-space is at the bottom there must be the added complication of a bee-space in the cover. The place for the bee-space is in the honey-board, and not in the cover, and this means cases with the bee-space at the top.

The case for holding open-side sections is yet to be invented. We must admit that, at present, we know of nothing better for this purpose than wide frames.

One-Piece Sections — Using Up Basswood Timber—A Reply to Dr. Tinker.

S. PATTERSON.

DR. TINKER makes a strong appeal to bee-keepers not to use one-piece sections, using as an argument that it destroys the basswood bee pasturage. It is true that the manufacture of one-piece sections uses up some basswood, but not one-tenth of the amount of that used for other purposes. Parties having basswood are going to sell it, and it may as well be used for sections as for other purposes. The Dr. refers to Mr. Boardman, of East Townsend, as one who realizes the loss of the basswood as a honey producer. Be that as it may, Mr. Boardman continues to use the one-piece sections, and will, no doubt, continue to do so in preference to going back to that nearly obsolete makeshift—the four-piece section.

The Dr. says:

"But the one-piece section is always a frail affair, and it is next to impossible to make them true. On the contrary, the four-piece, if properly made, is much the stronger, and it is easily made perfectly true, both in size and width. Again, unless the former are securely clamped in the super, they will speedily assume a diamond shape and become both unsightly and difficult to crate."

Now, if I admire one thing more than another in Dr. Tinker, it is his nerve in making the assertion contained in the foregoing quotation—one so contradictory to what the majority of bee-keepers know from their own experience to be true. Probably nine-tenths of the sections used are one-piece. Will the Dr. explain why so much stupidity in a class of men that are admitted to be progressive?

BERLIN HEIGHTS, OHIO. Dec. 31, 1888.

The Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor & Proprietor.

TERMS:—50 cents a year in advance, two copies for 95 cents; three for $1.35; five for $2.00; ten or more, 35 cents each; all to be sent to ONE POST OFFICE. In clubs to different post offices, NOT LESS than 45 cents each.

FLINT, MICHIGAN, FEBRUARY 10, 1889.

THE ADVANCE.

The Bee-Keepers' Advance has shed its bright, yellow cover, and gathered itself together until it is about the same size as the REVIEW, except that it has twice as many pages. It is printed from new type; has a cut of its editor; also a full-page, illustrated title page. Oh yes, and it is now stitched and trimmed. Taken all in all, it is decidedly an "Advance."

Since the above was written, a private letter from Bro. Mason informs us that he has bought the *Bee-Keepers' Magazine*, and will consolidate it with the *Advance*. We offer our most sincere congratulations.

SAVE THE BASSWOODS.

After there was more matter in type than could possibly find room in this issue, there came to hand quite a long article from Mr. H. R. Boardman, in which he pleads most earnestly and eloquently for the preservation of the basswoods. Had this timber been used only for making one-piece sections the case would not be so serious, but its use for this purpose was followed by the making of frames, cases, crates, etc., etc.; and its use by bee-keepers seemed to make known its value for other purposes, and a wholesale destruction has followed. He looks upon the cutting off of the basswoods as the killing of the goose that lays the golden egg, and as one of the greatest mistakes of which bee-keepers have been guilty.

HONOR TO WHOM HONOR IS DUE.

Different periodicals, notably those devoted to rural pursuits, have, at different times, gotten out "special numbers;" that is, some one number is principally occupied with the discussion of some special topic. Mr. Alley, of the *Apiculturist*, is inclined to blame the REVIEW for having made a *specialty* of "special numbers" without having given *him* credit for the idea. We think that Mr. Alley was the first *apicultural* editor to get out a "special number;" and the REVIEW most cheerfully accords to him whatever honor there may be due for such action: but when asked to give him credit for having been the first to originate the "special number" idea, the REVIEW says *Nay:* and that most emphatically.

THE AMENDE HONORABLE.

I have much admired the fairness and kind spirit of the REVIEW, and would be no true friend did I not raise my voice against the first departure. I can but think that friend Heddon made a mistake in closing his article in the December number with such an unkind thrust at Doolittle, even if it were true: and I think W. Z. H. made a mistake in admitting it, thus breaking his enviable record. Dr. C. C. Miller.

The foregoing came on a postal, and its perusal caused pain: but it was the pain of the surgeon's knife cutting away an excrescence, and we hereby acknowledge our gratitude to the *Doctor*. When reading over the "copy," those uncomplimentary references regarding Mr. Doolittle and his methods were marked out. Afterwards they were reconsidered: and, finally, they were reluctantly admitted upon the ground that they were used as arguments to show how undesirable were the views and methods of Mr. Doolittle. But courtesy ought to have excluded them: and, by the way, any man ought to be honored for standing by his convictions, even though opposed by the whole world. Mr. Heddon is the editor of a political paper, and he wrote that article just

after the heat, worry and excitement of a presidential campaign; and when he came to read it over afterwards, as we sat around the stove at the hotel in Jackson, the next morning after the Michigan State bee-keepers' convention, he said: "Did I say that about Doolittle?" The reply was: "You certainly did; and it came pretty near being thrown out." "Well," said he, "That's a little too rough, isn't it?" Bro. Doolittle, we beg your pardon.

MR. WEED AND HIS ARTIFICIAL COMB.

In answer to an inquiry asking why samples of comb had not been sent, no stamps returned, and no explanations made to those who had sent postage for specimens of the artificial comb, Mr. Weed replies as follows:

Detroit, Mich., Feb. 5, 1889.

MR. W. Z. HUTCHINSON:—

Dear Sir, I have just returned home and read your letter.

I admit that letters of explanation ought to have been sent to those sending stamps, but it was simply a neglect, amid a great press of other business. I find that, during my absence, machinery has been completed that is, I believe, absolutely perfect; and, by working late to night, I hope to send you some of the product on the morning train.

As for Newman's "dig" at the REVIEW, I should like a few lines of space in the next REVIEW for a reply.

If you can spare a day, after we get to running smoothly, I will pay the expenses of a trip to Detroit, so that, in some future issue of the REVIEW, you can describe the working of the machine.

Yours Truly, E. B. Weed.

Friend Weed, if you will send samples of comb, with proper explanations, to those who have sent stamps, we think no further explanation or defense will be needed. The proper reply to Bro. Newman is a piece of perfect comb large enough to be of practical use. This is the *one* unanswerable argument with which to meet all opposition.

LARGE HIVES.

It is impossible to notice, let alone publishing, all the articles on hives that have been received. A. L. Leach, of Dwight, Ill., very kindly sends an account of his experience with hives of different sizes. His preference is a large hive; and the reasons are that the bees swarm less and more honey is secured. That bees swarm less in large hives we are ever ready to admit, and that more honey *per colony* is often secured no one doubts; but that a large hive, one with a large brood-nest the year round, is the one with which to secure the "greatest amount of honey with the least expenditure of capital and labor" is not believed by many of our most practical, dollar and cent bee-keepers. The only advantage we can see in large hives is their tendency to prevent swarming; but, unless this tendency is sufficiently great to practically prevent swarming, little is gained. If there is sufficient swarming to require constant watching by some one, there may as well be many swarms as few. A slight, yes, one-half, decrease in the number of swarms would not compensate for the disadvantages of large hives.

WHICH ARE THE BEST BEES?

This seems like an old, hackneyed subject, long since worn thread-bare; but from the many postals that come to this office bearing the above query, it is evident that it may be profitably discussed. As, in the discussion upon bee-hives, it was necessary, before deciding upon the merits of a hive, to know for what purpose it was intended, so a discussion in regard to the merits of the different varieties of bees will be of little value unless the locality and the results desired are considered. The Syrians are great breeders. So long as there is a drop of honey in the combs they rear brood. In climates blessed with winter's frosts and snows this is an undesirable trait: but in sunny Cuba, where the honey flow comes in the season corresponding with our winter, this very characteristic proves of value in securing populous colonies at the beginning of the harvest. We believe it was A. W. Osborn who thus reported. The Syrians also fill the cells so full of honey, and cap it so poorly, that it gives it a peculiar, dark, watery appearance. In raising extracted honey this is not objectionable. The Cyprians have proved so firey in disposition that they have been almost universally discarded. The Syrians have something of the same style, only in a less degree, and, in their purity, are not needed in our Northern states. A few cling to them when crossed with some other variety, but we fail to see why, as they have no good qualities not possessed by the Italians. The REVIEW circulates chiefly in the northern part of the United States, and in Canada; so let us try and decide what bee is the best

for this portion of the country. In our opinion there are only three varieties worthy of consideration, viz.: Italian, black and Carniolan. As yet, the latter is on trial. It is claimed for it that it possesses all the good qualities of the black bee with the added ones of gentleness and prolificness (?). A word right here about prolificness. Abnormal, or unusual prolificness is of no value—it is an objection. Did queens cost large sums of money, there would be a shade of sense in desiring prolific queens; but, to the practical honey producer, they cost absolutely nothing; and by using hives that are not too large, queens of ordinary prolificness will keep the combs sufficiently filled with brood. This is a point upon which the Italians are unexcelled. During the spring months they push breeding with wonderful rapidity; but as soon as the honey harvest begins in earnest, breeding is *reduced more than one-half*. Now that we are speaking of Italians, it is a significant fact that, in *nearly* all the "crosses" that have been advocated, the Italians are *one* of the factors. They are the standard variety of this country, and for the production of extracted honey are probably unexcelled. There seems to be about them a peculiarly quiet, steady, energetic determination, possessed by no other variety. When honey is coming in slowly, and must be sought for far and wide, it is then that the Italians carry off the palm. But as producers of comb honey they have two very disagreeable traits. They are loth to store honey outside of the brood apartment, and fill the cells too full of honey. A producer of first class comb honey cannot afford to ignore the splendid comb building qualities of the blacks, and the willingness with which they will work in the supers; neither can he dispense with the great energy of the Italians. It is needed to bridge over the poor seasons. The proper way is to cross the two varieties; then by continued selection retain the good qualities and weed out the poor ones. It is practical to do this without any mating of queens in confinement. Simply rear the queens from the best stocks; the drones ditto; keeping the drone comb out of all undesirable colonies, and giving some of the choice stocks an abundance. This will fill the air with choice drones, and the chances of a queen's mating with an undesirable drone will be very slight indeed. This is the only practical method of improving our bees. The time has passed when a man will bring down a shower of abuse if he advocates the crossing of bees; in short, our best authorities recommend it.

"Which are the best bees?" is to be the special topic of the March REVIEW, and we should be glad to hear from all who have had experience in this line, particularly would we like to hear from those who have tried the Carniolans.

"PRACTICAL BEE-KEEPING."

As mentioned in the December REVIEW, Mr. D. A. Jones is writing, and publishing in the C. B. J., a series of articles on "Practical Bee-Keeping."

It is seldom that a work of this kind is above criticism, and the fault we have to find with this one is that, especially in the opening chapters, too much space is taken up in giving well known facts—those found in nearly every text book. But there might be more objectionable features than this, and we shall probably find plenty that is new.

Like every practical bee-keeper, Mr. Jones sees the advantage of learning the business the same as other kinds of business are learned—by actual work in a well managed apiary. He says a student ought not to expect pay the first year.—He urges the teaching of the elementary principles of apiculture in schools. We believe that our schools should teach those branches only that are needed in *all* the walks of life; and not meddle with the bees, hens and pigs.—In mentioning the desirable spots for locating the apiary, Mr. Jones speaks of the orchard. Mr. Allen Pringle; who is reviewing these papers, objects on the ground of too much shade. After trying both shade and open exposure, he prefers the latter. He says the bees build up faster in the spring, and work more hours; that the expense of providing some cheap shade in very hot weather is trifling compared with the advantages accruing from the sunshiny location. We agree with Mr. Pringle.—Mr. Jones tells us, and we know it to be true, that bees may be kept near a highway without making trouble to passers-by, if there is some barrier, as a row of trees or a high fence, between the bees and the street. In passing over the obstructions the bees fly so high that they are above the travellers on the road. It is not necessary that the fence should be absolutely tight,

because the bees are not inclined to fly through small openings. When a fence is not high enough, four-feet lath, nailed six inches apart to the top of it, with a strip along the top of them to keep them in place, will cause the bees to pass over.—Our author advises using only one style of hive, while his reviewer (Mr. Pringle) argues for the use of several kinds. The principal reasons given for having different kinds being "a scattering of chances, as it were, in the varied seasons, and in the contingencies of wintering." This time we are with Mr. Jones. Give us the best hive there is for our particular needs, and in the "scattering of the chances" we will take our chances.—Mr. Jones says that one of his yards is a solid bed of sand; and he finds that, while it has its drawbacks in windy weather, the bees are always ahead of the others in breeding up in the spring. He attributes this to the heat being retained by the sand and reflected upon the hives.—Wind-breaks are desirable, and all of the apiaries owned by Mr. Jones are surrounded by board fences eight feet high.—Many writers have advised beginners to buy bees in box hives and transfer them to movable-comb hives. We are glad to see that Mr. Jones is so sensible as to advise against such a course. He says the novice had better buy bees in good movable-comb hives, and let alone the troublesome job of transferring until he has attained some skill.—When writing of black bees Mr. Jones says: "Some apiarists claim to have a race of large, brown bees; but these are, I think, the ordinary bee bred in localities favorably situated to assist the bee-keeper's efforts in breeding for selected stock." There is certainly a difference in black bees, and we have secured this larger, browner strain in box hives, from the apiary of some old-fashioned bee-keeper who had made no attempts at selection.—From personal observation, and otherwise, Mr. Jones infers that the bee indigenous to Italy was the black or brown. He believes that the light-colored races originally came from Palestine and Syria; that coasting traders in honey and wax brought them to Italy, where the dark natives were, to a great extent, crowded out by the hardy and vigorous Syrians. On the cessation of this trade, in-and-in breeding was practiced for hundreds of years, and this has produced the Italians of to day.—Mr. Jones looks upon the so-called "Albinos" as merely bright strains of Italians.—It has been urged as an objection against the Italians that they do not work so readily in the supers as do the blacks; but, with our improved methods, says Mr. Jones, this and other objections are overcome.—Speaking of the Syrians, he says: "Their former admirers have, in a great measure, become disgusted with them, on account of their exceedingly irritable disposition. They are great breeders, the queens being wonderfully prolific, but they frequently consume all their stores in brood rearing."—On the whole, he does not recommend pure Syrians or Cyprians as adapted to the northern part of America. In the South, Texas or Florida, there may be localities to which they adapted, but for more northern localities there are more suitable bees.—As yet, Mr. Jones has found no pure race possessing all good qualities with none of the bad. He has tried crosses of the various races, and is convinced hybrids give better results than pure races. He does not consider the Cyprian a desirable bee; but with the Syrio-Italians and the Syrio-Carniolans he has achieved splendid results. He cautions us against deciding that the goal has been reached because a first cross is of extraordinary value, for it seldom duplicates itself.—In crossing varieties, he urges that particular attention be given to securing the best of drones, as the male has the most influence on the quality of the progeny.—But few persons, if any, have had greater experience with the different varieties of bees than has Mr. Jones, and his views are certainly worthy of attention.

(To be continued.)

THE "REVIEW."

SPECIAL FEATURES.

One special feature is that of reviewing current apicultural literature. This is not done in the usual, stereotyped, conventional, platitudinal manner, but all the bee-journals are read, and when a valuable idea is found it is seized upon and made the subject of a short, crisp, terse editorial. Errors and fallacious ideas are treated in a similar manner. Another feature is that of making each issue what might be termed a "special number." A "leader," or introductory editorial, upon some special topic appears in the number preceding the one devoted to its discussion. This gives correspondents a cue to follow in preparing their articles for the coming number. No pains are spared to secure, as correspondents, practical, successful bee-keepers who are able to write, from experience, articles that are a real help to honey producers.

Price of the REVIEW, 50 cts. a year. Samples free. Back numbers can be furnished.

The Production of Comb Honey.

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

It begins with taking the bees from the cellar and goes over the ground briefly, clearly and concisely, until the honey is off the hives; touching upon the most important points; and especially does it teach when, where and how foundation can be used to the best advantage; when combs are preferable and when it is more profitable to allow the bees to build their own combs.

Price of the book, 25 cents.

SPECIAL OFFER.

For 65 cts. we will send the REVIEW one year and "The Production of Comb Honey." For $1.00 we will send all the numbers of the REVIEW for the past year (1888), the REVIEW for this year (1889) and the "The Production of Comb Honey;" or, for the same amount ($1.00), we will send the REVIEW for TWO years from Jan. 1st, 1889, and "The Production of Comb Honey."

Stamps taken, either U. S. or Canadian.

Address *W. Z. HUTCHINSON, Flint, Mich.*

THE BEE-KEEPERS' REVIEW

VOL. II. FLINT, MICHIGAN, MARCH 10, 1889. NO. 3.

Italians Take the Lead in Beauty, Gentleness and Industry.

E. M. HAYHURST.

I PREFER the Italians on account of their disposition, good looks and industry. I have yet to be convinced that docility and beauty are incompatible with thrift and industry. By Italians, I mean the highly bred, pure strains which we now have in this country; not the ordinary imported stock. Where intelligently cultivated, these strains prove to be extremely beautiful, gentle, and most industrious; the three qualities most to be desired in bees. They have other good qualities, but, as I look at it, these are side issues hardly worth considering when comparing Italians with other varieties, in which any one of the above are wanting. Our native blacks, or rather brown bees, in their purity, are quite docile; but they lack the beauty and enterprise of the Italians. I have known cases where strong colonies of these bees were loafing listlessly about their hives in a starving condition, while my Italians were making a fair living. As far as my experience goes, crosses often inherit the industry of the better variety, but generally without the quietness, and it requires "eternal vigilence" to keep that industry from being misdirected. I have often had my attention called to enormous yields from individual colonies of hybrids, in which a careful examination would show that the honey was stolen from other hives. A friend once stated to me that, the worst that can be said against the Italians is, they do not cap their honey so immaculately white as do the pure blacks. It appears that this is due to the fact that they fill their cells *full* of honey, while the blacks leave a small space between the cap and the honey. This cannot affect the *taste* of the honey, and I have heard a number of persons say that they admired the rich appearance of comb honey stored by the Italians. Can we not educate most of our customers to such a preference? But suppose that we cannot, and have to sell our honey for a trifle less, because it lacks the snowy whiteness; admit that the statement is true, that the Kansas City market makes $\frac{1}{2}$ cent difference between the work of the Italians and blacks, this would amount to only $50 on a crop of 10,000 pounds. Now, I would willingly lose this amount for the satisfaction of working with my gentle beauties, and I believe they would very much more than make it up in increased yield. While I keep bees largely for the money that there is in them, I also have an eye for beauty: and would much rather handle a colony of handsome, golden Italians, instead of blacks, simply for the sake of said "eye." I have never seen the Carniolans.

KANSAS CITY, MO., Feb. 20, 1889.

Italians Great Workers, but Poor Designers.

T. F. BINGHAM.

EARLY in the "60's," Italian bees gave much trouble by their persistency in building combs, and storing honey, around and above hanging, or Langstroth, frames. This tendency led me to the construction of closed-end frames, and to the discarding of a honey board. The trouble was not a small one, as, unless pieces of comb starters, reaching like ladders to the top of the surplus boxes, were used, the bees could not be readily induced to cluster in the top of the box and construct regular and handsome combs. They not only persisted in building comb in the shallow space around the frames, but also reared an Egyptian pyramid up into the surplus boxes, having cells radiating to all points of the compass. This not only injured our surplus and sales, but it rendered the honey-board and frames almost immovable after a season's long flow.

Had Mr. Langstroth had only Italian bees, he would probably have invented closed-end frames, and had no occasion to use a honey-board, neither would he have had so large a hive in one section.

Italian bees carry this tendency to store honey close around the brood, to all imaginable extremes; often filling the brood frames almost solid with sealed honey; no matter how much room is given above, they will not transfer it to the boxes. Here the extractor came to the rescue, and circumvented again this instinct, as did the closed-end frames.

One other feature, also, in the early days of the Italians, militated largely against them; viz., the second generation was so largely made up of hybrids, having uncontrollable tempers.

The absolute necessity of smoke, in almost unlimited quantities, to control the hybrids,

was the one great factor which led to the long line of experiments resulting in the production of the Bingham smoker. Thus another of the drawbacks to these beautiful bees was brought within the easy control of the bee-keeper.

It will now be seen that comb foundation in the supers, by furnishing the starter ladders, and designs for combs, has rendered the comb-building instinct subservient to the desired end; while closed-end frames, in small shallow hives, the honey extractor and the smoke, have practically overcome the objectionable features of this best and most productive race of bees.

It will be seen that Italian bees are better workers than designers. The genius of the keeper has been taxed to furnish designs (foundation) and many other devices to enable them to compete with the easy ways of their brown, but more artistic sisters.

ABRONIA, MICH., March 1, 1889.

Carno-Italians, Ahead of Everything.

S. L. WATKINS.

I TRIED the Cyprians one season, but gave them up on account of their vindictive temper. They are no better honey gatherers than the Italians. The black bees do well, in certain locations, and if forage is *close at hand*, they gather almost as much honey as any race of bees. In the mountains (Sierra Nevada), 14 miles above Placerville, they do well as long as *honey comes in plentifully*, but after the honey crop ends they soon dwindle down and will not protect themselves against robbers. A few miles higher in the mountains, all bees do well, there being continual bloom the entire season, and all colonies keep strong in bees.

My favorite, among all races of bees that I have tried, is the Carniolan, crossed with the Italian. For this location I want a bee that will defend itself against robbers, yet, not be to cross to handle, and I have found it in the Carno-Italian. I prefer to raise Carniolan queens and have them mated to Italian drones. The Carno-Italian bees are a trifle crosser than the pure race of Carniolans.

Pure Italians will not enter the surplus boxes as readily as the mixed races.

After comparing Carno-Italians and pure Italians, colony for colony, as regards the size of colonies, amount of brood, honey, etc., I find the Carno-Italians *far* ahead. Every colony of this kind is just boiling over with bees.

I have bought several Carniolan queens of different eastern breeders and they have all turned out well. The queens being very prolific and the bees easy to handle.

I examined a colony of Carno-Italian bees yesterday, and found eight frames full of brood. They had about fifty lbs. of honey.

Mr. T. Eversult, a bee-keeper of this place, thinks that the Carniolans and their crosses are superior to all other bees that he has ever tried. My colonies are in better condition, as regards the number of young bees at this time of the year, than they have ever been since I have kept bees. This is probably owing to the large number of Carniolan colonies that I have at present. I have had two years of experience with Carniolans, and I am fully convinced that they possess very desirable characteristics as regards white comb building, non-robbing disposition, gentleness and prolificness. I believe they will play a prominent part in the near future in apiaries where Italian bees are now the favorite.

PLACERVILLE, CAL., Feb. 28, 1889.

Carniolans Work Even in Cold Weather; Can be Handled Without Smoke.

E. E. EWING.

MY EXPERIENCE with the Carniolans has not been extensive, but sufficient to induce me to replace all others with this variety. On cool days, they are out and away as lively as though the temperature were up to 70°. Early in the morning and late in the evening they are busy, while the blacks and Italians keep close in the hive. They are equal in working qualities to the best Italians, and can be handled, I believe, at all times without smoke—not a colony here and there, but the whole yard.

RISING SUN, MD., Feb. 15, 1889.

The Best Bees are a Cross Between the German and Italian.

JAMES HEDDON.

WHEN IT is the best bees, is it, this time? Do you know, Mr. Editor, that you make it very hard for me to write upon the different subjects you introduce? Your "leader" just takes in all of my points before I can get at them. I have nothing to say upon this subject except that every point you make, if I mistake not, is exactly what I think about the best bees. But I wish to further add that it is exactly what I have been saying and practicing for the last dozen years.

Do you remember when I first came out and declared in favor of crosses between the best strain of German bees—the large brown—and the long, leather-colored Italians; and how half a dozen held up their hands in holy horror and cried, "Hybrids?"

You no doubt recollect that I opposed wasting time trying to accomplish fertilization in confinement; both because it was apparently so far off, and because I could see no great need for such accomplishment; as the very system you mention, which I was then practicing, worked so nicely. That is, keeping my drone combs among my choice colonies and rearing queens from equally choice stock. Yes, you have been over all the ground, and I will say nothing more about it, except that, after ten years of careful experimenting, no one can get me to bring any Cyprian, Syrian or Carniolan bees into my apiary. I want none of them. I remember Josh Billings' advice to travelers: "When you find a really good hotel never

exchange it for a better one." I fought so hard, among my neighbors, against these imported bees, that none of them were ever brought into this locality. I am thankful that such was the case. My neighbors are also thankful that I succeeded in my labors with them. No matter where you live, nor whether you raise comb or extracted honey, no bee in this world, so far as known to bee keepers, can, in my judgment, equal a wise and judicious cross between the best strain of Germans and Italians.

DOWAGIAC, MICH., Feb. 13, 1889.

Italians, Blacks, Syrians, Carniolans and Their Crosses—The Four-Piece Section The Best.

H. D. CUTTING.

YOU ASK, which are the best bees? I think location, and the flora from which the nectar is obtained, has much to do with the problem. If in a location where honey comes in slowly, from a long season, then Italians show at their best. But if honey is near by, and in great quantities, the blacks will store at least *one-third* more than the Italians, and in much finer condition.

The blacks have some undesirable qualities, but I must say that, if we had done as much to breed up the good qualities and eliminate the bad, as we have with the Italians, we would hear less complaint about black bees.

I have tried a cross between the Italians and Syrians. Such bees are splendid workers, but it is *business* to handle them.

I have tried the Carniolans two seasons. They are good honey gatherers, very quiet until after the honey season, then they prefer to be let alone. They are excellent comb builders. One colony, or *stock*, the past season, filled a hive, four stories high, with comb, (from ½ sheet of foundation.)

I shall buy several Carniolan queens this season to mate with Italian and Syrian drones and try the different matings. We must not jump at conclusions, but test them for several years under different conditions, before we say which are the best bees.

I don't like to dab my fork into some other man's plate of hash, but the article in the last REVIEW, by S. Patterson, of Berlin Heights, Ohio, calls for a few words. In regard to Mr. Boardman, I think he is right in trying to preserve our basswoods.

Mr. Patterson refers to "that nearly obsolete make-shift, the four-piece section." Does Mr. Patterson know that many of our largest honey producers use and prefer the four-piece section? In looking over my order book, for several years back, I find that I sell more than eight times as many four-piece sections as I do of the one-piece. Five years ago I sold over 30,000 one-piece sections, since then the trade in one-piece has dropped off, until now I have but few calls for them. I used the one-piece in my own yard for several years, and they were from the best makers, but they never gave the satisfaction that the four-piece did. I have a machine for putting together four-piece sections that cost only $1.00. It drives them up solid and square, and they *stay* so, which cannot be said of the one-piece. I think if Mr. Patterson will investigate, he will not find as much "stupidity" as he thinks among the "progressive" bee keepers. I don't make sections of any kind, and don't sell any, except to my local customers, but I am on the side of the four-piece, white poplar, section *every time*.

CLINTON, MICH., Feb. 25, 1889.

Blacks, Italians, Carniolans.—The Latter are Preferable, as They are Quiet, Amiable, Industrious, and Winter Well.

JOHN ANDREWS.

ALLOW me to go back nearly thirty years, when I began my work with black bees, learned to winter them successfully, and obtained good yields of honey. After the excitement over the Italians had run a few years, I thought I would get rich very fast if I could change my black bees for Italians; and, one summer, I bought more than thirty Italian queens, getting them from three different breeders, and reared queens and changed the others as soon as possible. When taken from the cellar the next spring, there were only forty five colonies left out of one hundred. But I bred them up as rapidly as possible in order to save my empty combs, and in the years that followed did not lose so *many* in wintering. I kept Italians about ten years; part of the time having bees in three or four places.

Five years ago this coming spring I sent for an imported Carniolan queen. Last season, in company with Mr. Lockhart, I changed the bees all over for the fourth time since commencing with Carniolans, buying both imported and home-bred stock, and for myself and Mr. Lockhart I can say that we consider the Carniolans ahead of any bee we have tried. They hang to the combs as well as the Italians; fight robbers and moths, but are easily handled, and uncommonly quiet in winter. This winter our bees are in a temperature of 48° to 50°, yet they are as quiet as any black bees we ever wintered. The one Italian colony in the cellar has gone down to a small cluster, losing as many bees as the whole 121 Carniolans have lost.

PATTEN'S MILLS, N. Y., Feb. 16, 1889.

Carniolans are Gentle, Industrious, Good Comb Builders, and use Little Propolis.

DR. S. W. MORRISON.

I BEGAN in 1876 with black bees. Four years later I replaced them with Italians. From 1880 to 1884 I became acquainted, in my apiary of fifty colonies, with the habits of Italians. During the same time, and also later, I have watched the habits of several strains of Cyprians and Syrians, including Benton's strain of "gentle" Cyprians, from select, imported queen.

In 1885 I imported a Carniolan queen, and at once supplanted every Italian queen by daughters reared from the imported Carniolan. During the next three years I imported a large number of Carniolan queens, of selected stock only, and each year re-queened my whole apiary, which has, for several years, averaged fifty colonies. My course indicates my preference.

I discarded the blacks because of their restlessness when being handled, and their inability to defend themselves against the moth. I condemned the Syrians and Cyprians because of their irritability. Italians are gentle, industrious, quiet when handled, moth proof, and prolific; but I have not found the Carniolans lagging behind in any of these good qualities; in fact, they are more gentle and industrious. Especially do they get out earlier, and find the honey before any other variety of bees gets there. There is not half the trouble with robbing in a Carniolan apiary. In my experience with Italians, robbing was often very annoying; sometimes almost uncontrollable. I don't know whether it is because Carniolans are afraid of getting hurt, or because they defend themselves better, but I do know there is greater freedom from robbers. Carniolans do not swarm any more than Italians, use less propolis, and make whiter combs.

OXFORD, PA., Feb. 14, 1889.

Carniolans and Italians—Crosses Needed for Comb Honey—An Explanation.

CHALON FOWLS.

THE QUEEN breeder may prefer a variety of bees that is very gentle, and quiet on the combs, but the man who raises comb honey for his living, is after bees that make the most and whitest comb honey, even if they are a little firey.

I have had all of the three varieties mentioned, both pure and crossed. The Carniolans I have not *fairly* tested for honey, as the last three seasons have been too poor, but, there are some other points I have noticed. The bees are very quiet on the combs, like the best Italians, but *are easily shaken off*; not over prolific: and no more inclined to swarm than many colonies of Italians and hybrids in my yard. In one point I think they excel the Italians, and that is in hardiness. I do not believe they would cross well with blacks; as I once had an untested Carniolan queen whose bees evidently had a dash of black blood in them, and they were the worst bees to boil out of the hive that I ever saw.

As to the Italians and their crosses, I will say that, for building fine looking comb, a cross with black or Carniolan blood seems best; but I would insist on having the dark or leather colored Italians to breed from. I have had light, straw colored Italians, that were *perfectly worthless* as honey gatherers.

In reply to your foot note on page 24, I will say, I was thinking of wintering the bees on their summer stands, and the little combs would be new, and I think *old* combs essential.

By the use of the queen-excluding honey-board the "labor" is next to nothing, and I save the "expense" of buying bees in the spring.

I mentioned that two of the little combs would just fill an L. frame, simply to show people that they could *try* them, and could save the combs in case they did not like them.

OBERLIN, OHIO, Feb, 27, 1889.

The Adjustable Case for Open-Side Sections.

OLIVER FOSTER.

AS THE REVIEW very kindly offers space for a reply to the objections brought against the Adjustable honey case, I will be brief and candid. With regard to the bee-space, it may be that, since recent developments, the advantages of a horizontal space between the tiers of sections outweigh the objections, but I am satisfied that my bees do better work with the least possible separation between their combs; therefore I think that, if we admit the bee space, nothing in the shape of wooden slats should be added to this space; and, to diminish the deposit of propolis, the supports upon which the sections rest should be as few and as small as practicable.

I have used the Adjustable case with such a bee-space and *now* make them so when *desired*.

As for the clamp, it is now found *unnecessary*, and indeed *useless*, except when first filling the case with sections. Aside from this once clamping, I have handled the last two crops of honey without the clamp, and have never had a section drop out. Some large honey producers do all the pressing by hand.

I do not thing that my case is better for open-side sections than anything that can be invented; and I invite criticism and improvement, but think the latter has not yet been offered.

MT. VERNON, IOWA, Feb. 22, 1889.

The Carniolans and Their Good Qualities.

C. L. FISHER.

IF EVERY bee-keeper would give the Carniolan race of bees the fair trial that I did, in the same yard with Italians, blacks, and their crosses, they would be compelled, in truth, to report the superiority of the Carniolans. With me, they are the surest to winter, and less liable to dwindle in the spring. They build up very rapidly in spring, and are ready for the early honey flow; they enter the sections readily and work in them through the honey season, often neglecting to supply themselves with winter stores.

They proved their honey gathering qualities in the past poor season, giving a fair surplus, while the other races gave none. They cap their honey very white, even the dark grades, and leave their sections cleaner than do the other races. They are very gentle and cover the combs well while being handled. They are as good as Italians to

defend their hives. It has been said of them, that they are excessive swarmers. To that I will say, that, being so much more prolific than the other races, they must do something to relieve the pressure; and if they are pinched for room to breed and store honey, they will naturally find relief by swarming; but if they have store room, and the queen is not limited for room, all works well with them. I have had many swarms of Carniolans build up numerous enough to occupy a three story hive, and work like beavers the whole season. They were too numerous to winter in a common hive, and I divided them with swarms that were weaker. At present the Carniolans are not as popular as the Italians, but I predict it will not take them as long to work their way into general favor as it did the Italians.

Some may say that I write this as a deadhead advertisement. Not so, I am entirely out of the bee business, having sold all my bees last September, and accepted a position in my father's mill as sawyer, filer and stone dresser.

SOUTH DEERFIELD, MASS., Feb. 26, 1889.

Beginning With too Little Experience—Too Easily Discouraged.

R. F. HOLTERMAN.

I MADE the mistake of engaging extensively in bee-keeping (seventy-nine colonies, spring count) with the experience of only one season as a guide. I now would advise having at least two season's experience, three would be better, with some successful bee-keeper, before attempting, all alone, to manage much of an apiary.

The season in which I started in bee-keeping, proved a poor one. I had bought bees in box hives, at $5.00 per colony, transferred them, and then discovered that I had made a mistake in the selection of a hive. I became discouraged, and finally sold out. This was a mistake, as the next season proved a good one; and, had I kept the bees, prepared them for winter, and wintered them, they would have richly repaid me for all the losses of the poor season.

I have learned, if it can be avoided, it is better not to go into bee-keeping after an unusually good season; also that it is a mistake to leave the business after a bad season.

BRANTFORD, CANADA, Jan. 18, 1889.

Size and Proportion of Hives.

C. B. ALDRICH.

TWENTY-THREE years ago I commenced keeping bees in the Langstroth hive. I began with 12 colonies, and in six years they had increased to 100 colonies. At this time I bought five colonies in a different style of hive. The bees in these hives were treated, and wintered, the same as the others; and the next season they swarmed in May and June, and I secured seventy-five pounds of surplus honey per colony (spring count) from them; while those in the Langstroth hive did not swarm until a month later, and furnished but little surplus. This set me to thinking, and I decided that it was the size and shape of the hive that made the difference. With this idea in view, I constructed the hive I now use; and, as I have more than 300 of them in use, and have tried them to my satisfaction, getting all my swarms, and the most of the surplus in June, I feel warranted in giving this hive the preference.

The hive with which I have achieved such results is fourteen inches square, and twelve inches deep, inside. It has a loose bottom board; and, to allow tiering-up, each hive is made to fit upon any other hive. I will not mention the minor details of construction, believing that size and proportion are all-important.

A hive large enough to hold sufficient winter stores, is the hive to use, so far as size is concerned; then, when the honey harvest commences, it is unnecessary to contract the brood-nest to force the bees into the supers.

MORRISTOWN, MINN., Dec. 24, 1888.

Our northern friend is the only one of our correspondents who has advocated a deep frame. This is one reason for giving place to his communication: another reason is that his experience so clearly shows the influence that the *hive* has upon apicultural success or failure.

Inferior Hives; "Too Many Irons;" Selling Honey; Late Increase; Entering an Occupied Field.

J. H. MARTIN.

"MISTAKES in bee-keeping." Well, here we are. And *such* a theme! Could I but retrace the steps of my life, and recount all of the mistakes,

"It would harrow up thy soul,
Freeze thy young blood,
Make thy two eyes, like stars,
Start from their spheres,
Thy knotted and combined locks to part,
And each particular hair to stand on end,
Like the quills of the fretful porcupine."

But no, I will not "harrow up thy soul;" I will simply deal with my recent, apicultural errors.

My first mistake was the adoption of a hive requiring much manipulation, and in which my efforts at wintering bees were more or less unsuccessful. To remedy this, I am now changing as rapidly as possible to a style of hive with which I have had better success in every way. "First be sure you are right, then go ahead."

It is a mistake to have other business that interferes with bee-keeping. If the apiarist has only fifty or one hundred colonies in a single apiary, some other pursuit may be managed in connection with bee-keeping, but with 200 or more colonies, and these kept in more than one apiary, the bee-keeper has all he can attend to without burdening himself with additional cares. "A burnt

child dreads the fire." I received a "scorcher" in the following manner: In the fall of 1886, in company with a friend, I went into the business of evaporating fruit. I had 150 colonies of bees, located in two apiaries. In September I had but little to do with the bees, thinking that, if feeding should be required, it could easily be done at night, or early morning. The rush of apples came, and we were busy day and night until nearly the first of December. The bees were neglected, and in the severe winter that followed a hundred colonies were lost. Our evaporated apples were held over, and finally sold for four cents a pound—three cents *less* than the cost of evaporating. Now, when I hear advice about "working in some other business with bee-keeping," I "grit" my teeth and say: "Not any for me if you please."

It is a mistake for a bee-keeper to send all his honey to a commission man. If there *is* a business that will "work in" with bee-keeping, it is that of peddling honey in winter. Tea, coffee, etc., can also be carried along to good advantage. Much honey can thus be distributed in the rural districts and the city markets relieved of much of their surplus.

If a bee-keeper owns fifty colonies, it is a mistake to purchase bees in box hives because they are cheap. It is often quite a temptation to buy such lots at an auction or other sale. If there is any occasion to buy, it will prove more profitable in the end to get bees in good, practical hives.

It is a mistake to make artificial swarms out of season. There has been much advice in the past in relation to making large increase after the honey season. It is better to make the increase early, and be saved the vexations of building up weak colonies that will seldom winter well.

Some bee-keepers wait until they get their bees through the winter before they make up new hives, put up sections, etc. This is a fatal mistake. The dish is sure to be bottom up when the big yield comes. Let the spare time in winter be spent in getting ready for the summer harvest.

It is a mistake to think that bees can be moved into *any* neighborhood. Other bee-keepers will often be encountered who will look with positive distavor upon all such enterprises. Any neighborhood can be amicably entered by the purchase of a small apiary in that locality. It is, however, a mistake to enter a locality that is partly stocked.

Among the minor errors, might be mentioned that of using sawdust around the hives. In dry weather there is danger of damage from fire that may be started from the smoker. For the same reason, all quilts and cloths ought to be relegated to the waste heap.

I have, heretofore, raised extracted honey almost exclusively, and shall do so the coming season, but I begin to feel that it is a mistake not to produce more comb honey; and a few more cases of sections than usual will be introduced this season.

Your point in relation to keeping too few bees is well taken. It is the hosts of workers that bring in the tons of surplus. My apiaries now consist of 200 colonies. If the coming season proves to be a good one, I expect to increase the number to 300, and establish another apiary.

HARTFORD, N. Y., Feb. 6, 1889.

A Review of "The Production of Comb Honey;" The Best it Has Yet Received—The Harm of Discussing "Feeding Back" and Artificial Comb.

JAS. A. GREEN.

FRIEND HUTCHINSON: — When I called it a mistake to do away with foundation in the brood chamber, I never for a moment thought that complete failure was even a necessary or even a probable result, when all your instructions were followed. I have followed your methods myself, with very good results and no very great failures. What I meant was that, taking everything into consideration, the disadvantages of the plan outweigh the advantages, to my mind. Admitting that there is, sometimes, at least, something to be gained by making the bees build their brood comb, let us look at some of the drawbacks.

In the first place, the hive in which a new swarm is placed must be exactly level, else the combs will be built partly outside the frames. This, especially, with frames at fixed distances, is not to be tolerated. You may say it is easy to have hives level, but, with a large number of hives, in two or three apiaries, especially if they are on a side hill, I think you would find it no easy matter to have all hives always exactly plumb.

Secondly, I think that, with an empty brood chamber, bees are much more likely to abscond than when some sort of a start is given them. I had trouble enough in this way last summer, being obliged to hive some swarms twice a day for nearly a week, before they would "stay put." This was with a contracted brood chamber, but I would rather use even empty combs than give up that. I know that to transfer the old supers to the new hives has a tendency to prevent this, but it is not always effectual, and what are you going to do, if, as was the case last season, the bees swarm before any honey comes in to amount to anything, and when but few supers have any honey in them?

Then comes the drone comb question, and it is the ugliest of them all. With a large swarm, a sudden rush of honey, or an old queen, a great deal of drone comb will be built. Of course, we can cut this out, but I think it would pay better not have any built. I do not think it profitable to try to keep only young queens, or to use hives differently prepared according to the age of the queen, &c. Even supposing you get your combs built straight, and the drone comb cut out, and replaced with worker, your combs are not worth as much as if built on unsupported foundation, and not nearly as much as if on wires. We should have an eye to the *product*, as well as the *process*. Brood combs, I know, are not the principal product of an apiary, but I consider them valuable nevertheless.

All the fixtures that I shall hereafter use, must be adapted to a sort of wholesale management; and as far as possible, so arranged that hurry, unskilled assistants, or even carelessness, cannot materially affect results. When a swarm is hived it is worth something to *know* that the frames will be filled with straight and substantial worker comb without any looking after; and I would rather use the time so saved in caring for a few additional colonies, which will amply make up any difference in results.

I want my apiary so that the whole thing can be picked up at short notice at any season and hauled or shipped with safety to the contents of the hives; so I shall use wired frames. Perhaps I shall never move my bees much, but I think it worth while to be prepared for it. I may find sometimes that my bees are gathering nothing, while eight or ten miles away nectar is plentiful.

Remember, all my objections are from the standpoint of the large producer, and may concern but little the one who has only a few colonies with abundant time to look after them. Perhaps in them all, I am only recounting my mistakes again, but if I ever find it out, I will own up.

With regard to "feeding back," I am not sure but it is a mistake to even discuss the subject. The idea that honey is often adulterated, is quite prevalent, and acts as a great injury to our business. I believe though, that this is largely the fault of bee-keepers themselves, through unnecessary zeal in keeping the subject of adulteration stirred up. Whether or not this be true, it especially behooves us to keep silent on any point which tends to give credence and color to popular misconception. The old and natural belief that it was impossible to adulterate or imitate honey in the comb, received a severe blow through the "scientific pleasantries," so widely circulated through the newspapers, that comb honey was being manufactured without the intervention of bees. The use of foundation helped along the belief in the fraud, but it was usually not difficult to convince an intelligent person that the thing was impossible. But now, just as the editor of one bee journal has secured the retraction of a damaging falsehood, along comes the editor of another with still more damaging *truth*. We can no longer claim that it is impossible to manufacture comb, or that it would be unprofitable to feed bees for the purpose of producing honey, for the editor of a prominent bee journal declares it both practicable and profitable. The next reporter who wishes to write a sensational article on the manufacture and adulteration of honey, may speak from the card as it were. He may not tell the whole truth, or he may tell what appears to him to be truth. "Nothing lies like the truth;" and an incomplete or garbled presentation of the REVIEW'S position on these points would be worse than the "Wiley lie." I speak thus not from any desire to find fault, but from my honest convictions.

While feeding back extracted honey to secure the completion of unfinished sections, might be made profitable by some men under some circumstances, I very much doubt that the majority of bee-keepers could make it pay. I was not very successful in my experiments, simply because the weather was too cold. There is no incentive here to resort to such means to get sections finished, until the honey season closes, about the last of September. Last season our honey crop was cut short by the weather becoming too cold for the bees to leave the hive. No one can make feeding back profitable at such a time. I believe that at any time it would be found more profitable to adopt a system of management that will reduce the number of unfinished sections to as low a point as possible, then by extracting or selling at a low price, dispose of all that contains honey.

DAYTON, ILL., March 2, 1889.

In our opinion, the above is the best review that has ever been given our little book "The Production of Comb Honey." Very wisely, our friend brings forward his weakest objection first. That the hives must be sufficiently level to bring each comb within its own frame, is an objection that is easily overcome. That the combs may be built true inside the *sections*, necessitates a reasonably level hive. So far as swarming-out is concerned, *we* have never been able to detect any difference between swarms hived upon foundation, and those simply given starters. With small brood-nests and young queens, we do not get three per cent. drone comb. (On this point, see the review of "Langstroth Revised," in this number.) With *old* queens there will be more or less drone comb constructed, and we know of no *practical* way of avoiding it. There may be something peculiar about our management, that we have not yet discovered, or in the stage of the proceedings at which our swarms issue, (never before a start is made in the supers) but this is certain, that no one could wish for finer combs than we secure with the methods we advocate. They would, of course, be more easily broken down when first built, than would those built on foundation. Did we think of moving colonies before the combs had acquired sufficient strength, we would have the combs built in frames liberally wired. Friend Green says it is worth something to *know*, when a swarm is hived, that the frames will be filled with good, straight, worker comb, without any looking after; and, even if he doesn't get quite so much honey by filling the frames with foundation, he prefers to do it, and use the time saved, by having no drone comb to look after, in caring for a few more bees. Good. That's a gem of a thought. Those who can't hive swarms upon starters only,

and get straight, nearly all, worker-comb, can keep a few more bees. They may not make quite so much profit, but the idea is a good one.

We agree exactly with our Illinois friend in thinking that the majority of bee-keepers would probably fail in "feeding back," and that for the masses that plan would be best that would leave the least unfinished work at the end of the season. Nevertheless, where the honey harvest stops the middle of July, and does not begin again until about the first of September, as is the case here, the bee-keeper who thoroughly understands the business, can very profitably employ those "scorching hot" six weeks in securing the completion of his unfinished sections of white honey.

But we must take issue with our good friend upon the expediency of discussing "feeding-back," comb foundation, or even artificial comb, through the medium of the apicultural press. Bee journals are devoted to the interests of bee-keepers, and anything affecting their interests ought to be fully discussed. Our friend says that foundation helped along the "scientific pleasantry." Would it have been wise for the bee journals to have tabooed its discussion? We believe that the REVIEW can best serve its readers by giving them the *truth*, withholding nothing, and giving it to them while it is yet *news*, instead of waiting until it has become ancient history.

The Bee-Keepers' Review,

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor & Proprietor.

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FLINT, MICHIGAN, MARCH 10, 1889.

TWENTY PAGES AGAIN.

One excellent article followed another, advertisement after advertisement came in, and, as the month drew to a close, there were so many things that, so it seemed, *must* go in this issue, that we finally decided to add four extra pages, making twenty in all. The extra work makes this number a little late; but we know that our readers will be sufficiently appreciative to overlook the delay.

THE BEE-HIVE.

This sprightly little monthly has not slipped its cable, but it has slipped two or three cogs, (issues) and also slipped off its cover—that expensive feature of a magazine. The January, February and March numbers came up bright and smiling.

"GREAT IS TRUTH, AND WILL PREVAIL."

Last July, when we were laboring so hard to show Bro. A. I. Root the inconsistency of his course in regard to patents, we were much "refreshed" by his promise not to "talk any more about patents," for the present. Even if he *did* think it wicked to sell "rights," no great harm would be done if he kept still about it. This was only a few short months ago, yet *twice*, since then, have we been "saddened and somewhat discouraged" because he has introduced the subject and used his influence to try and revive the sentiment among bee-keepers that there is something *wrong* about patents.

HONEY-BOARDS, AND WHO INVENTED THEM.

Awhile ago something was said in the A. B. J., as to whom belonged the honor of having invented the slatted, wood-zinc, honey-board. A little later, the C. B. J., very cautiously, gingerly, broached the subject, but lacked either the knowledge or courage to be outspoken. Now, this whole matter can be put into a nutshell, and done in such a manner as to give everyone due credit and satisfaction. Mr. Heddon invented the slatted, break-joint, bee-space honey-board. The grand feature of this honey-board, the one before which all the other features pale into insignificance, is its *bee-space*. As every hive with hanging frames is, to that extent, a Langstroth hive; so every honey-board with a bee-space is, to that extent, a Heddon honey-board. Just who first used perforated zinc in connection with bee hives, is not *positively* known; but to Mr. D. A. Jones belongs the honor of *introducing* it into this country. Dr. Tinker took strips of this perforated metal and slipped them into saw-kerfs made in the edges of the slats of the *Heddon* honey-board. The honey-board is Mr. Heddon's; the perforated zinc was invented by *somebody* else; and to Dr. Tinker belongs the honor of combining the two in the peculiar manner shown in the wood-zinc honey-board.

SENDING PAPERS AFTER THE SUBSCRIPTION HAS EXPIRED.

Without knowing it, we sometimes touch a chord in the public heart, and set it all a-quiver with sympathy. This was the case in the December number, with the editorial under the above heading. Letter followed letter in approval of this course. One man wrote: "What would we think of the merchant that would send twice the amount of goods ordered?" Another bee-keeper had received the December number as a sample copy, and was undecided whether to subscribe or not until his wife called his attention to the fact that the REVIEW would stop coming when the time was up, when, to use his own expression, "That fetched him." He said, farther, that he had threatened to make a solemn vow, that he would subscribe for no paper that made a practice of sending papers after the time is up. There is something about human nature that resents having even a good thing *forced* upon it. We notice with pleasure that the *Advance* will no longer send out papers after the subscription has expired. In our opinion, this is the only correct, and business-like—yes, the only *right* way of doing.

CONTRACTION OF THE BROOD-NEST.

The brood-nest is contracted to prevent the production of brood at a time when the resulting bees would come upon the stage of action at a time when there would be no honey to gather—when they would be consumers instead of producers. It is also contracted to compel the bees to store the honey in the sections instead of in the brood-nest. There are several reasons why this is desirable. The honey from clover and basswood is white, fine-flavored, and brings a higher price than that gathered later; hence it is more profitable to force this higher priced honey into the sections, and allow the bees to fill brood combs, later on, with winter stores from such sources as yield honey that brings a lower price. When it is desirable, either because of its cheapness, or of its superiority, to use sugar for winter stores, contraction of the brood-nest can be so managed as to leave the bees almost destitute of winter stores, which does away with the trouble of extracting, and leaves nothing to be done except to feed the bees. Such, in brief, are the advantages of contracting the brood-nest. Where the honey flow lasts nearly the whole season, with no long periods of scarcity, and the quality of the honey is uniform throughout the season, and no advantage is found in substituting sugar for honey as winter stores, we see little need of contracting the brood-nest; and would advise that it be of such size that an ordinarily prolific queen can keep the combs well filled with brood. But where any of the first mentioned conditions exist, the bee-keeper who neglects "contraction" is not employing all the advantages that are available. It has been urged, against this practice, that it results in small colonies at the end of the season; and that the bees may become populous in time for a fall flow, or for winter, some who contract the brood-nest during the white honey harvest enlarge it again in time to have plenty of workers when they are *needed*. When bees are wintered in a repository of the proper temperature, we have never found that unusually populous colonies were any more desirable than smaller ones. This is one advantage of cellar-wintering, the population may be reduced to the minimum during the consumptive, non productive, part of the year. In contracting the brood-nest, more advantages are gained if it is contracted vertically. All dummies, loose pieces, and complication is avoided; and, what is of greater importance, no part of the super extends out over dummies, but there is brood under all the sections. We have, for several years, practiced contraction of the brood-nest, and have read nearly all, if not all, that has been published upon the subject, and, in the foregoing, have tried to treat it fairly; nevertheless, we request all who have had experience in this line to favor us with an account of it, and we will devote the April REVIEW to a discussion of "Contraction of the Brood-Nest."

A VERY KIND NOTICE — "THE DOVETAILED HIVE."

The last number of *Gleanings* has an excellent picture of the REVIEW editor, accompanied by some very kind words. We thank Bro. Root most heartily for this courtesy. Naturally, this little sketch was very interesting reading to us, but not more so than the description of a new hive that Bro. Root describes and recommends, and has begun to manufacture. It is not quite our ideal, but, with the exception of a few points that can

be easily changed, it is so far superior to the old, ten-frame, telescopic jointed, metal rabbeted, raised-covered Simplicity, that we are ready to hold up both hands in its support. It is called the "Dovetailed Hive," because, not only the hive, but the supers, are dovetailed at the corners. We look upon this as one of the minor points in hive construction. Plain, square joints, firmly nailed, give sufficient strength; and, in our opinion, nothing more is needed. Dovetailing is an unnecessary expense. This new hive is practically the old, eight-frame, Heddon hive, with loose bottom board; but Bro. Root has made one or two mistakes, which we feel sure he will be glad to have pointed out. He has made the brood frames flush with the top of the hives. To overcome this error, he proposes using a honey-board with *two* bee-spaces; one above, the other below. It is now a well established principle that a bee-space is necessary between all the disconnected parts of a hive, from bottom board to cover. Now, this bee-space must be upon the *same* side of every part, else confusion and complication are the result. The next error is in trying to use wide frames without top-bars, ("section holders" he calls them) in a T super, with the T tins removed. The T super is two shallow for this purpose. To overcome this error he removes the top bars to the wide frames, and reduces the bottom bars to only 3-16. To this there are two very serious objections. The bottom bars, being so thin, will sag terribly, and this will bring them so near the slats in the honey board, that they will be stuck fast with propolis. When the first super is partly filled, and is raised up to put under an empty one, the bottom bars of the upper one will be sagged, because there is the weight of honey upon them, those in the lower one will *not* be sagged, because they do not, as yet, have upon them any weight; the result will be that the bottom bars of the upper "section holders" will almost, if not quite, touch the tops of the sections in the lower super, and all will be completely stuck tight with propolis. The other objection is this, 3-16 is not large enough for a bee space, 5-16 is *the* bee space. When we go below this the bees begin to object by using propolis, and the lower we go the greater the objection, and when we get down to 3-16 the bees will *completely plaster* the opposing surfaces, even connecting them in places with little mounds of wax and propolis. For the love of bee-keepers, Bro. Root, put a bee-space in the top of your bottom-board, in the top of your hive, in the top of your honey-board, and in the top of your supers, and *stick to the T super.*

THE BEST BEES.

Judging from the reports in this number, we were entirely correct when intimating that we Northern bee-keepers had no use for Syrian or Cyprian bees. Italians, Germans and Carniolans are the three varieties from which to choose. Before attempting to make a decision, let the bee-keeper well consider his honey resources; together with all the accompanying conditions. Let him also decide whether he is to produce comb or extracted honey. Let no bee-keeper be caught by that phrase, "general purpose" bee. The bee-keeper who thoroughly understands his resources, knows *exactly* what he wishes to accomplish, and chooses the best hive, the best bee, and the best methods, to secure the desired ends, will far outstrip the "general purpose" bee-keeper, with his "general purpose" hive, "general purpose" bee, and "general purpose" methods. For the production of extracted honey, the Italian bees stand without a superior. Were it not for the difficulty of dislodging them from the combs, they would, for this purpose, be well nigh perfect. In search of honey, they will fly far and wide. Though the recompense be slight, they toil on. If the yield of honey is abundant, and the source of supply near by, the blacks will bring in as much honey as any bees—some say more—and, once the nectar is in the hive, they handle it in a manner that is truly artistic. The Italians are the better *field workers*; the blacks the better *house-keepers*. In this respect the Italians are like man, while the Germans resemble woman; to carry the simile still farther, they *ought to marry*. In plain English, the best results will be secured, especially in raising comb honey, by uniting these two varieties. Don't let the union be brought about in a hap hazard way, but understandingly, according to the plan given by us last month, and mentioned again by a correspondent this month. For raising extracted honey, we would use Italians or hybrids; in the production of comb honey, we would employ blacks or hybrids. Now then, after we have thus conclusively shown, that a judicious cross between the Italians and Germans, is the best "bee for business," up

step the Carniolans, claiming to possess all of the good qualities of both the blacks and Italians, with one or two additional virtues thrown in. It is asserted that they are the most gentle bees known; that they remain quietly on the combs when handled, but are *easily shaken off*; that they are industrious; good comb builders, capping the honey very white, and using but little propolis; that they are hardy; prolific; and just perfection itself. But we must not forget the disposition to praise *new* things. The Carniolans have been here only a few years; still, it is a significant fact, that *all* who have tried them are pleased with them. So far, no word of fault has been uttered against them. But we are by no means ready to advise every bee-keeper to immediately discard his Italians or Germans, or their crosses, for Carniolans. We have done our level best in securing testimony upon this subject, and we take pleasure in laying it before our readers, but, at the same time, we advise caution, investigation, and the laying aside of all prejudice.

"PRACTICAL BEE-KEEPING."

(Continued from Feb. No.)

Mr. Jones favors the traffic in virgin queens. That they can be furnished very cheaply there is no question, but that they are difficult to introduce we know from experience. A newly hatched queen is easily introduced. As the hours go by the probabilities of acceptance are lessened. With us, the percentage of loss has been great when the queens were three or four days old. Then there is the risk of loss in mating; and, unless the locality of the purchaser can furnish excellent drones, the queens will find undesirable mates; and, as pre-potency is on the side of the male, there will be little "value received."—After much experimenting, Mr. Jones concludes that old bees build more perfect cells than do the young bees.—Of the various methods of cleansing wax, he knows of no better plan than melting it over water, and then keeping it in a place sufficiently warm to prevent solidifying for at least twelve hours. This allows all propolis, pollen and dirt to settle to the bottom. For rendering wax he prefers steam; but the steam must not be allowed to play directly upon the wax or it will be injured.—To detect adulteration in wax, draw the thumb nail over the surface. If genuine, the nail sticks slightly. If adulterated, the wax becomes slippery and gives out the smell of tallow or other adulterant.—The directions for making foundation are very full. Preference is given to the Vandervort mill. Soap suds made from good white soap has proved the best lubricant. Old foundation should be dipped in warm water (about 120) before using. This restores it to its original softness. There is no necessity for drone foundation.—Mr. Jones favors the Parker machine for fastening foundation into sections.—Considerable space is given to the description of sections with grooves upon the inside for holding the foundation in place. We do not believe such sections will ever come into favor in this country. As Mr. Pringle says, we desire something better.—We are astonished to see that Mr. Jones objects to apicultural patents. We supposed he willingly accorded to mental labor a legal right to its own.—On one other point we are compelled to differ. He says that in reality there is not much difference in hives except in the variation of the size of brood chambers. This is only *one* way in which hives differ, while there are several important variations that may be mentioned. For instance, there is the difference in *shape* as well as in size; hives may be single-walled or double-walled; with fast bottom boards or loose ones; the brood chamber may be all in one body or it may be divisible; the hive may be invertible or it may not; may be arranged for side storing or adapted to tiering up; the frames may be of the hanging style or they may be of the standing variety; then there are the so-called minor points, that are often of importance, such as square or bevel corners; telescopic or square joints; hives arranged for a simple, flat, board cover, or those having a quilt over the frames, and over this a costly, raised cover. Why, Bro. Jones, we don't see how you ever came to make such an assertion.

(To be continued.)

ARE THERE TOO MANY BEE-JOURNALS?

Recently, in noticing the advent of a new bee paper in Switzerland, Bro. Newman of the A. B. J., remarks as follows:—

"This makes the third periodical on bee-keeping now being published in our small sister Republic, where one is 'an abundance.'

It seems a strange infatuation, that leads to such a multiplication of bee-periodicals. Where one good bee paper could live and be a real benefit to the pursuit, two or three will spring up and none of them be able to

make their influence *felt*, because of their weakness, by reason of the splitting up of the subscription patronage. What would support one would starve three.

This is a *calamity* which is threatened in every bee-keeping country. The power for good and influence for right, which one strong and vigorous publication would maintain, is frittered away by reason of an unhealthy increase of bee-papers. It behooves all to look this matter squarely in the face, and refrain from lending their influence to an increase in this line, which is detrimental to the entire craft.

Until a few years ago, England had no bee-paper—now she has three; two too many! A quarter of a century ago in America there was but one (the *American Bee Journal*), now their names are legion, and as a result some of them are sick and dying; others are only half supported, and the *influence* of all, by reason of the multiplication, is much *impaired*.

All this is the result of the suicidal mania for publishing a bee paper; and if it is not soon stopped, the time will come when many of them will die, and their owners will be poorer but wiser men.

It is quite time to call for a *halt* on such reckless increase—which is just as detrimental in the field of literature as it is in the apiary. In both cases, too much increase will destroy the business, and ruin those who should be benefited by the investment."

The last twenty-five years have witnessed wonderful progress in the arts and industries. Bee-keeping has not lagged behind. With this progress came an increase in journalism, and in the publication of books, but the production of apicultural literature has not been multiplied to any greater extent than has that devoted to other rural industries. It is true that many bee papers have been born only to struggle and die; but the same is true of many a venture in *all* the fields of journalism. It is true that competition is one factor in the combination of causes that has brought failure to so many journalistic efforts, but there is more than one *kind* of competition. Bro. Newman has mentioned *one* kind, the competition of numbers, but that of *quality* is passed unnoticed. We believe that, in the field of apicultural journalism, more failures have come from the superior qualities of competitors than from their numbers. This competition among bee journals is really a *benefit* to bee-keepers. It acts as a spur to the editors; and, in their efforts at vieing with one another, better journals are produced. Too many bee journals have been started with no intention of competing in the race for *quality*; the primary object being simply that of furnishing an auxiliary to a supply trade—a sort of side issue. Others have been started with no conception of the obstacles to be met and overcome. Many a journal has gone to the wall because the editorial work was done in a listless, dreary, half-hearted way that actually courted failure.

"'Tis not wealth, nor rank, nor state,
But its 'git up and git' that makes men great."

To succeed in apicultural journalism, there must be a thorough, practical, working knowledge of bee-keeping; a personal acquaintance with apiarists and with the hobby of each; and the journal must stand *first* in affections of its editor. In the highest and truest sense, it must be his "baby." For it he must be willing to rise early and work late; to wear plain clothes, yes, *patched* clothes, if necessary; to live on simple fare; and there must be no hesitation as to whether he can afford this or that for his journal; he must simply pull out his pocket-book and *lay it on the altar*. Neither will it answer for him to sit in his office week after week and month after month; he must work with the bees, get out among bee-keepers, visit conventions and apiaries, and know what is going on; in short, he must leave no stone unturned in his efforts to bring his journal up to the highest standard. This is only a *part* of the price that must be paid for success in apicultural journalism, and he who cannot pay it willingly, cheerfully, yea, *proudly*, would better adopt some other style of wooing the fickle goddess.

LANGSTROTH ON THE HONEY-BEE, REVISED BY [redacted] DADANT.

Before us lies the difficult, delicate, yet delightful task of reviewing "Langstroth on the Honey-Bee, Revised by Dadant." (The work is also published by Dadant & Son, Hamilton, Ill. Price, $2.00.) It has 521 pages, and 197 engravings, besides 16 full-page plates; some of the latter being excellent pictures of noted apicultural leaders. The paper is good, the press work excellent, and the composition free from typographical errors. The book is well bound, and, across the front cover, in a diagonal direction, lies a strip of foundation, done in gilt, above which appears, in letters of gilt, "The Honey-Bee." Mechanically, the book is above criticism.—About five years ago, Father Langstroth consulted with Messrs. Dadant & Son in regard to the revision of his book. At that time all agreed upon the prin-

cipal points. The Dadants then began reviewing the work, bringing it up to the present. They retained the original as much as possible, but found it necessary to introduce more new matter than was anticipated, hence the work is largely Dadants.' A letter from Father Langstroth informs us that he was unable to assist in the work of revision. We do not mention this to find fault, but to point out upon whom rests the responsibility for the views expressed.—Chapter I is devoted to the "Physiology of the Honey Bee." We have never dissected a bee; never examined any part of one with a microscope; nor made any of those fine experiments to which scientists are given. We do not say this to be-little such experiments, all honor to the men who make them, but our station in life has been such that we have been obliged to make all our experiments from a dollar and cent point of view. Of course, we have read all that the text books have to say upon the physiology and natural history of the bee, and know just enough to know better than to set ourselves up as a critic upon these points. Messrs. Dadant say: "We have found it advisable to give a short description of the principal organs of this interesting insect; and abridged passages taken from various scientific writers, whose works have thrown an entirely new light on many points in the physiology of the bee." So far as our knowledge allows us to judge, we should say that this part of the work is well done. The original matter is brief, concise, explicit; the selections excellent.—Before going farther, we wish to state that, in this review, we shall, as a rule, pass unnoticed all well known and established facts; giving our attention to what there is new, and to those points upon which authorities differ. Practical subjects will be given the preference.

Chapter II treats of "The Building of Bees." It is probable that, during the honey season, the young bees secrete wax involuntarily. If there is no place for the scales of wax, they are gathered in small knots here and there. Although old bees secrete less wax, it has been proved that they *do* produce small scales. Prof. Cook says that, during the active storing season, when comb building is in rapid progress, nearly every bee taken from the flowers has wax scales in the wax-pockets. It is this point that we so strongly urged in our own little book, viz., that, during the honey harvest, the bees are involuntarily secreting wax; and, unless they are given an opportunity for utilizing this secretion, it is wasted. But there is also an "other side" to this question; and Messrs. Dadant most forcibly urge the use of drawn combs in which to have the surplus stored. For the sake of showing how completely we agree with the Authors, we think we may be pardoned for giving a short extract from "The Production of Comb Honey:"—

"When bees are gathering honey slowly, the natural wax secretion probably furnishes sufficient material, and there is probably abundant time, for the building of comb in which to store the honey. As the flow of honey increases, the wax secretion is increased by an increased consumption of honey. Whether it is profitable to allow this increased consumption of honey depends upon the price of wax compared with that of honey, and the amount that is required of the latter for the production of the former. But, as the flow of honey increases, a point is finally reached where the bees cannot secrete wax and build comb with sufficient rapidity to enable them to store all the honey they might gather. When this point is reached, and, possibly, a long time before, it is profitable to use full sheets of foundation in the sections. But the flow of honey can be, and sometimes is, so increased that the bees cannot keep pace with the bountiful harvest, even with foundation in the sections, and then drawn combs would be an advantage."

We most thoroughly agree with the Dadants as to the conditions under which newly hived swarms build drone comb. So long as the queen keeps pace with the comb builders, the result is worker comb. If she is old, her powers failing, and the comb builders outstrip her, they at once begin making drone or store comb. The reason probably is that storage can thus be furnished more quickly and with less material. If the brood-nest is so large that the bees begin hatching from the first-built cells, and the queen returns to re-fill them, before the brood-nest is filled with comb, drone comb will be built from the time the queen deserts the comb builders for the centre of the brood-nest. If the honey flow ceases when the brood-nest is partly filled with comb, and then begins again just as the brood begins hatching, the new comb resulting from the returning harvest will be of the drone variety. If the bee-keeper wishes to prevent the construction of drone comb, when allowing swarms to build their own brood combs, let him avoid old queens and large brood-nests; at the same time giving every opportunity for storing honey in the supers.

(To be continued.)

ADVERTISING.

From one year's experience as a publisher, ten as an advertiser, and a still longer period as a careful observer, we wish to say a few words about advertising. But few lines of business that involve the sale of something can be successful without advertising. Other things being equal, the more extensive, persistent, and judicious the advertising, the greater the success. It is not *always* merit that wins. A most excellent, but poorly advertised, article is often crowded to the wall by an inferior competitor, the advertising of which is directed by a master hand. To advertise costs money. How to secure the best returns for the money expended is the problem. To simply advertise is no trick; to advertise *judiciously* is an art. There are, however, a few simple rules that may be mentioned. For instance, periodicals furnish the best medium. Those journals should be chosen that circulate among the class of people that are interested in the article offered for sale. There is a still further discrimination to be made. Flashy, trashy papers, those made up from poor material, sold at a nominal price, or given away to Tom, Dick and Harry, such papers have little value as advertising mediums. The circulation of a paper is a most important point, but while considering this we must not entirely overlook the lesser factor of what *kind* of people are its readers. That is, what are they financially, morally, socially? Of what *grade* are they? If an advertiser will carefully examine a periodical, remembering that "birds of a feather flock together," he can easily decide as to whether its readers belong to the class that he wishes to reach. Papers that publish original and interesting matter, that are *clean*, and free from "trash," that are sought for and read by a progressive, pushing, wide awake, industrious class, these are the periodicals in which to advertise useful articles. Having decided upon the journal that shall be patronized, the next thing to be considered is the advertisement itself. The *style* is important. Some people are born story tellers; they have such a "taking way" of "putting things" that we are at once interested and listen with pleasure. In the same way, some have a happy faculty for writing advertisements. Everything is said so appropriately, so well put, so "pat," that, in spite of ourselves, we read, admire, and *buy*. The wording, arrangement, and display are all important; but it is impossible to lay down specific rules. The best that can be said is *think;* be *original;* strive to bring out something new, something unique, something stamped with *individuality*. Let it be character rather than size that attracts attention. Mr. Wanamaker, Philadelphia's great merchant, is looked upon as the most successful advertiser in this country. He has the faculty of grasping every passing event and turning it into an advertisement. When beginning life as a tailor, he secured the job of making some uniforms. The profits attending the transaction were $38.00. He spent the whole amount in a unique newspaper advertisement. From the time of its appearance he dates his success. It attracted attention; orders poured in; the tide was turned. Mr. Wanamaker says: "To discontinue an advertisement is like taking down your sign. If you wish to do business, you must let the public know it. Standing advertisements, when changed frequently, are better and cheaper than reading notices. They look more substantial and business-like, and inspire confidence. I would as soon think of doing business without clerks as without advertising." There is one point in these remarks of Mr. Wanamaker that we wish to notice, and that is the discontinuing of advertisements. As a publisher, we find the task a delicate one, but it must be performed. There are few things more unsatisfactory, to all concerned, than spasmodic advertising. An advertisement is inserted a few times. Immediate returns are expected. They do not come. The advertisement is discontinued. High rates are paid, as there is little discount on short time advertisements. The advertiser feels as though he were being robbed, while the publisher loses a customer. As dealers in apiarian supplies, who have succeeded? Settle this. Having done so, glance over the advertising columns of the bee journals. Invariably, it will be found that they are constant, persistent, advertisers. It cannot be urged that such a course is so *very* expensive, as the discounts are such that a yearly advertisement costs but little more than one for a few months. We can but admire the manner in which great business houses advertise; how day after day, month after month, year after year, they continue to ding, ding, ding, the merits of their wares into the ears of the people; fairly *compelling* them to listen. There is a sort of arithmetical progression

about a continued advertisement. Each insertion adds to its effectiveness. There is one other point in Mr. Wanamaker's advice to which we wish to add emphasis, that of frequently changing the subject matter of an advertisement. We have often wondered at the way in which some advertisers allow their advertisements to run on and on, month after month, year after year, in the *same old form*. There are, of course, instances in which this is all right; but, as a rule, it is well to make frequent changes. Even though the facts be stated in the most interesting way imaginable, the story soon becomes *old*; let it be served up in a different style, and again it is relished. Continue the process, and readers fall into the habit of looking for this particular advertisement, to "see what there is new this time." We remember reading of a wholesale house that, upon giving a customer credit, immediately subscribed for his local papers, and watched his *advertising*. If he did little advertising, or if his advertisement remained *unchanged*, credit was given charily, or entirely withheld. If he proved a liberal advertiser, *changing* his advertisement frequently to suit the times, unlimited credit was given. Here is a moral worth heeding. When an advertiser seeks his customers at a distance, transacting the business by mail, there is one thing more to be considered. He must enjoy the *confidence* of the people to whom he appeals for custom. A queen breeder who has done but little advertising complained last season that he had not sold enough queens to more than pay his advertising bills. Another breeder of whom we solicited an advertisement for the REVIEW replied: "What's the use? I have more orders now than I can fill this season." The man so burdened with orders has been before the public for years as a writer, breeder and advertiser. The practical question is, how can this confidence be secured? To answer is not difficult. A business reputation is usually a plant of slow growth, and the only course is to begin its cultivation at *once*. First, and foremost, begin to advertise, and continue to do so, according to the principles just laid down. Mr. Wanamaker truthfully says that a standing advertisement inspires confidence. If you know of any valuable facts connected with your line of business, give them to the public over your signature. Nothing more quickly familiarizes a man's name with the public, and that, too, in a favorable manner, than seeing it appended to excellent, well written articles. Of course, all cannot write articles, but all can *think*; can use all honorable means of bringing, and keeping, their names before the public. And when a little custom *does* come, with it comes the golden oportunity. Treat each customer in such a manner that he will return again and again, and will always be glad to speak a good word for you and your business. "There is no advertisement like a pleased customer." Perhaps the general reader will think that too much space has been given up to this subject, but he must remember that, were it not for the advertisements, no journal could be furnished at less than double present prices; that advertisers pay well for the space they use; and it is no more than fair that their interests receive some consideration. Advertisers will ever find us ready to aid them in their efforts at getting up new and attractive advertisements, and in so managing their advertising that it will benefit all concerned.

EXTRACTED.

Why Some Bee-Keepers Prefer Blacks to Italians.

LAST SEPTEMBER, our valued correspondent, J. A. Green, contributed to *Gleanings*, an article upon the above subject. As it contains some excellent points, not touched upon by our other correspondents, we take pleasure in reproducing it, somewhat condensed: —

"I believe that nearly if not quite all who prefer the black bee and its crosses are producers of only comb honey, or, at least, advocate the securing of most of the crop in that shape. That the Italians are superior for extracted honey, is, I think, unquestioned.

Two points of superiority are claimed for the black bee. First, that it will more readily enter the surplus receptacles, especially if not close to the brood. Probably there is some truth in this, or it would not be so strongly insisted on; but I have never observed any difference worth mentioning; and with proper management I know there is practically none whatever.

Second, it is claimed that the blacks produce whiter comb. There is a difference in Italians in this respect. I have had Italians, all of whose honey had to be graded as No. 2, at two cents per pound less than that of colonies alongside, just because of its dark and watery appearance, due simply to the way it was capped. Such queens are promptly superseded. Whiteness of comb stands

high in the list of qualities for which I am breeding, and its realization is much more desirable than yellowness of bees, though I am working for that too.

The two points referred to are the only ones in which the blacks may be fairly claimed to be superior to the Italians under *ordinary* management. When we consider their positive defects, the Italians easily bear off the palm under *such* management. With *certain systems* of management, though, these very defects of the blacks are so utilized that they become *aids* to manipulation. The black bee is easily frightened, and readily driven off the combs by smoke or other means. They are also easy to shake from the combs. In handling "hives instead of frames," a system that must come more and more into use, these qualities are valuable; and, if the frames are not so easily handled as the ordinary style, highly desirable.

The blacks are not so liable to fill up the brood-chamber with honey, thus crowding the queen. This is a very desirable feature when contraction is practiced. This very quality, though, is apt to bring them out in the fall with an empty brood-chamber. Some consider this an advantage, though I think most would prefer bees that look ahead a little more, and do not require to be fed every fall. Of course, if the full honey is not suitable for wintering, which is probably the case at some times in some localities, it is best that there should be as little as possible below.

To sum up, if you are producing comb honey exclusively, on a large scale, practicing contraction, handling hives instead of frames, and wintering on sugar, blacks *may* suit you best; but under other circumstances, and for an 'all-purpose' bee, the Italian is preferable." JAMES A. GREEN.

Dayton, Ill., Sept. 25, 1888.

THE "REVIEW."

One of the distinctive features of the BEE-KEEPERS' REVIEW is that each number takes up some special topic, and discusses it most thoroughly Each issue is, to a certain extent, a little pamphlet, giving the best that is known upon the subject taken up Below is a list of the topics discussed in 1888:—

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

The Jan. No. for the present year discusses "Bee-Hives;" while the Feb. issue is devoted to "Mistakes in Bee-keeping."

Price of the REVIEW, 50 cts. a year. Samples free. Back numbers can be furnished.

"The Production of Comb Honey."

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

It begins with taking the bees from the cellar and goes over the ground briefly, clearly and concisely, until the honey is off the hives; touching upon the most imortant points; and especially does it teach when, where and how foundation can be used to the best advantage; when combs are preferable and when it is more profitable to allow the bees to build their own combs.

Price of the book, 25 cents.

SPECIAL OFFER.

For 65 cts. we will send the REVIEW one year and "The Production of Comb Honey." For $1.00 we will send all the numbers of the REVIEW for the past year (1888), the REVIEW for this year (1889) and the "The Production of Comb Honey;" or, for the same amount ($1.00), we will send the REVIEW for TWO years from Jan. 1st, 1889, and "The Production of Comb Honey."

Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, FLINT, MICH.

THE BEE-KEEPERS'
REVIEW

VOL. II. FLINT, MICHIGAN, APRIL 10, 1889. NO. 4.

Contraction of the Brood-Nest Profitable—It May Even Cause More Honey to be Stored.

JAS. A. GREEN.

TO DISCUSS this question properly, I feel that I ought to have, at least, one more season's experience with contraction on a large scale during a good honey season. I have practiced contraction for several years, but three of these were poor years for honey, and, before this, my experience with it extended to only a few colonies. Still, contraction has so uniformly shown superior results, that I have no hesitation in declaring it invaluable to the honey producer. Yet, it must be properly handled, or it will be found that the system is not without its drawbacks. I have not found it profitable to contract except during the early honey flow from white clover, basswood, &c. If the brood-nest is kept contracted all summer, I find at the end of the season, in most cases, the brood-nest crowded with honey, with but little brood, and a small colony of bees. Probably the result would be different in some localities, and also when the bees are of the black variety. As I do not consider such colonies in the best condition for wintering, I prefer to increase the size of the brood-nest as soon as the early yield is over. This allows the queen room for breeding, and the eggs laid at this time hatch out in time for the fall harvest. The honey for winter is stored in the upper part of the hive, and where a double brood-chamber is used, the upper section will contain nearly all of it, and the bees are put in good shape for packing or putting into the cellar by simply taking away the lower section after the brood has all hatched.

The vertical contraction that is permitted by the use of the double brood-chamber is preferable in every respect to contracting horizontally, as is necessary when deeper frames are used. If deep frames have any advantages at any season except first cost over a frame six inches in depth or thereabouts, my experience has failed to show them.

With me, contraction has proved most profitable with a swarm just hived. I am not altogether sure that it is any real advantage under any other circumstances during the honey season.

We are told by some that no more honey can be secured by contraction than without it; that the only advantages are, getting honey in the sections that would otherwise be stored in the brood-chamber, preventing the rearing of brood when it is unnecessary, &c. Hives, they say, do not make honey. "Bees will store as much honey in a nail keg, &c., &c." With these I cannot agree. It is true that it is the bees that gather the honey, but it is not true that bees work equally well under all circumstances. We have all seen how two colonies side by side, apparently exactly alike in every respect, will differ widely in the amount of work they will do. No doubt this is usually attributable to a difference in constitution, but sometimes the backward colony will take a start and work with a vigor that soon puts it alongside or even ahead of its rival, showing conclusively that the difference between them was a difference of conditions, which we did not understand. In other words, when the conditions are not right, bees sometimes work in only a half-hearted way, when if the conditions were favorable they would work with a vim.

Contraction sometimes seems to supply the necessary element to make the bees work with all the vigor of which they are capable. It may be because of the honey saved that would otherwise be fed to brood, or, it may be that nurse-bees are sooner released as workers, or it may be something else, but I feel very sure that in some way, contraction is, sometimes at least, the cause of more honey being gathered and stored in the hive than would be had without it.

DAYTON, ILL. April 1, 1889.

The Benefits of Contraction.

R. L. TAYLOR.

SINCE I first began the production of comb honey, I have largely practiced contracting the brood-nest, and continue to look upon the practice with great favor, but I can readily see that it might not be desirable in all situations. With me, the main crop comes in June and July from clover and basswood, and is, of course, excellent in appearance, of the finest quality, and so, readily salable. The only surplus I can hope for after that, comes in August and

September, and is almost invariably meagre in quantity and difficult of sale on account of its poor quality and appearance. It becomes an object, therefore, to secure as much as possible of the former in a salable condition, even at the expense, if necessary, of the latter. And again, swarming comes almost entirely during the early honey flow, and it is then that the desire for brood rearing is at its height. The question at once presents itself, are brood and honey in the brood combs, or, honey in the sections, the more profitable? For myself, I have no hesitation in deciding that the latter must have the preference.

It may be that some will question whether this is a necessary alternative, and ask whether I may not have the brood and honey in the brood combs and the honey in the sections too? Or whether, in any event, both the brood and the honey in the brood chamber are not necessary, and therefore profitable?

In determining the proper answers to these questions, it is well to consider, first, what would be the probable difference in the result in respect to the amount of comb honey? In contracting the brood chamber, I decrease it the capacity of five L. frames, and I am unable to estimate that these could be filled with brood and honey at an expense less than a twenty-five pound case of comb honey of the value of, say $3.75, an amount of profit on a single colony well worth a diligent effort to secure. Whether that amount of honey extra, stored and used in the brood chamber at that season of the year, is, in my locality, of any advantage at all, is to my mind, very problematical. This extra brood can be of no use during the white honey flow, and at the advent of the fall season the lives of the bees hatched therefrom are well nigh run, and as they must have food during the intervening season of dearth, they will probably have used most of that portion of the twenty-five pounds that was left after receiving what was necessary to nourish them in their earlier stages.

Then a failure to contract the hive for a swarm may work harm in another way. There are, we will say, yet two weeks of good honey gathering, and for six or eight days the bees may confine their operations to the brood chamber, and then, loth to go into the sections, waste several days, perhaps the rest of the season, in idleness; while, with contraction, work in the sections begins *at once*, and continues without interruption.

I have said sufficient to indicate that with me, at least, neither the extra brood nor honey can yield much profit, for, ordinarily, little of the honey remains, and the brood reared in five L. frames is sufficient to keep the colony strong. But there is another point which, at the risk of being charged with inconsistency, I will call attention to. If not forced into the sections at once, many colonies, and especially Italians, will so clog the brood-nest with honey, that it assumes the dimensions of one's two fists. Of course such extreme contraction is injurious and can be easiest avoided by a proper reduction of the brood-nest at the time the swarm is hived.

I have only time to say further that I contract by dividing the hive horizontally, using the new Heddon hive. No statement is needed to show that this is much the better way. After the early crop is gathered, and before the fall flow begins, I enlarge the hive to its full size. This gives room for what may be gathered in the fall to be stored convenient for winter use and at the same time leaves plenty of room for all the brood a colony is likely to rear at this season of the year. This plan suits me all around. I want the honey there for winter, I want all the brood I can have at that time, and I want a full sized hive to winter in. From my own experience there comes no uncertain utterance with respect to the desirability of brood and hive room.

LAPEER, MICH. April 2, 1889.

The Somber Side of "Contraction"—A Conservative, Conscientious Article.

DR. C. C. MILLER.

THE CONTRACTION to be talked about, I understand to be contraction during the honey harvest for the sake of getting honey put in supers instead of in the brood combs. It is practiced mainly, if not entirely, by raisers of comb honey. I have raised comb honey with ten Langstroth combs in the hive, eight, seven and six, and in hundreds of cases with four or five, in some cases with three, two, and even with but a single comb. In the latter case no queen was in the hive. Strong reasons will probably be given for and against contraction, and some of these reasons are apt to be carried farther, on each side of the question, than facts will warrant.

So long as there is abundance of room in the brood combs, I have not found the bees anxious to leave this empty space unoccupied in the brood-chamber to commence work upon empty sections. If, however, room in the brood-chamber be limited, as soon as it is all occupied, if the honey flow continues, the bees *must* store in the sections. One object of contraction, there, is to force the bees into the sections. I do not lay any particular stress on this. Bees will commence work in sections sooner if coaxed in than driven. A section partly or wholly filled, and then the honey extracted in the fall and the section cleaned out by the bees, makes a *bait* which, put into the central part of a super the following summer, will, at least in my case, start the bees at work in the super just as soon as it is at all desirable to have them there. The seasons of 1887 and 1888 were, in my locality, failures. I put on supers giving each an emptied section as bait, and in nearly every case work was commenced in the supers. A very few colonies succeeded in filling a super, some worked a few sections nearest the bait, but the large majority filled and sealed the bait section and left all the empty sections unworked. The brood-nest was contracted in most of these cases, but is it at all likely that this contraction was just effective enough to start the bees in the bait and no other section?

The objection has been urged that when the brood-nest is contracted the queen is apt to lay in the supers unless a queen-excluder is used. I have not used a queen-excluder between the brood-chamber and the sections, merely a Heddon slat honey-board, and I have had no trouble with the queen going into the supers. I think not one section in a thousand has had eggs laid in it. Possibly the case might be different if I did not use separators.

I think the two principal reasons in favor of contraction are, first, the white honey is all forced into the sections, giving that much more first-class honey to be sold, and leaving the brood-chamber to be filled up with a poorer class of honey, or with sugar syrup: and, second, the partial suppression of breeding, so that a large quantity of bees will not be raised too late to be of any service in securing the harvest. As to the second reason, I am skeptical. It is true a bee does not go to work in the field till about 37 days after the egg is laid, from which it hatches, and from this it might be hastily concluded that where the white honey harvest lasts only about five weeks, the laying of the queen during that time would only be the means of bringing forth a lot of consumers ready for work just *after* there ceased to be any work for them to do. But it must not be forgotten that, although 37 days may ordinarily elapse from the laying of the egg before the bee is ready for *field* work, it forms an important element in the *hive* work from the very moment of emerging from its cell, and the more bees there are for hive work, the more can be spared to go into the field. Although it is laid down as a general rule that a worker does not go to the field till 16 days old, it must not be supposed that is a fixed time without regard to circumstances. I have seen workers that I know were only five days old carrying in pollen. A queen had been given sealed brood without any bees, and five days later I saw the young workers carrying in pollen. In this case there were no older bees, and is it not possible that a large force of young bees in the hive might be the means of sending to the field, workers of no greater age than five days? In any case, every egg laid as much as 21 days before the close of the honey harvest may be counted as an addition to the working force. It looks to me reasonable that the fewer eggs laid during the last 21 days of the honey harvest the better, providing no after harvest comes. Still, the bees don't always go by my reasoning, and I must confess that I have observed a number of cases in which the queen had unlimited room right through the whole season, and although at the beginning of the season the colonies were not up to average strength, they accomplished more than average results. So I am rather forced to the belief, without seeing any good reason for it, that it may give a large yield to let the queen have full swing throughout the season.

Whether it is best to force all the white honey in the supers, leaving the bees to be fed later, or to fill up on fall flowers, may depend somewhat on circumstances. If dependence is placed on fall flowers, then is it not important to have as strong a force as possible to store this fall honey? If so, contraction may defeat us. If we are to depend on feeding, then we must count on the extra labor, and I seriously doubt whether bees thus fed, will in general be in as good condition for winter as those which have been allowed to store their own supplies directly from the flowers. From this it seems possible that, even if a larger crop of white honey may be secured this year by contraction and feeding, it may be so much at the expense of next year's crop, that, in the long run, contracting may be unprofitable.

All things considered, I am somewhat in doubt as to the whole matter. I do not know that contraction is never profitable, and I do not know that it is never unprofitable, but I know that it involves labor, and like others, I want a minimum of labor, and as I am doubtful as to its good results, I am growing more in favor of the simple plan of letting the bees have full room in the brood-nest all the year round.

MARENGO, ILL. April 1, 1889.

Contracting the Brood-Nest. One of the Greatest Advantages of all Modern Manipulation.

JAMES HEDDON.

I BELIEVE it was once settled that the writer of these lines was the first to make public the system of contracting the brood chamber, as a system, and for the purpose at that time described, and since enjoyed by hundreds of our most successful honey producers. This was done in a bee paper, now dead, but at that time published in Ohio.

Later, a fuller and more comprehensive description and plea for the system, I placed in the American Bee Journal for 1885, see page 437. The article was illustrated by an ill-shapen cut representing my modification of the Langstroth hive as being shorter from front to rear than from side to side, when exactly the reverse was true. Later, Mr. G. M. Doolittle wrote an article in favor of the system.

As usual, in your introduction, you have made many of the salient points in favor of this splendid system. Still, I will quote, with your permission, quite extensively from my article above referred to. Before so doing, however, it may be proper to say that my attention was first turned toward the system by the advice of a friend who had practiced it for several years quietly and to himself. I quote the article as follows:

"During the past three years I have been carefully testing a hive-contracting system, and I have found it of great value, as regards both summer and winter success. It has become a permanent system in my apiaries when running for comb honey, and now, after testing it for three seasons, I feel prepared to speak of what I know.

I hive all swarms, whether first or second swarms, upon five Langstroth frames of foundation, filling up the rest of the space in an 8-frame hive, with two contractors or 'dummies.' I find that the queen uses these

five combs to such an extent that I get as much brood in them as in any seven combs where the whole eight are used. The five combs become five sheets of nearly solid brood, and where they are reversible, quite all brood. Certain it is that this contraction in no way tends to increase the amount of *honey* stored, but to a great extent tends to increase the amount stored as *surplus*, and decrease the quantity stored in the brood-chamber.

This contraction also keeps much bee-bread out of the hive, leaving it in the field, which is by far the best and most economical reservoir for it, in this locality. With this treatment, a prime swarm commences work in the cases at once; I usually place one case on the hive when hiving a swarm. A second swarm usually commences in the surplus cases in two or three days after being hived.

In autumn, when the honey harvest is over, the little brood-chamber contains but little honey and pollen (almost none at all if the bees are German). I now have much honey in the supers that, without contraction, would have been in the hive, and I am now ready to feed the colony sugar syrup for winter. When fed, the bees are in a condition where all their stores are accessible, and to winter with almost absolute certainty, if they are kept warm enough. Whether the brood-chambers are almost honeyless, or partially stored, depends upon the nature and duration of the honey-flow, and the blood of the bees. Most bee-keepers are aware of the fact that Italians are more prone to load the brood-chamber, regardless of the surplus department, both early and late in the season, than are the German bees.

While the system is so nearly perfected that with any bees I bring nearly all of the colonies out at the close of the season, so as to take one-half or more of their winter and spring stores through the feeder, I have it complete as far as Germans and most hybrid colonies are concerned. I am now at work with assurance of perfecting the system, so as to bring out all brood-chambers, with any bees, in a perfect starvation condition; our honey all gone into the market, and our colonies all ready to receive the winter food prepared by the bee-master, as their whole winter and spring stores. I believe that sugar syrup is better than honey as spring stores, till the weather is quite warm, and till the bees can fly daily.

I keep the bees on these five combs, after placing them on the summer stands, until the spreading of the brood and the advance of the sun north of the equator calls for more room, when I remove the contractors, replacing three combs which are put in the positions occupied by the contractors, or among the combs of brood, spreading them, according to the weather and force of the colony. When this colony swarms, I hive its swarm on five combs, as above described, and then on the twentieth day after swarming, I go to the old hive and find, as a rule, a young, fertile queen, eggs in the centre combs, and three or more combs with considerable honey and no brood, which I remove, replacing them with the contractors. This old colony is soon in the supers, having a five-comb brood-chamber filled solid with brood.

I have had colonies, after casting three swarms, at work in the supers within five days after contracting. I think that the advantages of this contracting system will be seen; or it may be called an enlarging system: that is, enlarging the brood-chamber for about six weeks during the time that the queen is not only the most prolific, but when such prolificness gives us bees to become field-workers, just when we most need them. I think that it will also be seen, too, with what advantage reversible frames may be added to this system. I make the contractors by making a wide frame just the same width all around, and just the size of the standard Langstroth brood-frame. It is no division-board, as it has all the same bee-spaces as has the brood-frames, and thus manipulates very easily. When the frame is made, I nail a $\frac{1}{8}$ inch board upon each side, and in the middle I place a little cubic block, a little smaller than the width of the frame; by nailing each side to this block, they will be just a little concave.

Through all the summer days' the contractors are kept at the same distance from the sides of the hive and adjacent combs, as the combs are kept from each other; but in winter I move them back close to the sides of the hive, thus aiding as non-conductors, and giving a little more wintering room: these two points I consider non-essentials, however.

Some of the contractors I fill with chaff, some with sawdust, and I also have 300 made of solid wood, but these are only 7-8 of an inch thick, and each pair replaces but two combs, leaving six instead of five. When six are used the spaces of the honey-board exactly break joints with the spaces below, as with eight combs; but with five combs I move the honey-board sidewise as much as it will go and still rest solid on the hive, and then I leave the break-joint feature of the honey-board perfect as before. It was by the use of this five-comb system that I first got my best test of the great value of the break-joint feature of the honey-board. I never knew how much more, queens and comb would get up through where they ought not to, till after I placed a lot of honey-boards on some contracted hives, and in such a manner that the slots corresponded vertically instead of breaking joints with each other.

My first thought was to have these contractors, broad-frames filled with sections, but experience taught me, first, that we did not need any more surplus room with a Langstroth hive and complete 'tiering-up' system; second, it adds complication to have storing in sections going on in the brood-chamber; and third, the honey stored there is not fit for market, at least none that I have ever seen comes up to my standard. If it were only started there, and finished in a better place, it might do, but as such a system complicates labor still more, why should we use the place, when we have all the room we want without it, and in a far better and handier position? I have not been troubled with the queen entering the sections, when I used the honey-boards in proper position,

though most of them are not queen-excluding, the slots being $\frac{3}{8}$ of an inch, or double bee-space."

In your introduction in last issue it seems to me you use the word "vertical," when you mean "horizontal." For the very reasons which you give there, and knowing as I did from several years experience, the advantages to be derived from contraction, I was led to the invention of my new hive, the crowning feature of which is one brood-chamber in two horizontally, divisible parts, or sections, all about which your readers well know. With this arrangement contraction can be accomplished almost instantly without any exposure to robbers, no loose pieces to be handled, bringing the brood close up to the honey-board, and, when the surplus cases are adjusted, there is brood under the whole, there being no "dummies" as formerly. I have found this a great advantage, not mentioning the important gain by the alternating of its brood sections.

Before closing I wish to say a word in regard to your editorial on page 40, concerning my honey-board. If I were compelled to give up either, the bee-space or break-joint principle, I am not sure but that I should give up the bee-space. It is like, "Which would you rather lose, your father or your mother?" We would rather keep them both.

May I lisp one more word concerning "best bees?" I was somewhat astonished at the number of bee-keepers who favored the Carniolans. If the truth could be known I would be willing to wager that the majority of those who have Carniolans have more German than Carniolan blood in their bees. I used to say that, if the best strains of brown German bees could be introduced under a new name, that their praises would be sung by hundreds who would now discard them for worthless Italians. If there is any bee having a single quality superior to the combination of the best Italians and Germans, I want to see its work. It may be true. I am open to conviction.

DOWAGIAC, MICH. March 18, 1889.

Bro. Heddon, we cannot agree on *all* points. Were *we* to make use of the nearness and dearness of our relatives in comparing the merits of the bee-space and the break-joint principles in honey-boards, we should look upon the latter as a cousin, and the former as a parent.

It has been asserted that the Carniolans are simply a strain, or variety, of black, or German bees; but they *certainly* possess characteristics, and desirable ones at that, not possessed by the German bees as we now have them in this country.

We believe that we employed the word "vertically" in the proper sense when using it in connection with contraction of the brood-nest. A brood-nest contracted "*horizontally*," would be squeezed up at the sides.

Size of Brood-Chambers, also a Little Criticism of Friend Green's "Review."

G. M. DOOLITTLE.

A CORRESPONDENT says, "I have more bees than I wish to keep, considering that, in all probability, they will double by swarming during the present season. Can I not work them all till I get five frames of brood in each, and then double them so that each hive will have ten frames of brood? In this way I would have my original number in the fall, if each gave one new swarm, and get the bees in just the best possible shape for the harvest. What think you of the plan? I used the L. frame." In answering the question, there are several points to be considered, such as getting all of the bees to stay in the new location, which the doubled-up colony will occupy; what is to become of the extra queens, etc., etc.? But the main one, as I consider it, and the only one which I shall dwell upon in this article, is, will the bees be in the "best possible shape for the harvest?" as the correspondent says they will. I claim they will not, and, as such a claim is not worth a cent unless it is backed up by suitable evidence, I will at once proceed to give what I consider sufficient proof that I am right. In the first place, one queen will lay only about so many eggs, or keep about such an amount of comb space occupied with brood for any length of time, that space amounting to about seven L. frames, taking our queens as they average. A few may do better, many will not do as well. Now, our correspondent is going to give the brood product of two queens, or seven-tenths more brood than the average queen can produce, to one colony, expecting to reap large returns in honey, basing this expectation, I presume, on the amount of bees he will have in that hive twenty-one days later. As far as the bees are concerned, his calculations are all right, but there is another factor which comes in right here, which spoils the bright outlook; for, when the brood hatches from the outside combs, the queen will fail to fill them with eggs again, so that storing in the brood-chamber will commence upon the hatching of the first bees, and before the bees commence to work in the sections to any amount. With so large a comb space below, the bees will soon crowd the queen, in preference to extending their operations in the sections. There is a limit regarding the size of a brood chamber, beyond which we must not go, if we would reap the best results in comb honey. I know of nothing so damaging to the prospect of a good yield of honey, except a failure of the flowers to secrete any, as letting the bees begin to store honey in a large brood chamber, or any other, before they get well at work in the sections. To avoid this storing of honey in the brood-combs, before the bees went to work in the sections, I cut the size of my hives down to a comb capacity of about $7\frac{1}{2}$ L. frames, I using 9 of the Gallup size, and if at the beginning of the harvest I find some few of the queens do not keep this amount of room occupied with brood, the size of the brood chamber is contracted till

they do. To best explain what I wish to, I will say that my plan of working for comb honey is as follows, and this plan I have adopted after an experience of nearly twenty years, trying during that time nearly all of the plans devised. I work the brood up to the fullest capacity of the queen, or till the hive is full, previous to ten days before the honey harvest. Understand that the number of frames in the hive, be the same 6, 7, 8 or 9, Gallup size, are to be *full of brood*, not part full. When all combs in each hive are thus filled, and the honey harvest is only eight or ten days in advance, the sections are put on, into which the bees will go to store the first pound of honey, for they have no other place to store it. This storing will continue till the bees swarm, at which time, while the bees are out in the air, I go to the hive, remove the sections, take out the frames of brood and the few adhering bees, and place them in a light box I have for carrying combs about the apiary. I now place in the hive five empty combs and two dummies, one on either side, placing the sections back in place again as they were before I took out the combs of brood. If I do not have the coms, I use frames with foundation starters in; still, I think better results can be secured by using the combs. As, of late years, I have all of my combs built by nuclei, I always have the combs on hand. The swarm is now returned or allowed to return, as I keep all queen's wings clipped, so that they return about as soon as I can get the exchange,spoken of above,accomplished. I next take the combs of brood and place them in an empty hive where I wish the colony to stand, and the next day give a just hatching queen-cell or a very young virgin queen to them. While the queen is becoming old enough to commence laying,the bees are hatching from the combs rapidly, so that by the time she does so,I have a strong force of bees of an active age in this hive, while the cells from which the bees have hatched are well filled with honey. The sections are now put on this hive, and if the honey flow holds out a few days longer, these sections are quickly filled with the nicest kind of honey, for with these bees and this young queen the case is different than with the old colony. Now, instead of the bees crowding the queen with honey, the queen crowds the honey out of the brood nest into the sections, and after years of experimenting I have come to the conclusion that there is nothing gained by contracting the brood chamber to the old colony after it has cast a swarm. By the time the young queen gets about what comb filled with brood that will be required for the prosperity of the colony in the future, the honey season draws to a close,so that she only keeps this brood along, hence a host of useless consumers are not reared, as would be the case with the swarm, were the brood chamber not contracted with them. For this reason the brood chamber to the swarm is contracted, while the other is not. Now, if the correspondent will work his bees as above, giving each colony not more than 8 L. frames at any time, I think he will be better satisfied with the results than he would be by the plan he proposes. The point I wish to emphasize is, secure the largest amount of bees possible for one queen to produce in time for the honey harvest, having just as few at all other times as is consistent with the accomplishing of this object.

As to Bro. Green's article, criticising your position, it is faulty in his not taking into consideration the cost of foundation, wire, and the extra work of putting it into the frames. The time he claims will be saved to care for other colonies, will cost him pretty dear if he takes this into account. It will cost about 10c. per frame for the foundation, to say nothing of the time required to get frames ready for the bees. If I were to use foundation in full sheets at all, I would do so by putting it in upper stories to have it drawn out, after which I would use it with swarms as spoken of in this article. As my nuclei do most of my comb building, I get all worker comb, and, as I believe, much cheaper than to buy and fuss with foundation.

BORODINO, N. Y. March 23, 1889.

Contracting the Brood-Nest and Preventing Increase by Removing the Queen—Locality and its Influence on Methods of Wintering.

P. H. ELWOOD.

MR. SAMUEL CUSHMAN writes me for more particulars as to the working of colonies having their queens removed, and requests that my answers to his questions be sent to the REVIEW for publication. The plan already given in the REVIEW in brief is to remove the queen just before the bees would swarm naturally. With the queen should be taken one or more sheets of brood with enough adhering bees to protect the brood and queen. All queen cells liable to hatch within eight days are to be broken out, and eight days later the queen cells are to be again broken out. Eight days after this, or sixteen days after removing her, the queen is usually returned. Mr. Cushman asks if the great stimulus or increased working energy arising from natural swarming, is not lost by this method, substituting instead that lack of energy which we are told is always the result of leaving colonies hopelessly queenless. I have discovered no stimulus quite equal to natural swarming. For the same strength a natural swarm will work with greater energy than any artificial method I have knowledge of. Notwithstanding, in a contest with our queenless stock, a natural swarm falls behind from lack of numbers before the expiration of three weeks. The natural swarm from the modern small hive, usually rone too strong at the start, is rapidly losing, while the queenless stock is as rapidly increasing in strength from the hatching brood. In the experience of Capt. Hetherington and myself, it has been noticed that the first eight day's work of the queenless stock, while raising queen cells, is the poorest. The second eight day's work when hopelessly queenless, is much better. If during this second period the colony is per-

mitted to raise another crop of cells, the result will not be nearly so good, thus proving that a colony hopelessly queenless, will work with greater energy than one of like strength still possessed with the swarming impulse. The third period of eight days after re-queening, is when the greatest energy is shown, and is the nearest approach to the energy of natural swarming that I have observed. During this period with the largely increased strength of the old stock, it far surpasses the natural swarm in results. The loose honey occupying the nearly broodless comb, is rapidly transferred to the surplus receptacles, and with honey coming in plentifully from the fields, very satisfactory progress is made. Thus it will be observed that our colonies are increasing in both strength and working energy during our white honey harvest of three or four weeks. This is in conformity to the honey flow, which, with us is usually enough white clover to stimulate swarming, followed by a heavier flow on basswood. The strength and energy of natural swarms may also be compared to an inclined plane, but with them the large end of the wedge comes first. This would better fit a heavy flow on clover, followed by a lighter one on basswood. Methods must be adapted to the honey flow, and this method has never been recommended for all localities. It is presented as a *reliable* non-swarming system, but where a heavy increase is desired some other plan must be adopted. In amount of crop it has not suffered in comparison with other systems of manipulation in the hands of skillful apiarists near us. Mr. Cushman asks whether removing the queen is more effective than contraction. It *is* contraction, for the brood removed contracts the brood-nest just that much. At first in removing queens I preferred to contract to five frames $10\frac{1}{2}$x16 inside, but for the last few years I have preferred to leave six frames. With horizontal contraction I have had no experience. I can see many advantages and some disadvantages in this in contrast to the old way. He inquires whether I would practice this method with fifty colonies in a home yard provided I had plenty of time to care for them. I think it peculiarly adapted to these conditions. Not more than one day in the week ought to be spent in caring for this number, and by removing the queens it could be done and not have a swarm in the air. The bee-keeper could also keep the Sabbath as a day of rest and worship. A home yard run in connection with some other business may be the bee-keeping of the future. Should prices of honey go much lower, bee-keeping at arm's length (in distant apiaries) will not be profitable.

Mr. Cushman here changes the subject and makes some inquiries about wintering: 1—Do you find that carting bees from distant apiaries is better than leaving them packed on their stands the year round, where they have pure air at all times, and can fly freely in suitable weather? 2—In your opinion, what is the reason that extensive bee-keepers in Vermont, follow out-door wintering, while you and Hetherington cart hives back and forth spring and fall? 3—Does it not increase the labor to such an extent as to balance any saving in stores from cellar wintering? 4—Can you not, in your climate, safely winter bees in well-made outer cases, in which packing may remain the whole year, provided you were using a top-opening or hanging frame hive? 5—If you were using a hanging frame hive like the Hoffman, would it make any difference? 6—Do your bees dwindle much when set out in the spring, and do they not then need as much protection as is afforded by a chaff hive?

In answer to these questions I will say that the out-door method of wintering has been most thoroughly tried in these high lands south of the Mohawk, and has been abandoned. Fifteen years ago I knew hardly any bees in this immediate vicinity wintered indoors; now, I know of none wintered out. Out-door wintering has proven a comparative failure with all kinds of wood and straw hives, and with all kinds of packing, including permanently packed hives. It will do finely for some winters, but unfortunately we cannot pick out these winters in advance. I have known our bees to be confined to the hive for five months without a flight. I formerly thought those Vermont bee-keepers knew very much more than we about wintering bees out-doors. Since visiting them, I conclude they know only a little more than we on this subject; (I would not have you understand by this that they would not bear acquaintance well); I now think the difference in climate makes a large part of the difference in results. The winters in Addison Co., Vt., are shorter than ours with more mild days and less cold winds. The Champlain Valley is almost a continuation of the Hudson Valley, making a favorable opening for warm south winds. The high Adirondacks at the west break the force of the prevailing northwest wind, therefore the climate is milder than the latitude would indicate. They have some very cold days, but severe cold is not disastrous if not long continued. The mild days, even if not warm enough for bees to fly, are beneficial in giving the bees opportunity to change honey and position in the hive, etc. The Mohawk Valley runs east and west and it seems to be a great funnel for supplying the central part of New England with fresh air. The prevailing winter winds are northwest and they are hardly ever idle; severity of cold is not always correctly measured by the thermometer, but is often dependent upon the force of the winds, the amount of moisture in the air, etc.; so, also, severity of climate is not always dependent upon distance from the equator, but upon elevation and local conditions. We get very little south wind here. Frequently we hear the south wind blow on the hill top a couple of miles south, while with us there is a cold east wind and freezing weather. Four miles south bees are flying and a genuine thaw goes on. We consider a closed-end frame much better for wintering and springing bees than an open-end frame. For moving bees the closed-end is very much better. You can handle them like bricks. The Hoffman frame is partly closed at the end, which is quite an improvement. I lately saw the Quinby closed-end frame hung on rabbets, and the owner said after using them for

years with Hoffman and other hanging frames, each kind in a hundred or more colonies, that they were far superior to either for convenience and intrinsic worth. Our bees do not dwindle so much in spring as when they were wintered on their summer stands packed in chaff. I should prefer a somewhat open outside case so that the moisture might more freely pass off. Absorbents after remaining in the hive during the winter are usually somewhat damp and are of doubtful benefit for spring protection. A wet overcoat would be much the same protection to a man. Absorbents are also a detriment in shutting off the sun. Honey and wax retain heat well, and in a well-made hive, a good supply of honey, when well heated up, makes comfortable quarters for a swarm until the next sunshiny day, *provided* that day is not too far off. At any rate, after trying both for years, I prefer this occasional warming up to the shade and dampness of the chaff hive. However, for the latitude of Rhode Island, and even farther north, some form of outdoor wintering will probably be best, care being taken in constructing outer cases that they be so open that the sun and wind may dry out the packing. We do not put our bees in the cellar to save honey, but to save bees. The honey saved together with the saving of work in weighing, feeding, looking up queens, uniting, etc., at home, instead of at a distance, helps to offset the extra work of carting back and forth. The immediate labor of setting in and out is more than counterbalanced by the saving in hives. It is surprising what a saving it is to keep them in the cellar. Capt. Hetherington, one day last fall, with less than a-half dozen men to help him, put in seventeen hundred swarms. They didn't wear any of the harnesses described in our bee journals. His teams wore the harness.

STARKVILLE, N. Y. March 28, 1889.

Large Combs With Passageways—"Contraction and Quilts" Undesirable. Stimulative Feeding.

J. A. BUCHANAN.

IT WOULD be a herculean task to recount the scores of mistakes I have made since engaging in apiculture. My passionate fondness for the pursuit seems never to abate, even under the most trying circumstances; yet it is my decided opinion that I made the greatest mistake of my life by engaging in the business.

The first frame hive I adopted was the old style, eight-frame, Quinby, which was equal in capacity to a ten-frame L. hive. Since that time I have tested hives and frames of every conceivable size and shape, but none have given better satisfaction, either in wintering bees or in amount of honey secured, than has this old Quinby hive. In dropping this hive, if I made no mistake, I am sure I have made no more money by adopting other styles. Passageways were made for the bees by cutting out of the combs, vertically, narrow strips, a little forward of the center. Then strips of wood were placed in the sides of these openings, leaving a bee-space only, which prevented the bees from closing them. These passageways were valuable, not only for the bees to return directly to the main cluster when sudden changes came, but they also permitted the queens, especially of weak stocks, to pass to the opposite side of a comb in extending brood in cool spring weather. These openings extended from within one inch of top bar to within one and one-half inches of the bottom bar. Bees kept in such hives always seemed to have plenty of stores and did not need such close attention as do those in small or shallow-frame hives. This brings me to the subject of contraction.

Expert bee-keepers tell us that we make a great mistake if we don't contract the brood-nest to the laying capacity of the queen, and force *all* the honey into the supers, supplying the needs of the colony with sugar syrup as the safer food for wintering. Some experiments, that I have conducted on this line, convince me that the claim is based on a false assumption. If it will hold good in more northern latitudes, let its advocates hold fast to it; but when we count the cost of feeders, the preparation and feeding of sugar, loss in weight by consumption of syrup for the purpose of elaborating wax in sealing the syrup, together with some loss of vitality in the bees that perform the labor, time required to sell the extra amount of honey, when all these points are considered, I believe the scheme will be found unprofitable. But we are asked to believe that this fall feeding induces the bees to rear more brood, which, maturing late, is a great advantage, as these young bees winter better. Another mistake. I find bees hatched during September, or even some earlier, winter best. These older bees are hardened off; and when cold weather comes they settle down to the quiescent state more perfectly.

On the subject of ventilation, I have some facts to record, which seem at variance with much that has been offered on the matter. "See that the quilts and cushions are tucked down closely over the frames in the early spring, that the heat may be retained for the rapid spreading of the brood," is the oft repeated advice given by many. Last spring I was called to examine three colonies that had been wintered on the summer stands, having the supers, (seven wide frames filled with sections which were partly full of comb and some honey,) left on just as they were in the fall. This was at the beginning of apple bloom. When I raised the caps and saw the bees hanging in festoons all through the sections, and noticed that new comb was being built, I could but view the sight with wonder and astonishment. To tell the truth, I just felt a little jealous over the affair. You see I had been so busy all the spring "tucking down quilts" to get up steam and start brood rearing in my apiaries, and I felt completely licked by this careless old bee-keeper, who had left his bees in such horrible plight. There were more bees in one of his hives than in any three of my best. I know another bee-keeper who practices leaving the supers on all winter, and his bees swarm very early and winter perfectly.

Generally, the advice is not to stimulate bees in the early spring by feeding. If I had

ten colonies, five weak, and five strong, I would stimulate the strong by feeding, and when an abundance of young bees had matured, I would shake one or two frames full of these young bees in front of the weak colonies, letting the old bees, that know the way, go back. These young bees will not quarrel with the bees of the weak stock, nor kill the queens. As the season grows warmer, brood from the strong hives may be given the weak ones, when all will soon be made strong. The mistake is made in attempting to stimulate the *weak* stocks.

HOLLIDAY'S COVE, W. VA. Jan. 27, 1889.

No Variety of Bee is Best in all Respects, But the Blacks are Hard to Beat.

BYRON WALKER.

IN ATTEMPTING to write briefly in relation to which are the best bees, I shall confine my remarks wholly to the merits of the blacks, Italians, and hybrids; since with these only, have I had any experience. When I began keeping bees, some fifteen years since, I purchased twenty colonies of black bees; and then, following the instructions of the leading apicultural writers of the day, having bought as many Italian queens as I had colonies, I proceeded at once to Italianize my apiary. For reasons unnecessary to mention here, I was not entirely successful in the attempt. The result was a sore disappointment at that time, as my heart was set on keeping only *the best bees*, those that could be handled with impunity, even though no veil were used, and that would gather a large amount of surplus, when the inferior blacks would starve, etc., etc. Well, I finally concluded to make a virtue of necessity, and so postponed the completion of my scheme until another season. This naturally led to a comparison of the traits of the two races, and since my capital at that time was very limited, I was obliged also to keep in view, general results. The third season found me in charge of an apiary of two hundred colonies, composed about equally of blacks, Italians, and hybrids; and from then till now, with the exception of two summers, when I had less than one hundred colonies, I have kept from one hundred and fifty, to two hundred and fifty colonies in my different yards each season; and as these were chiefly bought from different states each spring, the races in question being each year well represented in possibly a dozen or more different localities during this time, the chance for comparison has been a tolerably good one. I must confess that, at the outset, I was strongly impressed in favor of the Italians; but as I gradually ceased to *kick against the pricks*, and got my financial eyes wide open, the fulfillment of my original purpose was indefinitely postponed. It would be idle for any one at this time, to claim that either of these races in their purity, possess all of the most desirable traits in a measure that would entitle them to be called the best bees.

Who would question the superior disposition of the Italians, the greater facility with which they can be handled while performing the ordinary operations of the apiary, with perhaps the single exception of displacing the bees from their combs for extracting or other purposes; or that they excel in the vigor and tenacity with which they defend their homes from invasion? On the other hand, who will call in question the claim that the blacks are superior as comb builders, and that they impart a superior finish to the comb honey? In short, that as comb honey producers, they can be handled with far better results than Italians?

I am aware that there is a marked difference between different strains of the latter, but the best that I have been able to secure, are still quite inferior to the blacks in this respect. There is one point you mention in introducing this subject as an excellence peculiar to the Italians, that I cannot but regard as a defect, with a location similar to mine. I refer to the tendency to suddenly reduce the amount of brood rearing one-half, at the beginning of the honey flow. Does not this mean that the honey which should have been stored in sections, to the extent of this reduction, will now be stored in the brood nest, unless the apiarist is to the trouble to correspondingly lessen its size? In either case, does it not often result in crowding the queen so as to cause swarming, at a time when increase of swarms is sure to result in a largely diminished yield of the best comb honey; and further, if, as is often the case with me, the late yield is by far the better, and the interval between it and the early flow is but a short one, will it not often result in such colonies being so far diminished in strength as to be in poor condition for taking that flow? Finally, will not the close of the late flow, often find the brood nest almost entirely filled with honey, even with plenty of room in the sections, and the colony so far reduced as to preclude building up again during the season? Such have been the practical results with me in hundreds of instances. Indeed, only last fall I shook off from their combs, over thirty colonies that were in this condition, and yet each of these colonies had an ordinarily prolific queen at the commencement of the honey flow.

With regard to hybrids, I have for years past endeavored to follow the plan you mention for improving our stock, but constant winter losses have prevented giving it a fair trial. Thus far, I have failed in securing a strain that combines in any great measure the good qualities of the two races. Results have been by no means uniform. Hybrids with me, however, are commonly energetic workers, better comb builders than the Italians, and better home protectors than the blacks. In conclusion, were I to follow bee-keeping chiefly for the amusement to be derived from the occupation, I would no doubt regard the Italians, or, possibly the Carniolans, as the most desirable bees; so, also, if my location were better adapted to queen rearing and increasing stock than securing surplus comb honey; provided, of course, I could find sale for queens and bees at prices my conscience would permit me to ask for

them; but situated as I am in a location adapted to the production of comb honey, which requires, however, on an average, the purchase of one hundred or more colonies each spring to keep up my stock, I can't afford to pay from twenty to twenty-five per cent. more for a strain of bees that will (other things being equal) bring me a crop of honey bearing an inverse ratio in value, to their cost as compared with black bees. Nor have I during fifteen years trial in as many locations, found a season or locality so poor as to prove their superiority over the blacks, for the purposes for which I am engaged in bee-keeping.

CAPAC, MICH. March 8, 1889.

How the Carniolans Winter.

JOHN ANDREWS.

HAVING studied the habits of the Carniolan bees for five years, I will, for the benefit of those who are thinking of trying them, make a few statements in regard to their behavior in winter.

They will winter in a warmer atmosphere than Italians, and keep more quiet. During the last two winters I have had one colony of Italians in the cellar with the Carniolans, and, each year, the Italians died in February, while not a colony of Carniolans died, unless they starved. I have learned by sad experience, that Carniolans need more stores in winter than the Italians. They go in with more bees in the fall, and come out with more bees in the spring, and I feel that the extra honey is well used.

This winter I have kept the temperature at 50°. At this writing, a few show signs of being uneasy; and four colonies have been taken out for a flight; each one had from four to six combs of eggs and brood, and a nice lot of lively young bees.

PATTEN'S MILLS, N. Y. March 26, 1889.

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FLINT, MICHIGAN, APRIL 10, 1889.

THE EXTRACTOR IS HERE TO STAY.

Several times some one has said that the honey extractor has been detrimental to bee-culture. We are willing to admit that this is a debatable subject, but to discuss it would be wholly useless, as the extractor is here, and here to *stay*. No amount of argument would drive it away.

POPULARITY AT HOME.

It is pleasant to know that our correspondents enjoy the confidence and esteem, not only of their readers, but of their immediate neighbors. One of our best correspondents, Mr. R. L. Taylor, was elected State Senator last fall, and now another one, Mr. James Heddon, has been elected Mayor of the city of Dowagiac.

EXTRA PAGES AGAIN.

Is the REVIEW going to grow into a larger magazine? It will if we continue to be blessed with such quantities of correspondence so good that it *must* be published, and advertisements keep coming in at the rate they have for the past two months. Friends, it is with a thankful heart that we again give you four extra pages.

MR. WEED UNRELIABLE.

No large samples of comb have as, yet, come from Mr. Weed. We have borne with him, and published his excuses, and waited for him to send sample or explanations, until patience has ceased to be a virtue, Complaints still come that he neither explains nor returns stamps. Certain it is that he made small pieces of comb, and equally certain it is that there is a "hitch" somewhere in attempting to make large pieces—but there is no excuse for keeping stamps and making no explanation.

PROSPECTS FOR A GOOD SEASON.

Some correspondents in *Gleanings* call attention to the fact that a good honey season always follows a wet season. The reason given being that the clover secures such an excellent growth. They say that, according to this "sign," the coming season will be a good one. We have now had two poor seasons, and, if there is anything in the law of "chances," the harvest ought to be a bountiful one. We should not hesitate to put money into the bee-business this spring; in fact, we would sooner invest in bees this spring, than just after two good seasons.

THE "DOVETAILED" HIVE.

Mr. Root has made, in this hive, the the changes that we suggested. He has sent us a hive. At the risk of appearing too crit-

ical, we will say that the supers seem "bungling," clumsy, and heavy to us, as we are accustomed to handling those made of $^3/_8$ stuff. If Mr. Root would adopt the seven-to-the-foot sections, he could then make the sides of the supers thinner. The ends might also be made thinner, and then narrow strips tacked across the ends, at the top and bottom of the super, to make it as long as the hive. Or the supers might be made shorter than the hive and the end pieces of the honey-board made correspondingly wider.

PROF. COOK'S LITTLE PAMPHLET: "THE SILO AND SILAGE."

As a rule, we do not intend to "notice" anything outside of bee-culture, but we cannot resist the temptation to say a good word for Prof. Cook's last book: "The Silo and Silage." It is very readable, being written in the Professor's best style, and tells in a plain, straight-forward way how to build a silo, how to raise the corn, and how to put it into the silo. The Author writes from experience, and we doubt not that many a farmer could make money by following his advice. The price of the book is 25 cts. Address Prof. A. J. Cook, Agricultural College, Michigan.

MR. HEDDON'S "OFFICIAL" ORGAN.

An editorial in the March *Apiculturist* contains the following: —

"Why should not every bee-keeper have his official organ? Bro. Heddon has his; and, although published in the state of Michigan, I believe Bro. Heddon is not there to conduct its affairs, yet, when he desires to lash a fellow who does not puff 'my new system,' he pitches into him as vigorously as though he were editor-in-chief."

If we are to judge by the freedom with which Mr. Heddon is allowed to defend himself, then a perusal of his article in this same number of the *Apiculturist* would lead us to suppose that his "official organ" was published in *Mass.* instead of Mich.

BRO. NEWMAN'S NEW VENTURE.

Years ago, Bro. Newman, of the A. B. J. was engaged in the publication of the "Chicago Illustrated Journal." Upon taking hold of the A. B. J. the "Illustrated Journal" was dropped. Bro. Newman believes that the present is an auspicious time for its revival and he has brought forth "Vol. IV. No. I." with its name changed to the "Illustrated Home Journal." It is a monthly, at $1.50 a year, and is nicely printed on fine paper, and filled with choice miscellaneous matter suitable for the family and fireside. Bro. Newman has always been a warm friend of ours, and of the REVIEW, and we sincerely hope that he will prosper in this new venture.

"PRACTICAL BEE-KEEPING."

Continued from March No.

Mr. Jones describes the "Jones Deep Frame Hive." The frames are $10^3/_4$ inches wide, and $12^1/_2$ deep, and twelve frames are used in a hive. But few double-walled hives are used in Canada; many colonies are, however, wintered in clamps. The Heddon hive is illustrated and described. What Mr. Jones calls his "Combination Hive" is simply a hive with his deep frame laid upon its side, which is a move in the right direction. With this hive are used the reversible honey-boards and reversers. For "all purposes" this is the favorite hive of our Author. He pleads for a square frame, because the queen can then keep the brood more nearly in a globular shape. We must once more call attention to the fact that we ought not to build hives with a view entirely to suiting the instincts of the bees. It is true that bees prefer to have their brood in a globular shape, but it may be more profitable for *us* to compel them to flatten it. We must keep in view the *end*.—Mr. Jones would advise the painting of hives. He uses a dark drab mineral paint. Hives last longer and look better when painted; besides, many of the operations of the apiary require hives alike in appearance; and old hives have a different color from new ones when both are unpainted. We think this one of the strongest arguments in favor of painting. Hives ought to be painted white, as white reflects the heat, while dark colors absorb it.—In speaking of the Root "Dovetailed Hive," Mr. Jones says he thinks a mistake was made in leaving out the metal supports. We think not.—A brief description is given of the Richardson Hives.—The Barnes foot power saw is also illustrated and described.—Mr. Jones next describes the operation of transferring, but we have all read it time and again in the text books.

"Modern Transferring," that of driving the bees out and hiving them upon sheets of foundation, then driving them again when the brood is hatched, killing the queen and uniting the bees with the bees first driven, then extracting the honey from the old combs and melting them into wax, this excellent method, that was originated, we believe, by Mr. Heddon, is given by copying from *Gleanings*, an article of Mr. Heddon's.

To be continued.

THE MANAGEMENT AND CONTROL OF INCREASE.

The bee-keeper who has a large number of colonies is interested in learning how to prevent or control increase. Under such conditions, surplus is more desirable than increase. By using large hives, and raising extracted honey, swarming can be practically prevented; but, in the production of comb honey, swarming is the rule as soon as colonies become populous and work in the sections is well under way. In localities not overstocked, and blessed with a harvest from white clover, basswood and fall flowers, better results are secured by allowing one swarm from each stock. After-swarming can be practically prevented by the Heddon method, that of hiving the swarm upon the old stand, transferring the supers to the new hive, setting the old hive by the side of the new one for a week, then moving it to a new location. This throws all the working force into the new hive where the sections are, and leaves the parent colony so weak in numbers, just as the young queens are hatching, that few colonies cast second swarms. Did the young queens always begin hatching on the eighth day, this method would be infallable; but, occasionally, they hatch sooner; oftener, however, an after-swarm is the result of their not hatching until the eleventh or twelfth day; when enough bees have hatched to make a small swarm. As a rule, however, after-swarming is prevented by this method. E. A. Manum prevents after-swarming *entirely* by cutting out all queen cells, except one, on the fourth day, and again upon the eighth day. There's too much labor about this; we would rather have an occasional after-swarm. Mr. Manum, however, does not wish to weaken the old colony, while we have no objection, so long as the new swarm is correspondingly strengthened. Certain it is that after-swarming can be, and is, practically prevented, but the prevention of *first* swarms is a more difficult problem. The reports in regard to the Simmins non-swarming system are very meager and conflicting. We had hoped to give it a trial last season, but sickness prevented. We did, however, try the plan of replacing the old queens with young ones. Of twenty colonies so treated, only one swarmed, and the queen in this one did not prove a good layer, the bees seemed dissatisfied, and swarmed out. Of course, the honey producer cannot afford to buy queens in the spring, at $1.00 each, for all of his colonies; but, if some method could be devised for cheaply re-queening an apiary, with young queens, in the spring, we believe swarming could thereby be nearly, if not quite, prevented. By removing the queen, a few of our best bee-keepers prevent increase, and at the same time stop the rearing of brood at a time when its production means a lessened surplus. Then there are those who allow their bees to swarm, yet so manage that all *increase* is prevented. Dr. Tinker has been calling attention to such a method. When a colony swarms it is hived upon the old stand, the sections transferred to the new hive, all the bees shaken from the combs of the parent colony and allowed to run in with the swarm: the brood of the old colony is then placed over the queen-excluding honey-board of some colony that has not swarmed, and the supers of this colony placed *over* the brood thus added. As the brood hatches, the combs become filled with honey, when they can be removed and the honey extracted, or they may be piled up on a few colonies, and kept for use in wintering the bees. Well, we think we have said enough to introduce the subject of "Increase, its Management and Control," and we most cordially invite our readers to pick up the thread where we have dropped it, and help to make the May REVIEW brimfull of information upon this most important subject.

HONEY PRODUCERS' EXCHANGE.

The United States Honey Producers' Exchange was organized in January, 1888. Its officers are as follows: President, P. H. Elwood; Vice President, I. L. Scofield; Secre-

tary, G. H. Knickerbocker; Treasurer, C. G. Dickinson. Its object is to furnish its members prompt, reliable information as to the honey crop throughout the United States. Six or more reporters are appointed in each honey-producing state, and they forward their reports to the Secretary on the first days of June, July, August and September. The Secretary compiles these reports, and, on the tenth of the month, forwards to each member the reports from the whole United States. The membership fee is $1.00, and sending that amount to the Secretary, G. H. Knickerbocker, Pine Plains, N. Y., entitles one to the reports for one year. Great pains are taken to secure reliable men for reporters; and, as fast as possible, their number will be increased until every honey producing *county* will be represented by a reporter. The Exchange has the support and endorsement of such well known men as Dr. Miller, Dadant, Grimm, Manum, Crane, Cushman, Vandervort, Mason, Tinker, Pond, Cary, Root, Hetherington, Martin, Barber, Isham, Doolittle, Clark, Aspinwall, VanDeusen, Heddon, Taylor, Cook, Hilton, Cutting, Valentine, Demaree, Shuck, Foster, Secor, Wilkins, Rassmussen, and many others equally as well known: and the REVIEW most heartily adds *its* support. The selling of our product needs more study just now than does its production, and anything that helps in that direction ought to be encouraged.

CONTRACTION OF THE BROOD-NEST.

There seems to be but little to say in the way of summing up. There is no doubt but that contraction of the brood-nest is profitable in the production of comb honey in localities where there is an early harvest of white honey, followed by a dark fall crop; in short, it is advisable under exactly the conditions that we mentioned in our introductory editorial of last month. Dr. Miller introduces one point that we failed to notice, viz., that a young bee in the hive is a help, though the harvest may close before the bee is old enough to join the field laborers.

By removing the queen, P. H. Elwood, and others, not only prevent increase, but put a stop to brood rearing more effectually than it can be done by contraction; and, when the queen is returned, the honey that has accumulated in the brood-nest is rushed into the sections, to make room for the queen. This, of course, compels the bees to handle some of the honey twice over, but we don't care anything about that, it's the *results* we are after. We have never tried that plan, but feel sure that we would prefer contraction, as being less laborious, where the prevention of increase is not also desired. In the production of extracted honey, contraction is not so important, as the honey *can* be extracted even though it *is* stored in the brood-nest; still, it is more convenient, and the work more easily and quickly performed, where the brood is in one apartment and the surplus in another. The time when we have found contraction the most desirable, is in hiving a swarm. The sections are transferred to the swarm, and the bees forced into them *at once* by contracting the brood-nest. Work is speedily resumed in the supers, and the sections finished up; whereas, with a large brood-nest, the honey would be stored in *it* instead of in the sections, the latter being left untouched until the harvest is nearly passed and gone.

LANGSTROTH ON THE HONEY BEE, REVISED BY DADANT.

Continued from March No.

Chapter III treats of the "Food of Bees." During its sojourn in the honey-sac, nectar undergoes a chemical change. Most of its cane sugar is changed into grape sugar.—Whether the cappings over honey are air-tight is an undecided question. The Dadants are of the opinion that they are not, but they admit that the difference of opinions may be due to the fact that the cappings are very fragile, and crack imperceptibly, when exposed to the variations of temperature outside of the hive.—In some localities, the use of flour as a substitute for pollen, before it can be gathered in the spring, is a great advantage.—When rearing brood, bees need water, but, when bees are shipped, (without brood we presume) they do not need water; at least, Messrs. Dadant did not succeed in getting bees alive from Italy until, very reluctantly, the shippers consented to send them without water.

Chapter IV discusses "Bee-Hives." Some space is given to the hives of olden time. Earthen hives, straw hives, the Huber Leaf hive, the Gravenhorst hive, the Berlepsch hive, etc., hives that have seen their day, are given a brief description. Then follow

descriptions of the Langstroth, Simplicity, Heddon, and others. The hive preferred by Messrs. Dadant, is a Lanstroth, with hanging frames $11\frac{1}{4}$ deep by $17\frac{7}{8}$ in width, thirteen frames in a hive. Half dep h upper stories are used for extracting supers. The bottom board is loose. All through the chapter runs a vein of opposition to small hives. The objections are that the queen is not allowed sufficient room to develope her fertility; the bees are more inclined to swarm, and that not so much honey is secured. We see nothing gained by "developing the fertility of the queen." Were queens expensive there would be reason in trying to secure as many eggs as possible from one queen, but, as they cost the honey producer practically nothing, why not have enough of them to keep all of the brood-combs full of brood without any fuss and bother about "developing their fertility?" Our Ill. friends say: "The harvest is in proportion to the number of bees in the hive;" *we* say it is in proportion to the number of bees, and it makes no difference, within certain limits, whether the bees are all in one hive, or in two hives. A colony must be large enough to keep up the requisite heat for brood-rearing and comb building, and yet be able to spare the proper proportion of field workers, and when it is sufficiently populous for this, and the hive is adapted to the size of the colony, nothing is gained, so far as the storing of honey is concerned, by increasing the size of the hive and the number of its occupants. For years we were engaged in the production of extracted honey and the rearing of queens, and we have many times noticed that, in proportion to the number of combs, the two-frame nuclei stored as much honey as the full colonies. But there are other considerations aside from the storing of honey. These diminutive colonies could not generate sufficient heat to pass the winter, at least, not in northern climates; besides, in working for comb honey, the manufacture and handling of so many small supers would largely increase the expense and labor. If the hives are too large, wide boards, that are more expensive, are needed in their manufacture, they are too heavy to be handled with ease, and some of the queens fail to fill all of the combs with brood, leaving from $1.00 to $2.00 worth of honey in the outside combs as dead capital. There is a golden mean in these things, from which we cannot largely depart without loss. The Dadants say, be sure and have the hive large enough so that the queen can lay to her utmost capacity; *we* say, be sure that the hive is small enough so that the queen will keep the combs full of brood. That bees swarm more when kept in small hives, we have always admitted; but they will swarm enough with large hives to need an attendant. We are not a little surprised to see our Authors assert that the honey-board has been discarded of late years. If there is any one implement in bee culture that is the most rapidly gaining in favor, it is the honey-board. In closing the chapter on hives, beginners are cautioned to be very careful in buying patent hives. Why, we ask, any more caution when investing in a patented hive, than in one unpatented?

To be continued,

EXTRACTED.

Why More Honey is Secured by Proper Contraction.

FRANK CHESHIRE, in his excellent work, "Bees and Bee Keeping," gives most clearly and concisely the reasons why contraction of the brood-nest, at the proper time, leads to the securing of large quantities of honey. He says:—

"It would be easy to give a long catalogue of distinguished honey-producers, who all declare in favor of small brood-chambers when comb honey is the object. In the early part of the season the queen should receive every encouragement to deposit eggs, for the great spring laying is the foundation of all surplus; but, as the summer advances, and the duration of the yield is measured by five or even six weeks (the date depending upon the flora and latitude), the production of large breadths of brood is fatal to high results. Let us imagine that the brooding, feeding, and sealing of a single bee, from the egg upwards, costs as much to the colony as storing four cells with honey—an estimate which careful attention to this problem has shown me to be moderate, even for ordinary yields. Then the production of one pound of bees, *i.e.*, two pounds nearly of larvæ, will reduce the honey stored by 16lb.: if the comb has to be built, by probably 8lb. It is because a bee in a fair yield is able to requite the colony with many times its cost that a large population means surplus, but if the one pound aforesaid is produced at the *end* of the honey yield, the expenditure has been made without a possibility of return. The supposition that tremendous laying on the part of the queen is requisite right down to grey autumn, is most shallow."

THE "REVIEW."

One of the distinctive features of the BEE-KEEPERS' REVIEW is that each number takes up some special topic, and discusses it most thoroughly. Each issue is, to a certain extent, a little pamphlet, giving the best that is known upon the subject taken up. Below is a list of the topics discussed in 1888:—

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

The Jan. No. for the present year discusses "Bee-Hives;" while the Feb. issue is devoted to "Mistakes in Bee-keeping."

Price of the REVIEW, 50 cts. a year. Samples free. Back numbers can be furnished.

"The Production of Comb Honey."

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

It begins with taking the bees from the cellar and goes over the ground briefly, clearly and concisely, until the honey is off the hives; touching upon the most important points; and especially does it teach when, where and how foundation can be used to the best advantage; when combs are preferable and when it is more profitable to allow the bees to build their own combs.

Price of the book, 25 cents.

SPECIAL OFFER.

For 65 cts. we will send the REVIEW one year and "The Production of Comb Honey." For $1.00 we will send all the numbers of the REVIEW for the past year (1888), the REVIEW for this year (1889) and the "The Production of Comb Honey;" or, for the same amount ($1.00), we will send the REVIEW for TWO years from Jan. 1st, 1889, and "The Production of Comb Honey."

Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, FLINT, MICH.

THE BEE-KEEPERS'
REVIEW

VOL. II. FLINT, MICHIGAN, MAY 10, 1889. NO. 5.

Controlling Increase.

JAS. HEDDON.

IT *CAN* be done, but can it be done in a practical, profitable manner? We say no. Not in the present state of the science and art of bee keeping.

To the man who has a large number of colonies, and wishes to go into our business on an extensive and profitable scale, this is one of the most important of all apicultural problems. It would be of immense advantage if we could find a practical system of preventing increase, so that, after we had fixed things, neither increase nor a desire for increase (which if forcibly checked creates sluggishness on the part of the colony) would ever take place. Such a method as this, is what we are looking for. But we are not looking for, nor need we be at all anxious for, a method which merely tends to *decrease* swarming, not even if it does away with nine-tenths of it. We cannot afford to lose the other tenth. When we can prevent it *all*, and that too, without disgruntling the bees, we can adopt an entirely new apiary system of honey production.

Now, Mr. Editor, we have come to another place where we will have to agree to disagree. I am going to pitch right into you. You say that by using large hives and raising extracted honey, swarming can be practically prevented. I say no; not in *this* locality, which I believe is a fair sample of hundreds of others in the same latitude. It is not practically prevented so long as a swarm is issuing now and then.

Next, you take up the Heddon method of preventing after-swarms, and then you find fault with that. You say that it does not always work because the new queens sometimes hatch before the eighth day. If I remember right, I did not say eight days, but six days, and in my experience I have never known bees enough to hatch out between this day and the time the young queens hatched, to cause any second swarming.

Next you mention Friend Manum's method of clipping out, on the fourth day, all the queen cells except one, and say it is too much labor. That is not the worst of it. Many times that one cell hatches no queen at all; at other times, a worthless one.

The "Simmins non-swarming system," is merely a rehash of the old Gallup & Adair long-idea hive. You need not give it any trial, for it has been tried and discarded by hundreds of bee-keepers years ago. The principle is correct, but the practical use of it is too cumbersome and damaging to be tolerated.

The replacing of old queens by new ones works very well but not absolutely. It is too much work for the practical honey producer who expects to raise his honey at an expense less than its market price. But we do not want a system which *nearly* prevents swarming. We want an *absolute* system. A partial system will soon become so partial that you will lose too large a force from your apiary if not watched; and it is to get rid of watching the apiary that we most desire the non-swarming system.

As to preventing increase when swarming is allowed, the best way to do that is to hive the swarm on the old stand, placing all the surplus boxes on the swarm. Place the old colony near the new one. After a few days, turn the mouth of it the other way and throw a carpet over it in such a manner as to catch in the new hive the out and out-going bees. After one day, move the carpet and allow the bees to fly; then in a few days move the hive to an entirely new position, catching more of the bees in the new hive. The next morning bring it back to the new hive again, and so work it till the bees are all in the new hive. Then you can do what you please with the combs in the old hive. With queen excluding honey-board, the hive may be piled on top of the other, something my students have done many times, and the new queens hatched out may be allowed to fly out at the top.

Our method, in running three large apairies, is to keep a good man in each one, discourage swarming, when increase is not desired, (which is nearly all the time with us) by plenty of surplus room, shade, etc. Then what swarms *do* issue, hive them and make the most of them, and that means a good deal. It means enough to make two more good long articles, to describe the *modus operandi*.

DOWAGIAC, MICH. April 22, 1889.

Bro. H., if a man owns a large apairy, and prefers surplus to increase, he *practically* prevents swarming, if, by some simple, inexpensive management, only one colony in ten swarms. In other words, if his object is to augment his surplus at the expense of in-

crease, then it is a success. If his object in preventing increase is, chiefly, that the apairy may be left alone except at intervals, then, I agree with you, that no method can be called a perfect success that does not *entirely* prevent swarming.

It is true that, in your instructions for preventing after-swarms, you say remove the old hive to a new location on the fifth or sixth day; and when removed thus early, there is no danger of a swarm issuing before the hive is moved; but it was to lessen the probabilities of a swarm issuing at about the *eleventh* day, that we have usually moved the hive on the seventh day after swarming. As we said before, this method, as a rule, is successful; but it has failed occasionally with us.

By all means, Bro. H., give us those two, "good, long articles," describing your method of making the most out of swarms.

Preventing Increase by a ten Day's Removal of the Queen at Swarming Time.—Some Criticisms.

C. C. MILLER.

I'LL GIVE you what I think is about the best plan I ever tried to prevent increase, *provided* the bees are allowed to swarm. Have all queens clipped. When a swarm issues, cage the queen, and give her to the bees to take care of. Some time within three days, lift out all frames of brood, giving each frame a shake so as to leave about half the bees on each frame, and put these frames of brood in an empty hive which we will call No. 2; calling the old hive No. 1. You may fill up No. 2 with the number of frames you desire it to have for the remainder of the season, or you may put in only the frames of brood, the rest of the space to be filled up afterwards. In No. 1 leave one frame containing eggs and brood, and if you wish to raise some excellent queen cells give it eggs or larvæ from a choice queen. Besides the one frame with brood, No. 1 will have two or three combs with no brood, and you may fill it up with dummies or put in a division board and a single dummy, leaving part of the hive vacant. Don't leave in No. 1 one of the frames with queen cells, but if you leave one of the frames that has already been there, be sure it has eggs and young brood, and be sure you destroy all queen cells upon it. Pay no attention to the queen cells in No. 2, but leave them on the combs, although I often enjoy picking off the sealed ones. Now put back the supers on No. 1, and cover up, and then put No. 2 *on the top of the supers*. Put the queen on top of the frames of No. 2, and let her run down among the bees, cover up, and the work is done for the present. No. 2, being weak in bees, and having a fertile queen, will make short work of destroying all queen cells,—much surer than you will, for you *may* miss some obscure ones.

Ten days after the day of swarming, or as near that as convenient, lift off the the hive and supers, take away No. 1, put No. 2 in its place and put on the supers. If, at the time of filling No. 2, you took only part of the frames from No. 1, and No. 1 and No. 2 contained, between them, all the frames belonging to No. 1, then at this tenth day after swarming you can destroy all queen cells on the brood frame in No. 1, and put back all in No. 2. If you desire to start a nucleus to raise a queen, all you have to do is to take No. 2 to a new location, and it is all right.

You may ask, what will become of the bees that have marked their location at No. 2 while on top of the pile? Well, when they come back from the field they will feel all lost, and will finally settle in a cluster on the super at the front, and by and by a bee or two will wander down in front till the entrance to No. 2 is reached, when a call is set up, and the whole cluster will march noisily down.

On page 66 you speak of the Dadants objecting to the use of the honey-board, and express surprise at it. Please remember, Bro. H., that the Dadants kept bees before you were born as a bee-keeper, and that you probably never used what they call a honey-board. When I first used movable combs, a honey-board was on each hive. It was a sort of cover, with holes through it, on which to place boxes. Afterwards, Bickford gave us the quilt, and the honey-board was thrown aside forever. Still later, Heddon gave us the *skeleton* honey-board, which is indispensible with me to place between brood chamber and super. So I have discarded the honey-board forever and adopted the *skeleton* honey-board, to be used, probably, always.

Replying to a remark of yours sometime ago, about the difference between taking off cloths and honey-boards, I've only time to say that my experience is unlike yours, and that I had rather take off two quilts than one honey-board.

MARENGO, ILL. April 17, 1889.

We have heard and read of the old-fashioned honey-boards mentioned by the Dr., but we don't remember having seen one. As the Dr. says, they were discarded long ago. Now-a-days, when the word "honey-board" is used, we understand it to mean a slatted, or skeleton, or perforated metal arrangement used between the supers and the brood-nest to prevent the attaching of brace-combs to the bottoms of the sections; and, also, when queen-excluding, to keep the queen out of the supers. This is the kind of honey-board to which we, very naturally, supposed Messrs. Dadant referred; but perhaps the Dr. is correct. There is a passage farther along in the book that would strengthen his position. It reads as follows: "All apiarists,

or nearly all, who have tried the oil cloth and honey-board simultaneously, have discarded the latter forever, except in some cases of comb honey production, when a *skeleton* honey-board is used between the stories." We were very much surprised, indeed, to think that so well-informed bee-keepers as the Dadants should say that the honey-board was being discarded; and we shall be very glad to know that they had reference to the honey-board of olden times, and not to the modern, slatted, break-joint invention of Mr. Heddon's.

And now Dr., for the pleasure of an argument with you about removing quilts and honey-boards. When the frames and quilt are new, the latter fits down quite nicely and smoothly; but the bees put propolis at all accessible points of contact. When the quilt is removed, it is seldom replaced in *exactly* the same position. The small attachments of propolis adhering to the quilt rest upon the tops of the frames. This raises the quilt a little above the frames, and the bees are not slow in improving the opportunity for plugging in still more propolis. The next time the quilt is removed and replaced, the opportunities for propolising are increased. The quilt finally becomes stiffened with its coating of propolis, and refuses to fit down into the hollows and depressions between the little knobs and mounds of propolis and wax, and the opportunities for using propolis are all that a reasonable bee could ask. Now we can't take hold of the quilt and break these attachments all at once; the quilt lacks the rigidity necessary for this operation, hence it must be *peeled* off; and, as we said in a former issue, every snap, and sputter, and tear of the propolis, as it gives way, jars and irritates the bees. A honey-board does not rest upon the frames, but is held bee-space above them, hence no propolis is ever placed between the frames and the honey-board. The connections between the frames and honey-board are always of *comb*, which can be broken without a jar. As we have before explained, there is only one jar in removing a honey-board, (and that is not of such an irritating nature as the tearing loose of a quilt) and that is in loosening the honey-board from the edge of the top of the hive. We accomplish this by inserting the blade of a pocket knife between the hive and honey-board, and giving the knife a slight twist. After the board is thus loosened, all that is needed to effect a separation is a slight twisting movement, similar to that made in unscrewing the cover to a fruit jar, which breaks all the comb attachments at once, without a particle of jar. When the honey-board has been removed, we lay it, upside down, in front of the hive, until the manipulations are over, when we pick up the board and strike one end forcibly upon the ground in front of the hive to dislodge the adhering bees. The bees that are sipping honey from the broken brace-combs upon the tops of the frames are driven down with a few sharp puffs of smoke, and the honey-board put back *instantly*. We are sorry that the Dr. cannot manipulate a honey-board so easily and quickly as he can a quilt, for we honestly believe that the latter is "going, going, going."

Management of Bees for Profit, and Prevention of Increase.

E. A. MORGAN.

PREVENTING increase in the number of colonies does not mean preventing increase in the number of bees, as this would be exactly the opposite of what we do to gain the best results.

As early as 1882, I realized that all my profits were going into increase of colonies, and I longed for a plan whereby I could turn swarms into honey. I purchased non-swarming queens, gave room, cut out queen cells, etc., but when the honey flow began, away went the honey crop into extra swarms and very little surplus.

In 1883 I had 100 strong colonies, and only 20 spare hives, and I decided to make these hold my increase. I succeeded in doing this, to my entire satisfaction, and my crop of white honey that season averaged 112 lbs. per colony.

Now for the plan, the object of which is to prevent swarming in a measure, but more especially to avoid increase in the number of colonies, which is always attended by a loss of surplus honey and an expense for new hives, combs, etc.

I use the ten frame L. hive, which is broad and shallow, and I find it the best all things considered. I strive to keep hardy prolific queens: such as can fill eight to ten L. frames with brood, and *keep* them so. This hive gives room for the most prolific queen, which, if crowded in a small hive, is too willing to swarm out, while it can be contracted, if so desired, by a division board. At the beginning of the honey season all hives should be full to overflowing with bees. Many inquiries are heard, asking, how shall I get my bees to go into the sections? My plan is to have the hive so full of bees that they go into the sections for room. With a colony in this condition when white clover opens, the combs will very soon begin to whiten along the top

bars. This is the time to put on sections with either comb starters or foundation, and the bees will make a rush for them, and honey will be stored rapidly. If left in this condition swarming would be the result. We are to watch the super, however, and before it is quite full, raise it up and place another under it, and the bees will continue to fill the upper one, and, at the same time, be filling the lower one. When this one is ready to raise up, the upper one will be ready to come off, and a third placed on the hive with the second raised up, always giving extra room before it is *quite* needed. If the hive is standing in the sun, a shade board should be placed upon it. Managed in this way throughout the season, swarming is hardly thought of, not one colony in a dozen casting a swarm, as all their energy is bent upon honey gathering, and the working force is being worn out about as fast as the young bees hatch. The queen is kept busy, the brood combs are full of brood, and all the white honey goes into the sections.

But, should a swarm issue, as it will be sure to do if hot weather with rain continues, we proceed at once to profit by it by hiving it in such a manner that no time is lost. This we accomplish as follows: As soon as all the bees are in the air we turn the hive clear around so that it faces in the opposite direction from which it did, setting it just off the stand. We now place a new hive on the same stand the old one occupied, and put in five frames, with starters in them, then take three combs of brood and larvae (selecting the youngest) from the old hive and put in, and fill up with a division board on each side. The supers are then transferred to the new hive, and the swarm hived in it. The old hive is allowed to remain till evening, by which time the flying force will be back in the hive on the old stand. We then open old hive and shake and brush all remaining bees down in front of new hive, when they will all run in. We now have all the bees of the swarm, and all those left in old hive, back on the old stand. This colony is now done swarming for the season. There is a strong field force; the bees have gained a new impetus by swarming; the work goes on rapidly; no loss of time; no increase; and a double surplus will be taken.

We now return to the old hive and extract all the honey in combs without brood, and also in those with *sealed* brood, saving those without brood for other swarms and giving those with brood, after cutting out queen cells, to colonies not overflowing with bees, or else removing frames of honey in others and giving frames of brood in their place. Or, they may be given to nucleus colonies, that are being built up; for every bee-keeper ought to have a few nuclei in which he can save queen cells from choice strains, and thereby have extra queens at any time.

We proceed in this manner with every swarm that issues. At the end of the season we find many colonies have not swarmed, while *all* have given an extra large surplus in comb honey. After July 10th, the supers can be contracted to close the white honey crop, leaving few unfinished sections. These can be extracted and kept for the next season, or saved for the fall crop. Anyone wishing increase can manage an apairy as above until July 25th, then divide or increase by the nucleus system and let them fill up on fall flowers.

CHIPPEWA FALLS, WIS. April 24, 1889.

Accompanying the above was a kind, encouraging letter, and we feel sure that our Wis. friend will not object to our giving the following extract:

"Since following this plan I have made money easily at bee-keeping; before, I barely paid expenses. In Sept. last, I moved from Columbus, Wis., to this place, and settled permanently. I now have 60 swarms of bees in the strongest shape at this date I ever had. I look for a grand honey season. I am now within the great Basswood belt of Wis., and intend to make it count.

By the way, I have twenty hives marked H., which my record book explains as Hutchinson queens, or strains, and I want to say here that they are the best bees I ever owned.

I like the REVIEW, and my wish is that you may receive the support you so richly deserve.

Resp. yours,
E. A. MORGAN.

Preventing Increase by Removing Queens, Requires Judgment.

E. FRANCE.

FRIEND HUTCHINSON.—Your card of May 1st, is received. I have read all of the June REVIEW for 1888, and I don't see as I can add anything to my article, or make any suggestions. I will say, however, that we caged 150 queens last year, a few days before the basswood honey flow, and the results were no swarming, and a much larger amount of surplus honey. In fact, nearly all of the 11,000 lbs. of honey that we did get; were the result of caging those 150 queens.

The profits of this caging, or taking away of the queens, depends altogether upon circumstances. In one case it would be an advantage; in another, a decided loss. A bee-keeper must have a thorough knowledge of his honey resources; must know just when and where his honey is coming from; and then he must know just what the bees will be likely to do under different circumstances. Two years ago, our bees had a large amount of winter stores, enough to last them until the basswood harvest. They used the honey to raise brood, and by the time that the basswood honey was ready to be gathered, the hives were *full of bees*, and their combs *full of brood*, with no room to store honey. In this case, the queens ought to have been caged ten days before the basswood harvest commenced. Then there would have been room for honey, in the combs, where the brood had hatched out. The year of 1888 we had to feed some in the spring to get the bees through to clover. Then they got just about honey enough from the clover to keep them in good breeding condition, and again our hives were running over with bees. We

did not wish to increase the stock, so, two weeks before the basswood opened, we caged 150 queens of the strongest colonies. Excellent results were secured. It would have been better if we had caged more queens.

Now, if the bees have plenty of room to store honey, a good deal more than the queen can fill with brood, or if the clover yields a good crop, so the bees keep one-half of the combs full with honey, then in that case, they won't get so strong, and there is no profit in caging queens.

We work mostly for extracted honey; and we believe in a large hive. We use the L. hive, three stories high—some of our other hives are larger.

In looking over the June REVIEW for 1888, I find an article by James Nipe, about a solar honey ripener, which interested me very much; as I have been thinking very much of building a large green house, to be used during the extracting season, for evaporating thin honey. I would like the opinion of other large extracted honey producers on this subject; for, do the best we can, we will sometimes get honey to thin to keep sweet. Can it be ripened in a green-house?

PLATTEVILLE, WIS. May, 4, 1889.

Preventing Increase Although the Bees do Swarm.

JOHN S. REESE.

ED. REVIEW.—Your request for my experience on the management and control of increase brings to mind a private letter from a practical bee keeper of much reputation, in which he says, "The greatest developments and advancements in bee keeping in the near future will be in the manipulation of hives at a proper time to secure the surplus." This idea must be understood to apply to all manner and kinds of hives, as this friend does not use a divisible brood chamber, but a hive after his own idea.

My experiments for the past two seasons have been somewhat restricted, owing to the short duration of a very poor honey season; so I will tell you about some things I *did* practice, and some I wanted to.

In hiving swarms on four empty L. frames, with starters and some old combs of honey, pollen and brood, I found there was too much drone comb built: and my conclusions were that the queen occupied this old comb for her temporary abode, while the bees built comb to suit their fancy. No pollen went into the sections when this comb was present, while with others that were hived on five empty frames, with starters, some little pollen was taken into the sections, but very little drone comb was built in the brood chamber, and in some hives none. This is a great saving of foundation and will be practiced again this season.

My method of management has been something as follows: The old combs of brood from the hives that swarmed (adhering bees being shaken off and left with swarm) were used in various ways; some were given to weak colonies, some to form nuclei, and others given to some fair conditioned colony to care for until after the honey season, when they were needed in the hives they came from to fill out the full number of combs for winter.

Will try again, this season, hiving swarms on four or five empty L. frames, with starters, and confine the queen to these frames with queen excluding division board, and, instead of dummies at the side, will put back frames of brood and pollen—(drone brood, if any)—which ought to catch the pollen that might go into the sections, and enough stores for winter.

Another plan that I expect great things from is this: Hive the swarm in a shallow extracting case ($\frac{1}{2}$ depth L. frames with starters) placed under the brood case from which the swarm issued, queen excluding honey board between it and the brood nest, and supers for surplus over all, drone and queen trap adjusted to old brood chamber, just above the queen excluding honey board, to catch the drones and young queens as they attempt to leave the hive. This will leave the old brood chamber intact and to be loaded with honey after the bees hatch. Now as the season of honey flow begins to wane, the old queen, or a young one if you have done the right thing, is returned to the old brood chamber and the shallow case with its brood is to be left, or placed elsewhere to hatch its bees, when it can be stored for a similar use next season. This plan will require very little time and trouble, and was inaugurated in my bee yard in 1887; but, as I intimated, has not been thoroughly tested.

My time and space for bee keeping being so very limited has caused me to try many plans to make the whole thing as nearly automatic as possible, and was the cause of my inventing the Automatic bee-escape which does its work so nicely and leaves the surplus free of bees to be removed when convenient.

WINCHESTER, KY., May 1st, 1889.

Increase, its Control and Management.

H. R. BOARDMAN.

IN the production of extracted honey there is usually little cause for anxiety about the control or management of increase, as the extractor is the most perfect non-swarming invention in use in the apiary. But in the production of comb honey, on a large scale, where several out-apiaries are employed, the management of increase becomes a very important question, and in these times of low prices for honey, it is a question seriously affecting the production of honey on a large scale.

The home apiary, with extra care, is very strongly indicated as the profitable method of future bee keeping.

In the management of a single apiary, with time to care for it, I doubt if there is any better way, unless the apiary is already too large, than that suggested by the instinct of the bees, viz.: let them swarm without let or hindrance the *first time*. As you sug-

gest, I would hive them upon the old stand to catch the force of workers. I would also say that I would hive them upon empty frames, and then depend entirely upon the new colony for surplus, depleting the old colony of bees to such an extent that swarming would be out of the question. This may be done by removing it to a new stand after *six* or *seven* days, or the young bees may be shaken off the combs in front of the new colony and then the hive changed over to the other side of the old stand from where it stood before. There are some reasons why I like this plan better than depending entirely upon removing to a new stand. I can see and know just the condition the old colony is left in by handling over the combs; there is no guess work, and I can judge very nearly in regard to its future possibilities. Then, if no increase is desired, or if these colonies, one or both, are, at the close of the honey season, below the standard desired for wintering, they are conveniently situated to be united.

I have sometimes found it convenient to forestall swarming by shaking or drumming out the bees, and afterwards treating the same as a natural swarm. I have in this way anticipated the action of a colony that would soon send out a swarm, thus doing the work at a time of comparative leisure, at morning; or late in the day, thereby making my work easier and avoiding the confusion of an additional swarm at a time when my hands would probably be full.

Again, for instance, if I have a small outapiary where I deem it too expensive to employ an assistant to watch for issuing swarms, and the colonies are all strong, this method may be adopted and the uncertainty of swarming settled for the season. Of course, if a queen is superseded in one of the new colonies a swarm might issue.

EAST TOWNSEND, OHIO. April 29, 1889.

Simmins Non-Swarming System a Success.

F. A. SALISBURY.

LAST YEAR Mr. Salisbury reported most excellent success with the Simmins non-swarming system. He again makes a similar report which we give below. We regret that our friend has not experimented upon a larger scale; one hive is all he has tried.

After another season's experience with the Simmins non-swarming hive, I can unhesitatingly say that it is an entire success; I having this year secured from this colony, which, by the way, was weak at the beginning of the season, sixty pounds of comb honey, ten of extracted, and one pound of beeswax. No foundation was used in the sections; all the comb being built below, cut out, and fastened into the sections. I know that bees worked after this plan have more ambition to work and store honey, than those furnished foundation in the sections. This is the third season I have managed this colony upon this plan, and no swarm has issued from it. Everyone knows how busy a new swarm is the first week after hiving, well, the colony in this hive works just like that all the time. I have noticed that the busiest colonies are those building comb in the brood chamber. This seems to say, allow your bees to indulge in comb building.

SYRACUSE, N. Y. Aug. 17, 1888.

The Simmins System—The Comb Building Space Must be Underneath.

W. A. HARRIS.

YOU MAY recollect that, when I sent you a statement of my experiment with the Simmins non-swarming system, during the season of 1886, that I stated that I had written to Mr. Simmins on the subject. Later I received from him a letter giving full directions, and a diagram of the hive as arranged, so that everything was made very clear. He also showed me why I failed.

Accordingly, I changed six of my hives to meet the case, and watched them carefully the past season. The result has satisfied me that the method is a failure in my locality with hives arranged with the frames *all on one floor*. The bees in every instance built combs and filled them with honey, in preference to placing it in the sections, crossing the combs from one frame to the other, thus tying them together and causing a great deal of trouble. The bees also swarmed, some of them before all the comb was built out. In one case, after the combs were filled, I removed them and replaced them with another set, when the same result followed.

In another case, where I placed a hive with starters *under* the brood-nest, *very little* comb was built there. It seems to me that the only thing worth trying, is to follow out the idea of placing a brood-nest with starters *underneath*.

NEW YORK, N. Y. Jan. 14, 1889.

How to Prevent Increase, Get the Most Surplus, and Leave the Bees in Good Condition for Winter.

HENRY HASTINGS.

I HAVE kept bees thirty years, and I will tell how I manage them to prevent increase, secure the most comb honey from clover and basswood, and leave the bees in the best possible condition for winter.

I pack my bees, with forest leaves, upon their summer stands. Before packing them, I see to it that they have abundant stores to last them until apple bloom, and I don't disturb them until that time. I then examine them and clip the queens that are not clipped.

Our honey harvest begins about the first of June, and lasts six weeks. Swarming commences about ten days after the opening of the honey flow. When a colony swarms, I

remove the queen, let the bees go back to the old hive, cutting out all queen cells but one, or cutting out *all* of them and introducing a virgin queen. I would like to have all of the old queens out of the hives by the twentieth of June. I *prefer* to have the colonies without eggs for fifteen or twenty days, because the bees that are hatched the last of July and fore part of August, are of no value here. They are too old to winter, and we have no fall flow to amount to anything.

The bees fill up the brood-nest with honey when without a laying queen, but, as soon as the young queen begins laying, they will move a share of it into the sections, and the rest I wish to remain.

The bees that hatch the last of August and fore part of September, are of the best age for wintering well.

I would not have a hive smaller than ten Gallup frames, and I have more than fifty that are larger.

KENTON, OHIO. Oct. 10, 1888.

Golden Italians Versus Imported Italians and Other Strains.

L. L. HEARN.

WE HAVE been very anxious to see the REVIEW for March 10th, a copy of which is just to hand, which we have read with no little interest. Our experience has been with our native brown bee, and the imported and American bred Italians. We consider either the imported, or American bred Italians, far superior to our native bees; and, like friend E. M. Hayhurst, we greatly prefer the latter.

About twelve years ago we had a large swarm of our native bees come out, and they were hived, and in seven days they filled every frame in the hive with nice new comb, and then they came out and "*skedaddled*" without leaving a single cell with honey in it. We have frequently had them come out late in the season, and build enough comb to winter two colonies, and yet have but little honey for winter; while the Italians were more discreet, and filled the comb as it was built; so, taking into consideration, the "good looks," industry, docility, thrift and disposition of the Italians to expel the moth, as compared with our native brown bees with which we have had an experience of nearly thirty years, we would just say we would not receive the latter as a present if compelled to keep them ourselves.

We notice one thing that strikes us very forcibly, and that is, a majority of persons keeping other strains of bees prefer a cross with the Italians. Friend Root once said that any cross of our brown bees with the Italians made an improvement on them (the browns). Just now we would say, take his word for it, especially with the second cross; either this, or order with your smoker, a cannon large enough to blow them to the North Pole.

Yes, gentlemen, we have "been there" and know whereof we speak. Our plan is to kill every mismated queen as soon as discovered, unless it is very late in the fall season. And, if Friend Root will excuse us for "stepping on his toes," we would like to call his attention to some other facts, in Feb'y *Gleanings*, page 135, in answer to the question by Mr. J. T. Rush, whether or not he considered that imported queens produced better workers than American bred Italians that show the three brands. His answer is as follows: "To the question which you propound no uniformity of answers may be expected from different ones. We think that stock direct from imported queens, as a general rule, is a little more hardy and vigorous than that produced from queens inbred so many times in our own country. The great tendency with our breeders is to run for color, *i. e.* 'nice yellow bees,' 'four banded bees,' etc. What we want is not color, not bands, so much as bees for business, bees that will produce big crops of honey. Our experience has been rather in favor of the leather colored Italians as honey gatherers, and these we generally get from imported mothers. Stock bred from queens reared in this country for several generations is pretty sure to be lighter colored; and in this tendency to run to color, as we have already intimated, we are afraid has been a sacrifice of the real bread-and-butter bees."

Now, we have been taught, whether right or not, that "consistency is a jewel." If these light colored bees are not equal to the darker ones, why, Mr. Root, do you say in your price list, "If we select the largest and yellowest, and those that produce the handsomest bees, the price will be three times that of an untested queen?" And, in *Gleanings*, Mr. G. M. Doolittle, if we mistake not, is said to be one of the most successful raisers of comb honey in the U. S. A., and friend Doolittle says he never owned but one imported Italian queen.

Now gentlemen, what have you all done with your favorite strains in way of raising a crop of honey? We will tell you the best we did last season. We had a swarm come out in June, and in twenty-seven days they filled a Simplicity brood chamber with brood and honey, and made 83 pounds in section boxes, and gave out a large swarm. About this time the honey flow ceased, and no more was made until Sept. Late in the fall we took from this same colony 53 pounds in section boxes, beside leaving ten brood frames, each of which was two-thirds filled with honey, and all this from our four-banded bees. This was far above our average, but we are satisfied we secured at least twice as much honey per colony as other parties in this county who keep other strains of bees. As to being hardy, they are equal to any we have tried. We reduced by doubling up in the fall from eighty-three to forty-six colonies, and to-day, April 18th, we have forty-six colonies in good condition. Now, with all due respect to Friend Root, we beg leave to differ from him, and would like to see his explanation.

We consider our industry an honest one, and shall stick to our favorite four-banded golden Italians, and shall do all we can to still improve them, and we find the demand for them rapidly increasing.

FRENCHVILLE, W. VA. April 18, 1889.

The + Bee-Keepers' + Review,

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor & Proprietor.

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FLINT, MICHIGAN, MAY 10, 1889.

TWENTY pages again *this* month.

THE C. B. J. ADDS A POULTRY DEPARTMENT.

Our enterprising friends of the *Canadian Bee-Journal* have enlarged their paper and added a poultry department which is under the charge of Mr. W. C. G. Peter of Angus. Mr. Peter has started out well; in fact, if he keeps on as well as he has begun, Bro. Jones will have to look well to *his* laurels, or they will be over-shadowed by those of the new poultry editor.

LETTING THE SWARM GO BACK, AND REMOVING THE QUEEN.

We wrote to Prof. Cook, asking if he could help us any in discussing the special topic of this month. Here is his reply:—

"Don't think I have anything new to offer. I believe that putting the swarm back, killing the queen, and destroying all queen cells except one, is the best plan I have tried. This re-queens the whole apiary."

THE "WESTERN APIARIAN."

We have received the prospectus for a monthly bee paper, of twenty pages, having the above heading for its title. Placerville, California, will be its home, and June is to furnish the birthday. Its editors, Watkins & McCallum, say that the culture of bees in the Pacific and Western States requires a somewhat different system of management from that practiced in the East, and we expect that this new paper will be devoted more particularly to the needs of Californian and Western bee-keepers. Price 50 cts.

THE INTERNATIONAL CONVENTION.

The American, International, Bee-Keepers' Association will meet in the Court House, Brantford, Canada, Dec., 24, 25 and 26, 1889. All bee-keepers are invited to attend. State and District bee-keepers' Societies are invited to appoint delegates to the meeting. Full particulars of the meeting will be given in due time. Anyone desirous of becoming a member, and receiving the last annual report, bound, may do so by forwarding $1.00 to the Secretary, R. F. Holterman, Brantford, Canada.

REARING QUEENS IN FULL COLONIES WITHOUT DEPRIVING THEM OF THEIR QUEEN.

For several months, Bro. Alley of the *Apiculturist*, has been promising his readers a little pamphlet which would give them the information mentioned in the headlines of this item. He has kept his promise. The plan is simply that of taking advantage of the disposition, upon the part of the bees, to to build queen cells if they desire to swarm or to supersede their queen. This method will succeed only with *old* queens, or those more than a year old. When the eggs and cells are prepared according to the instructions given in the "Bee-Keepers' Handy Book," and given to the proper colonies during the honey harvest and swarming season, queen cells are usually built. They must be removed as soon as sealed, and given to a queenless colony, or swarming will result. After the honey harvest is over, the necessary excitement is kept up by feeding: but it is occasionally necessary to deprive a colony of its queen in order to get some cells *started*. One colony can be made to "start" enough to keep the whole apiary busy finishing them up. If you wish for details, subscribe for the "*Api*." Subscribe anyway.

THE PREVENTION AND CONTROL OF INCREASE.

There are two classes of bee-keepers who desire to prevent increase in the number of their colonies. The first, and by far the larger class, own only large home apiaries, and prefer surplus to increase. This class can allow swarming if, by some simple manipulations, the number of colonies is kept the same, and the bees induced to devote their energies to the storing of honey. The second class are the possessors of out-apiaries; and they desire not only to prevent increase, but to suppress swarming. This accomplished, the out-apiaries can be left alone, except at stated intervals. What appears to us as the best plan, where swarming is allowed, is to hive the swarm upon the old stand and then

make some disposition of the brood left in the old hive. This ought to be so managed that the hatching thousands will be added to the force of some colony working in the supers. The plan of shaking the bees off in front of the newly hived swarm, handling the comb singly, then giving the combs to nuclei, or weak colonies, or exchanging them for combs of *honey* found in other colonies (by the way, these combs of *honey* ought not to be found in the brood-nests at swarming time), *may* be better than allowing the number of colonies to increase, but it's too laborious. If the Heddon hive is used, and one section can be picked up at a time, and the bees shaken out, and the brood then placed over the queen-excluding honey-board of some other colony, where the bees can hatch and join the *swarm* from *this* colony, if the matter can be managed in some such wholesale manner as this, it may be feasible. The plan of allowing the swarm to return to the old hive, removing the queen, and afterwards cutting out all cells but one, has been highly recommended. Our Friend Robertson, of Pewamo, Mich., has practiced this with excellent results. It has this in its favor: The colony is re-queened; but, as an offset, there is the labor of cutting out the cells, with the possibility that one may be left, or, that the one left may not hatch. With the prices at which honey sells, there must be as little as possible of this "puttering" work. The cutting out of queen-cells, handling of combs singly, changing them about, etc., must be dropped for more wholesale, short-cut methods. We must "cut corners" at every turn. The plan mentioned in this issue, by Mr. Heddon, of so manipulating the old hive as to eventually get all the bees into the new hive, is in this line. But this plan, or any other that allows the swarm to build its brood-combs, will eventually result in a surplus of combs. It is possible, however, that they would be secured at a profit. Quite a number of bee-keepers have succeeded to their satisfaction in preventing after-swarming, also in preventing increase, while but very few have succeeded in preventing swarming. Probably the only *certain* method that has been used to any extent, in this country, is that of removing the queen. This entails the work of cutting out queen-cells, but, if the queens are removed just before the bees are ready to swarm naturally, and the honey harvest is only from clover and basswood, it is a "dead sure thing." We have considerable hope that swarming may be prevented by furnishing the bees with young queens. The plan of having queens reared and fertilized in the same hive where the old queen is still busy laying eggs, may help us in this direction. One comb might be partitioned off with perforated zinc. The bees would build queen cells upon this comb, and when a queen had hatched and became old enough to mate, an opening could be made, in the back of the hive, for the queen to fly out. When she began to lay, the old queen and the perforated metal could be removed. Perhaps a colony with a queen of the current year might swarm if the hive stood in the sun, and the bees were crowded for room; but would it if managed as thoroughgoing bee-keepers now manage their bees? We experimented last year with twenty colonies, and the results were highly satisfactory, as we have already reported. We shall "try it again" this year; and should be glad to have others do so.

SHADE FOR BEE-HIVES.

Shall we shade our bees? If so; why, when, how? Some bee-keepers do not shade their hives; others do. Why do they do it? Is it really necessary? Do they thereby prevent any loss? Do they secure any more honey? These are pertinent questions. The temperature of a colony of bees in summer, when brood is being reared, is nearly 100°. Until the temperature, in the sun, reaches this point, shade is of no benefit; rather is it an injury, as it deprives the bees of the warmth of the sun at a time when it would be of some benefit. When the temperature in the sun goes above 100°, and begins to climb up to 110°, 120°, 130°, 140°, then the effort upon the part of the bees is to *lower* instead of *raise* the temperature in the hive. Crowds of them stand at the entrance, and, with their wings, drive strong currents of air into the hive. We have read, and been told, that the bees leave the combs of honey well-nigh forsaken when the temperature is very high, the reason given being that the combs can be kept cooler when not covered with bees. We have also read that the bees would "hang out," that is, cluster upon the outside of the hive, instead of working, if their hive were left unshaded during a hot day; that they were thus compelled to desert their hive to save their combs from destruction. We have always kept *our* hives shaded, hence we cannot speak from experience upon this

point; but good authorities say that it is true; and if it is, then it would seem that shade, in very hot weather, is both desirable and profitable. We have noticed that weak colonies, nuclei, for instance, seldom make any demonstration of discomfort from heat, even when left unshaded, while strong colonies will sometimes puff and blow like the runner of a foot-race. Why is this? Is it because the populous colony is suffering from the accumulation of its *own* heat—that generated by itself—that cannot escape fast enough? If this be true, why isn't a chaff hive the most insufferably hot place imaginable for a colony of bees in hot weather? We have never used chaff hives, but those who have say that no shade is needed, that the thick walls of chaff are a sufficient protection against the sun. We should think they would be, but what about the internal heat, that is hindered in its escape by the walls of chaff? We have never heard that bees in chaff hives suffered from the heat, as those in single-wall hives, standing in the sun sometimes do; or, at least, are reported to. Possibly the point is just here; the bees in the chaff hives have to contend with their own heat only, while those in single-wall hives have that from the sun in addition to their own. Let this be as it may, we know that a colony can be kept the coolest in a thin-wall hive surrounded by shade. How do *we* keep cool in hot weather? We wear thin clothing, and lie in a hammock in the shade. A colony of bees is a living, heat-producing body, and can be kept cool in the same manner that we keep our bodies cool, viz., let its clothing (hive) be thin, with a free circulation of air upon all sides, above and below, and protect it from the sun in the heat of the day. As we are discussing in this issue the management and control of increase, it may be well to mention how well bee-keepers are agreed that the absence of shade hastens and encourages swarming. The color of the hive has quite a bearing upon the necessity for shade. Black absorbs heat, while white reflects or repels. We have seen the combs melt down in an old, weather-beaten hive that stood in the sun; we never knew combs to melt in a hive painted white; and some assert that there is no necessity for shading hives that are painted white. There is little danger of combs melting in white, unshaded hives, but the great American question is, will it *pay* to shade them? Shade is not needed in the spring, fall, morning or evening. The only time that it is needed, if it *is* needed, is in the middle of our hottest days; and what we wish decided is will it pay to shade them then? If shade is needed, there is nothing cheaper nor better than a light board 2 x 3 ft. in size. We make them by nailing the thick end of shingles to a piece of inch board four inches wide and two feet long. They cost five cents each, and in the fall we tack them together and make packing boxes for packing the bees. Formerly, we used stones, or bricks, to keep the wind from blowing the boards off the hives; but we now use nothing of the kind. It is less work to pick up and replace the occasional board that is blown off, than it is to handle the weights so much. Some bee-keepers shade their hives, others do not; let's discuss this subject in the June REVIEW, and try and decide, if we can, whether or not the practice is necessary.

LANGSTROTH ON THE HONEY BEE, REVISED BY DADANT.

Continued from April No.

Chapter V has for its heading, the "Handling of Bees." "A honey bee, when heavily laden with honey, never volunteers an attack, but acts solely upon the defensive." In explanation of the fact that the bees of a swarm are sometimes very aggressive, it is asserted that, occasionally, "some improvident or unfortunate ones come forth without a sufficient amount of the soothing supply, and are filled with the bitterest hate against any one daring to meddle with them." Be this as it may, we know that a good smoking will quell the spirit of hatred, filling the bees with submission whether they are filled with honey or not.—Our Authors see no advantage in the use of Apifuge.—They have found cold water the best remedy for a bee-sting. They also mention the leaves of plantain, crushed and applied, as a good substitute. We have found the tincture of plantain, made by soaking the leaves in alcohol, the best remedy for bee stings. We seldom use it upon ourselves, unless stung near the eye; but when a child or visitor is stung, it is very pleasant to be able to soon relieve the pain, and prevent the swelling almost entirely. Attention is called to the fact that, after being stung many times, the system becomes inoculated with the poison, and a sting has but little effect. This is true, but we doubt

if this condition is a desirable one, so far as health is concerned. For health's sake, we believe it advisable to avoid stings as much as possible.

Chapter VI takes up the subject of "Natural Swarming." Messrs. Dadant say: "There are no signs from which the apairist can predict the issue of a first swarm."—They also assert that, unless the weather is very hot, a swarm that has clustered will not leave for, at least, one or two hours.—The only thing our Authors have known to stop a departing swarm, is throwing water among the bees. Our experience is the same; and for throwing the water we ask for nothing better than a Whitman fountain pump.—In hiving a swarm, if any combs are given the bees in the brood-nest, it is better to *fill* the brood-nest with them, because the giving of a *few* combs furnishes the queen a place to lay, and the comb built, while she is thus engaged, will be of the drone variety. The Dadant's would use either combs or foundation in the brood-nest when hiving swarms, because they consider such an addition a help, enabling the bees to store more honey. We would use "starters" only in the brood-nest, but we would give the bees abundant help in the way of foundation or comb *in the supers*.—The Dadants do not favor the plan of clipping the queens' wings. If two swarms cluster together, they may be advantageously kept together, so say our friends. If more than two swarms cluster together, they are to be shaken down in a pile and directed into different hives. Watch is to be kept for queens and all of them caught that are seen. When the bees of a hive show uneasiness, they are to be given a queen. If there are not enough queens to go round, then more are to be hunted for in balls of angry bees upon the bottom boards of the hives. We have been through all this, and the still more aggravating experience of seeing swarm after swarm go away to the woods by getting an unexpected start. We know there are disadvantages in having clipped queens, but we can overcome them easier than those attending unclipped queens.—As this number of the REVIEW is discussing the control of increase, it will be appropriate to quote quite largely upon this subject. "In the majority of instances, swarming is caused by the want of room in the comb." "When the bees are disposed to swarm, the heat of the sun hastens their preparations." "The hatching of a great number of drones is also an invitation to the swarming fever." "The giving of comb must be attended to just before the crop begins." "The breeding room must be large enough to accommodate the most prolific queen." "The hive must be located where the sun will not strike it in the hottest hour of the day." "Drone comb must be carefully removed." "Hives must be thoroughly ventilated." "If the above directions are followed, the natural swarms will not exceed five per cent." "The prevention of swarming, when comb honey is raised, is not so successful, because the apiarist cannot furnish his bees with empty combs."

"Artificial swarming" is the title of the tenth chapter, and in it we find little to criticise, or that is particularly new. There is one paragraph, however, that we must quote. It reads as follows: "The forcing of a swarm ought not to be attempted when the weather is cool, nor after dark. Bees are much more irrascible when their hives are disturbed after it is dark, and, as they cannot see where to fly, they will alight on the person of the bee-keeper, who is almost sure to be stung. It is seldom that night work is attempted upon bees, without making the operator repent his folly." We have "been there" several times, and, although we have not *always* had cause for repentance, when we did, the repentance was sufficiently bitter to make us give up the practice, unless actually *forced* into it.

To be continued.

DOOLITTLE ON QUEEN REARING.

Queen breeders have no cause for complaint in regard to the supply of literature devoted to their delightful branch of apiculture. A few years ago, Mr. Alley, one of our oldest queen breeders, published a book largely devoted to the rearing of queens; the present year has witnessed the birth of the *Queen Breeders' Journal*; and now that old veteran, G. M. Doolittle, has written a book of 176 pages, devoted wholly to "Scientific Queen Rearing." The price is $1.00; and when we say that the publishers are Thos. G. Newman & Son, Chicago, Ill., no more need be said in regard to the typograpical neatness and general make up of the book. It contains twenty illustrations, besides the best looking picture that we have ever seen of its Author.—Upon our desk lies a copy of this book, just fresh from the press; and all are invited to step up and look over our

shoulders.—Mr. Doolittle says that he has secured, on an average, $500 per year in rearing and selling queens; and, while he does not say whether he would have made more money had he devoted his whole time to honey production, he does say, in substance, that the queen business is too fascinating to be abandoned. We know exactly how he feels.—He places *great* stress upon the importance of the queen, and expatiates upon the bountiful yields resulting, largely, from the possession of extra, double-superfine XXX queens. Others have done the same. We expect it will be called heresy, but, many times, when reading extravagant expressions about "the whole of bee-keeping centering upon the queen," etc., we have felt like exclaiming: "Other things being equal, one queen is as good as another!" This may be putting it stronger than the case will bear; besides, it does not *exactly* express our views. Perhaps we cannot make our meaning clear, but we will try. It is not so much what a queen is *herself*, as it is what her ancestors were; or rather what her *bees* are. That is, she may be an insignificant looking specimen, may have been reared in a manner wholly at variance with the established principles of queen rearing, may be one of those short-lived affairs whose days are soon numbered, yet, if she comes from the *right stock*, her bees, whatever may be the number of which she becomes the mother, are *just as good bees as can be produced*. Do not misunderstand us. To be sure, we must have queens that are sufficiently prolific to keep the brood-nests full of brood at a time of the year when this is desirable; and possessed of a longevity that will enable them to perform this feat two or more seasons; having this, what more is needed? As a rule, the honey producer need trouble his head very little about the rearing of queens; the bees will attend to that, and furnish just as good queens as are needed. If his queens don't fill the brood-nests in the proper season, how much more practical to simply reduce the size of the brood-nests until the queens *do* fill them, instead of ransacking the earth for more prolific queens, or else by twisting, turning, and shifting about of combs, endeavor to make one queen lay an increased number of eggs. Mr. Doolittle cites cases of enormous yields from single colonies, and gives the credit, largely, to the queen. No bee-keeper would be so foolish as to purchase the queens of these colonies, expecting that, in the future, *he* would secure such wonderful yields. But, friends, trying to secure the greatest possible yield from the bees of one queen, is not practical bee-keeping. Dollar and cent bee-keeping works for the *greatest profit*, and cares not whether one queen lays all the eggs, or if it's the work of a dozen. This whole subject is too large to do it justice in the brief space allotted to this review: it needs to be made the special topic of a whole number; and, if queen breeders and others show sufficient interest in the matter, we will devote some future number to its discussion.—Mr. Doolittle still pleads for the necessity of "following Nature." While we are confident that the methods employed and advocated by our friend are such as will result in good queens, we cannot repress a smile, as the perusal of chapter after chapter shows how completely he has, by *artificial* means, taken matters into his *own hands*. It is not a question of whether or not we shall interfere with the plans of Nature, but, will this interference bring about *desirable results?* Thousands of instances might be mentioned where, guided by his reason, man's disturbing hand has so turned the course of Nature's steps that her bountiful treasurers were unloaded within easy reach; when, had her path been undisturbed, no treasures would have been yielded up.—No colony, says Mr. Doolittle, *immediately* begins the construction of queen cells upon the removal of the queen; hence it is better to allow a colony to remain queenless about three days, then remove all the brood, and give the colony eggs or larvæ from which to rear queens. A colony from which all the brood has been removed should not be allowed to build more than one batch of cells, as the nurses become too old.—A larva in a worker cell has all its wants supplied for the first day and a half, and is developed towards a queen just as fast, up to this time, as it would have been in a queen cell: in fact, Mr. Doolittle says that a larva 36 hours old can, by being transferred to an embryo queen cell, be changed into a queen that will be inferior to none.—Mr. Doolittle makes what might be called "dipped" queen cells. He dips the end of a rake tooth in melted wax, lets it cool a little, dips again not quite so deep, then again not quite so deep as the last time, continuing this until an embryo, cup-shaped, queen cell is formed. As he can make 200 an hour, this is not so big a job as

it appears. These cells are "stuck on a stick," a larva and some royal jelly transferred to each cell, the stick fastened into a frame of comb, an opening being made in the comb beneath the cells, and the frame hung in a colony prepared for cell building. The bees proceed at once to nurse the larvæ and finish up the cells. When "ripe," the cells are picked off the stick as easily as we pull cherries from a branch.—Except in the cooler weather of spring and fall, Mr. Doolittle places the ripe cells (when they are not given immediately to nuclei) in a queen nursery. Each cell is placed in a cage furnished with food, the cages fitted into a frame, and the frame hung in a colony of bees. In the fall and spring a lamp nursery is used, as a colony does not always furnish the necessary heat. His objection to a lamp nursery is that it requires such close watching to prevent the queens from killing one another. We overcome this objection by placing each cell, that is nearly ready to hatch, in an apartment by itself, the same as Mr. Doolittle does with the queen nursery.—One of the important features of Mr. Doolittle's book is that of showing, *in detail*, a system of management whereby excellent queens may be reared and fertilized in a hive containing a laying queen; and that, too, with no interruption to the regular business of the hive. The *principle* is not new, as it was discovered soon after the introduction of the queen-excluding honey-board. On page 518 of *Gleanings* for 1885, we find the following from Mr. Heddon.

"I have also discovered that two queens can be kept in the hive, one on each side of the excluder. In fact, wherever I have used the excluder, as soon as I put eggs and young larvæ above it (where the queen could not go), queen cells were started in quantity. In several instances last season, young queens were hatched. In two such, where we had put the queen above (to test the excluding power of the board) she remained above, and a young queen was reared, hatched, and fertilized, below. This point is going to be of value to us in the future. I think it is going to be one of the valuable features of the honey-board."

We believe, however, that Mr. Doolittle is the first queen breeder who has taken advantage of this principle in so extensive a manner, or who has so thoroughly mastered the details. He prepares his stick of embryo queen cells, stocks them with larvæ accompanied by a little royal jelly, fastens the stick into a frame of comb, then hangs it in the upper story of a hive having a queen-excluding honey-board between the two stories; the queen, of course, being in the lower story. He has even had queen cells built in a section box, by putting the prepared cells in it, and putting it in a super over a queen excluder. He has also had queens fertilized and begin laying in a section box so situated, but he does not recommend it, as it spoils the section for first class honey. By dividing off an upper story into several apartments, using perforated zinc for the divisions, and having an entrance for each apartment, a queen may be allowed to hatch and become fertilized in each apartment, while the old queen is at the same time doing duty in the lower story, there being a queen-excluding honey-board between the upper and lower stories.—All are cautioned not to shake the bees from a comb having queen cells upon it. Drive the bees off with smoke, or else brush them off.—We think, however, that Mr. Doolittle exercises more caution than is needed to prevent the chilling of brood and unhatched queens. It is possible that we are mistaken, but we have never seen any brood chilled unless it had been exposed to a low temperature *several hours*.—Mr. Doolittle makes what he calls "queen cell protectors." They are small tubes of wire cloth, slightly cone-shaped, and into one a queen cell can be slipped until only the point projects. The open end of the tube is then stopped up, and the cell, thus protected, is hung in the nucleus from which a laying queen has just been taken. The cell is thus protected against the attacks of the bees, (they will not bite through the tough, hard end that projects) and in from 24 to 48 hours there is a hatched virgin queen in the nucleus. We fail to see what has been gained. A nucleus that has been queenless that long will almost certainly accept a newly hatched queen. Why not let the queen hatch in the nursery, and then give it to the nucleus that has been queenless 24 to 48 hours?—To be able to introduce a virgin queen five or six days old to a nucleus from which a laying queen has just been taken, would be a great gain. Mr. Doolittle says it can be accomplished by taking away all the combs, and giving the bees the queen in a cage from which they can liberate her by burrowing through a hole filled with "Good" candy. The combs must not be returned until the queen begins laying. There's too much labor about this; it would be more profitable to increase the

number of nuclei. Mr. Doolittle himself admits that it is not profitable.—It might be well for us to remember, however, that when a colony or nucleus has been queenless long enough to build and seal over queen cells, that it will accept a virgin queen even if she *is* old.—In forming nuclei, Mr. Doolittle prefers to shake the bees into a box, keep them confined a few hours until they "beg" for a queen, then give them a virgin queen and hive them upon a frame of honey and one of sealed brood. There is too much work about this, and we fail to see any advantages over the plan of making a colony queenless a few days, and then dividing it up into nuclei, giving each nucleus a hatched queen or a cell. These queenless bees will adhere to a new location sufficiently well when given a queen or a cell.—We are sorry to be obliged to disagree with our friend upon so many points, but here comes one upon which we can agree most heartily, and that is in regard to the importance of having the queens mated with drones from the best stock. Mr. Doolittle tries to have all drones reared by choice stocks. He furnishes them plenty of drone comb, keeping up their strength, if necessary, by giving them worker brood from other colonies. Drone comb is withheld from other colonies. He doesn't like drone traps; they answer the purpose, but it is more economical not to rear drones that must be destroyed.—Mr Doolittle asserts that, from many carefully conducted experiments, he is forced to the conclusion that the drone progeny of a queen is affected by her mating. This is a point we cannot criticise.—A chapter is given up to the subject of queen introduction, and we believe that we agree wholly with the Author upon this subject. A queen just taken from a hive runs but little risk of rejection compared with one that has been away from the bees several days. Our Author's favorite plan of changing a queen from one colony to another in the same apiary, is to take two combs with the adhering bees, having the queen between them, and hang them in the hive from which a queen has been removed and to which the queen is to be introduced. He condemns the Peet cage, both for shipping and introducing. The space is too large for a shipping cage, allowing the bees and queen to be banged about too much from one side of the cage to the other when the mail bag is thrown from a train in motion; while it does not cover sufficient comb surface when used as an introducing cage. Mr, Doolittle's favorite introducing cage is of wire cloth, 3 x 7 inches in size, and ¾ inch deep. It is a sort of shallow, wire-cloth box. It is used the same as the Peet cage. The plan recommended by Mr. Doolittle for making nuclei, also furnishes a safe plan for introduction.—Powdered sugar should be used in making "Good" candy, the sugar and the honey both warmed, and it must be kneaded and mixed so stiff that it will not change its shape if laid upon a flat surface.—In catching bees to send away with a queen, use those from six to ten days old.—The sudden check in egg production caused by taking a queen from a full colony for shipment, frequently injures her prolificness. It is the sudden check in laying, rather than the hardships of the journey, that causes the trouble. This Mr. Doolittle has proved by caging queens several days, when some of them lost their fertility in a degree. Some of the cages were subjected to rough usage, but this made no difference.—Like nearly all who have tried the Syrians and Cyprians, Mr. Doolittle discarded them. He also tried the Carniolans slightly (two queens), but was not impresed in their favor. From his account, we should think he did not have pure Carniolans. He will try them again. Thus far, he has found nothing equal to the Italians.—There are, of course, a great many points that it is impossible to notice, even in so extended a review as this, (*all* details are necessarily omitted) and we will close by most heartily urging all queen breeders to read the book. Address the publishers.

THE BEE-KEEPERS' REVIEW

VOL. II. FLINT, MICHIGAN, JUNE 10, 1889. NO. 6.

Shade for Both the Bees and Their Keeper—Circulation of Air Needed—Quilts and Honey-Boards Once More.

DR. C. C. MILLER.

I WANT shade principally for the comfort of those at work with the bees when the sun is hot. One of my apiaries is in an evergreen grove, which makes a delightful shade, but, in cool days, especially in spring and early summer, it is too cool for the bees. Another is in a burr oak grove which is very satisfactory, as the foliage does not become dense until hot weather. The other two have apple trees for shade, which are nearly as good, but the low branches trouble sometimes. Very decidedly, I want shade for my own comfort. For the bees, I think it may be best when very hot, and harmful when too cold.

If no trees shaded my hives, I think I would provide some kind of shade when the sun became hot. Your shingle cover, Mr. Editor, is good; and now I'll tell you of a very simple shade I once used when there were no trees for shade. I took fresh-cut, tall grass, laid it over the cover so as to project over on all sides except the north, then laid on a stick of stove wood to keep it from blowing away. In a day or two it was dry, and fitted down upon the cover, and lasted through the season. I'm not sure but it was better than a board shade.

You say you never knew combs to melt in a hive painted white. I have seen combs melt down in hives that stood in a shade so dense that the sun never shone upon them. I'm not sure, now, about the color, but, as the sun never touched them, it would probably make no difference, whether the hives were black or white. The trouble was that growing corn on one side, and dense brush upon the other, made it so close that no air circulated, and the heat of the bees probably melted the combs. Of course, a white hive, *when standing in the sun*, is cooler than any other.

Friend Hutchinson, I'm not going to be put down so easily about quilts and honey-boards. It is possible that I cannot manipulate a honey-board so well as you can, but I had considerable practice with solid honey-boards before quilts were ever heard of, and I have handled slatted honey-boards by the hundred ever since they were known. Now, I'll tell you what I think. If you take honey boards and quilts, as I have known them in my apiary, I think I can take off a quilt in one-fifth the time *you* can take off a honey-board; and do it with less "snap and sputter." The very fact that a quilt can be *peeled* off, I count an advantage, for the attachments are broken a little at a time, but so rapidly one after another, that a second of time takes off the whole quilt. I have read and re-read your statement as to the way bees propolize quilts: whatever your bees may do, mine do nothing of the kind. Brace combs are built under the quilt just as they are under the honey-board, only in time the brace combs under the quilt become higher than under the honey-board, for the bees raise up the quilt by means of the brace combs, and this is an objection to quilts. The only way I can think it possible for your bees to do as you say, is that pressure of some kind keeps the quilt down close to the top bars: whereas, only the weight of the quilt keeps mine down: and I have seen brace combs an inch high built under them. The quilt may be, as you say, "going," and it is possible that I may discard it entirely, but *not* because of any difficulty of removal. And it is possible that I may retain it in part for the very reason that it can be handled so easily and with so little irritation to the bees.

You have discussed, in the May number, the prevention and control of increase: and I wait patiently for the time to come when you will discuss prevention, not of *increase*, but of *swarming*. That's what I would like to know about.

MARENGO, ILL. May 23, 1889.

What Shade is Worth, and How to Get It.

JAMES HEDDON.

WHEN I began bee-keeping under the guidance of my father-in-law, twenty-one years ago, one of his hobbies was shade for hives in summer. At that time, he was the most skillful and best posted in modern apiculture (as well as being a natural genius) of any bee-keeper in this part of the state. He had experimented a great deal with shading hives, and used to say to me that, if a man had to pay $5.00 a year for something to nicely shade each hive, he could better afford to pay it than go without it. The

reader will not forget that at that time honey was selling for a price nearly three times as great as at present. That would leave it on a present basis of say, $2.00 a year for a shade. Now, at that time, he preferred a plain piece of board about two feet wide and three feet long. (It was no trouble then to get wide lumber here.) About ten years ago he died, still using and preferring that method. I have used it principally, although in connection with some experiments in other ways of shading, during the twenty-one years I have kept bees, and it looks as though I, too, would die using and preferring that method of shading.

The hive fronts east. The shade board extends over the hive east to west, or from front to rear, lengthwise of the long way of the hive. Not any of the board extends over the north side of the hive, so that some ten inches extends over the south side. The board extends well over the front and rear, so that the hive gets the sun in the morning and late in the afternoon, but at no other time to any considerable extent.

I paint my hives white, and with that color and this method of shading, (which also shelters the bees in storms) I feel well pleased.

In some of my apiaries no weight has been needed to keep these boards in place during wind storms, but usually, I use a stone weighing about fifteen pounds; and when I hear a bee-keeper tell about the time and muscle consumed in handling this stone, and about doing without it, fastening the shade-board with a staple and hook, or something of that sort, I know at once that he has had no experience, or else he is an impractical man. No one is fit for a bee-keeper who dreads handling this stone. It can be handled in a careful manner in less than one-fourth the time you can tinker with any other kind of a fastener.

This kind of a shade is not only valuable as a storm guard, but it can be quickly adjusted exactly when and where needed, removed when not wanted, and is inexpensive.

But some propose double wall hives as a protection from the heat. Now, bees, like any other animal life, not only have the power to produce heat, but continually do so from *necessity;* and unless they are so situated that the heat they create can be radiated away, it will pile up until they become their own destroyers. With a colony of bees creating heat within a hive, and the sun outside "pounding" onto it, disaster must result, no matter how thick and non-conducting the walls may be. I began this article without reading your introductory, and now, upon looking it over, I see you have preceded me in this very point. I consider unshaded, overheated hives as the great cause for swarming. True, there is not nearly so much necessity for shading a white hive, but it needs it all the same. For years I have made packing boxes of shade boards as you mentioned in your leader, Mr. Editor, but I have never made shade boards out of shingles. Would not be surprised but that this is an economic quirk. I suppose much depends upon the price of the material used in any given locality.

Ah ha! in your last sentence you speak about weights, I notice. Well, I agree with you that, where only an occasional board blows off, it is better not to weight them. But I want you to consider that it is only an occasional apiary, in semi-occasional locations, where a shade board blows off only occasionally. Am I not right?

Now regarding the discussion of the practical use of cloths vs. wood covers for hives, I can say that I have used several hundred cloth covers, among which I may mention a whole bolt of excellent enameled cloth which I purchased of friend A. I. Root. I do not like them and do not consider them anywhere nearly equal to the plain, straight, board cover with a bee space below it. Another thing: I am not afraid of the competition of any bee keeper who does prefer the cloth covers. He probably has ugly bees or he is a consumer of time in his work, or what is more likely, both. If a man has well-bred, well-behaved bees and dispatches his work rapidly, he will not use cloth of any kind any longer than merely to find out that he does not want it. I would expect to go into an apiary and, with plain board covers with bee spaces, handle about three hives to one similarly handled by a bee keeper who uses cloths.

DOWAGIAC, MICH. May 18, 1889.

No Shade Needed With Chaff Hives.—Some Excellent Arguments in Favor of Quilts.

GEORGE F. ROBBINS.

MY BEES are largely in the shade of peach trees. I place them there more in obedience to instinct than to reason. I *feel* as though they ought to be in the shade: yet, I believe that, take the years as they come, my bees, as a rule, do better in the sun. If the leaves were not off the trees in winter and spring, the difference might be *more* marked. When thick, or double-wall, or chaff-hives are used, shade is of less consequence. My hives are large and roomy, and painted white, and dummies used at the sides. Under such circumstances, a free circulation of air is more necessary than shade. My bees swarm as little, and make as much honey, when standing in the sun as when shaded.

It is with Dr. Miller that you, Mr. Editor, have picked a quarrel (?) about quilts and honey-boards, but, in the melee, you have hit *me;* and I beg leave to "kick back." *a la* Oliver Foster.

You may have handled quilts more than I have handled honey-boards, but not so much, I think, as I have the former. The objections you urge against quilts are not wholly imaginary, but, it seems to me that they amount to but little when the right material (enameled cloth) is used. Bees are less inclined to propolize its glossy surface than anything else except glass; and propolis and wax *adhere* to it even in a less degree. My quilts seldom rest upon the top bars, as there are usually brace-combs above the frames. Wherever honey boards or supers

are used, propolis is employed and brace-combs are built; and I fancy you do not get your honey-board back much nearer the same position, each time it is removed, than I do my quilt. Whether you do or not, even *pressure* will not generally get it back so near the surface upon which it rested, as it was before removal. I have tried it sufficiently with section racks, and cases with separators, and, so far as I have used honey-boards, the rule holds good with them. If I did not keep scraping the honey-boards, or the Heddon covers, the same as I do the other pieces mentioned, I would eventually have a double bee-space in one.

In warm weather, the honey-board may, perhaps, be taken off with less jar than the quilt can be removed, but, in cooler weather, the reverse is oftener the case. At any time I can remove the quilt so quickly that all the "snaps, and sputters, and tears" are resolved into *one*, and no appreciable jar is communicated to the bees; at least, no more than the shock of surprise will offset.

But the great charm of the quilt remains to be mentioned. A cover, or honey-board, must be removed *all at once*, leaving the bees free to boil out if they feel so disposed; while a quilt may be turned up at either end, or side, or corner, leaving the rest undisturbed. This feature is often a great help in managing intractable hybrids, or any other strain of bees at certain seasons. It must also be of considerable importance in case we are called upon to work with the bees in cool spring weather, or at any time when we desire to conserve every particle of heat that is generated.

MECHANICSBURG, ILL. May 18, 1889

Shade Needed, but Must be Temporary, and Removable at Will.

B. M. YORK.

I AM a novice at bee-keeping, away in Sunny South Florida, amid the cabbage palms and alligators, but add my mite to—the—waste basket.

We should shade our bee-hives, because the more comfortable the bees, the better they can and will work. By observing closely the actions of the bees, at the entrance, we find them trying to drive a draught of air through the hive, and if they are forming clusters, and beginning to hang out, it certainly indicates a want of comfort inside the hive. When to shade the bees, differs with different localities. Here in South Florida I prefer to have the hives, containing strong colonies, shaded by the first of May. Wintering on summer stands, as we do, I can but think the sun beneficial from October to May.

It may seem like a little thing, but we must be faithful in little things, and take shade to and from the bees, changing the same as we do our clothing, to meet the proper conditions of temperature.

Some will claim that the low prices of honey will not allow so much labor to be expended on temporary shade, and insist on permanent shade. But if we wish the best conditions possible to obtain the greatest amount of surplus, must we not work and manipulate shade boards, as well as surplus?

I prefer a shade which I can handle or manipulate to suit requirements. I have been experimenting during the past few weeks with one strong colony, and one nucleus with regard to sun and shade. By allowing the sun's rays to strike the side of the hives, between two and three o'clock (the top of hives being shaded) I could force the bees of the strong colony to begin to cluster, and "blow," in about thirty minutes, and they would return in about the same time when I applied the shade. The nucleus did not seem to be affected, but it was on the other side of the hive, from the sun, and quite a space between the division board and side of hive.

GROVE CITY, FLA., May 25, 1889.

Shade, or No Shade?

EUGENE SECOR.

SHADE; unless the apiary is located in a cool, airy place. In that case, it is not necessary if the hives are painted a light color, and the entrance is sufficiently large.

If the apiary is located on a sunny slope, sheltered also by trees or other high obstructions on the north, or is in a valley where the air does not circulate freely, or in a climate where there are a great many hot days, the hives ought to be shaded. How? By a shade-board,—the cheapest, the best. Why best? Because it can be left off in the spring and fall or in cool weather when we want the hives to get the direct rays of the sun, and can be put on when needed.

Is it ever needed? Yes. Bees can no more work in the hive when too hot than when too cold. Proper shade will increase the working force by diminishing the tendency to "loaf."

FOREST CITY, IA., May 31, 1889.

The Necessity for Shade is Doubtful.

R. L. TAYLOR.

WILL it pay to shade them? you ask. I cannot do much more than say in the phraseology of Dr. Miller: That's what I would like to find out. I have never yet been able to convince myself that it pays to provide any contrivance specially for the purpose of shade. The expense and cumbersomeness of so many extra "traps" and the additional labor involved in their use constrain me to wait for information. I have as yet no reliable evidence that the profit of colonies is decreased by the heat of the sun. My home apiary is so situated that different colonies have differing degrees of shade and sun from the dense shadow of the low-branching apple tree to the almost doubled heat of the sun in shadeless protected corners, yet I have never had a comb melted down nor have I been able to discern that those with any degree of shade ever enjoy any advantage in the stor-

ing of honey over those standing in the hottest sun. I know of course that in the heat of the hottest days the bees in colonies exposed to the full force of the sun are partially driven from the surplus cases, but it does not follow that any less honey is gathered, and the heated condition of the hive may allow better work to be done in the night, and so bring full compensation.

One thing I am certain of, and that is that on hot days shade is a grand thing for the apiarist, but shade boards are not the most convenient means of securing it, so I prefer trees.

With my present information if I were to establish an apiary *de novo* I would have the ground pretty well studded with low-growing medium sized deciduous trees,—most kinds of fruit trees would be excellent—and I can think of nothing now that would be better than the common red cherry for that purpose. They should be trimmed neither too high nor too low, and the branches kept well thinned out. Thus the shade would be moderate; in the spring the rays of the sun would be little obstructed, and clustered swarms would be easily recovered.

I have never used any shade-boards properly so-called, and yet sometimes in the hottest weather out of sympathy for the bees I have practiced artificial shading. I have in my apiary plenty of waiting bottom boards and covers, and in the middle of the day when the temperature is exceptionally high I place one or two of these on the hives most exposed to the sun in such a way as to shade most of the top and the sunny side or end. A bunch of newly cut grass or a green bough sometimes serves the same purpose. Beyond this I am not at present prepared to go.

LAPEER, MICH., June 4, 1889.

Shade Not Usually Necessary.

E. M. HAYHURST.

FOR the past fifteen years or more our bees have stood out on the open lawn without natural shade. I have found it necessary occasionally to supply artificial shade for a few colonies, such as newly hived swarms on sultry days, also colonies temporarily confined. For this purpose extra covers seem to be all that is necessary.

Our covers are flat boards cleated at the ends, and covered with good tin, the cleats being wider than the thickness of the boards, admit of a free circulation of air between.

KANSAS CITY, MO., June 3, 1889.

Ventilation Better than Shade.—Why Quilts are Preferable with Some Hives.

J. F. M'INTYRE.

WHEN I was inspector of apiaries for this county (Ventura) I visited most of the apiaries in the county, and I remember only one apiary that was shaded, and I condemned every hive in that apiary except two as foul broody, and the owner burned them that evening. Come to think, I remember another apiary that had a large live oak tree near the centre, and nearly every hive under that tree had foul brood. As a rule, we are more troubled with too cool weather than we are with too hot. Sometimes, however, we have a hot spell, when the mercury goes up to 115° in the shade. I had a lot of shade boards made this spring, 2x3 feet in size, and $\frac{1}{4}$ inch thick, to protect strong colonies during these hot spells. I put them on during one hot spell, but don't think I will ever use them again, it is so much easier, and more effective, to ventilate. Most hives in this country are made with a flat cover, like the Heddon and Dovetailed, and all the leading bee-keepers have some kind of a cloth between the cover and frames. I use duck or drilling painted with two heavy coats of yellow ochre. They will last well, I don't know how long. I have some five years old that are nearly as good as ever.

When colonies get too warm and set out, I take a hand full of stones, from $\frac{1}{2}$ to one inch thick, and go along the backs of the hives and raise the cover and cloth, and put a stone between the cloth and hive, which holds the cover up so the air can pass under it, and makes an opening on each side of the stone so the bees can draw the cool air down through the hive by fanning at the entrance, which will make the bees go in much quicker than a shade board.

You are mistaken about the bees driving air into the hives, they drive it *out*, and, as nature abhors a vacuum, fresh air rushes in at other places. You can prove this by making a hole near the top of the hive, when the bees are fanning at the entrance, and holding your smoker below the hole. The smoke will rush into the hive through the hole. Or, hold your hand on a level with the entrance and feel the wind come *out*.

In 1886 I run 300 colonies and extracted 42,000 lbs. of honey, without any other help than what my wife could give, besides doing her house work, and we usually extracted a ton per day. Do you suppose we could do this and be bothered with shade boards? No; nor without cloths under the cover, and every other convenience we could think of. I can see how you could wrench a cover or honey board off a Heddon hive where the frames are held solid, but how would that work on a hive with tin rabbets, and a bee-space between the end of the top bar and the hive? This is how it works: You pry the cover loose from the hive and raise it up, about an inch, with all the combs hanging to it, having perhaps fifty pounds of honey in them; hold it up with your left hand, and with some tool in your right pry each frame loose, and, as each frame drops, a lot of mad bees rush out. You can't use the smoker and pry the frames loose at the same time, so you let them come. When you get the cover off it is all covered with honey and brace combs, which must be cleaned off or you will kill a lot of bees when it is put back on. With the painted duck cloth you lift the cover with your left hand and lay it down, holding the smoker in your right; then take hold of the right hand corner of the cloth, with your left hand, and pull to the left; as

the cloth peels off follow it up with smoke. My bees build brace combs between the cloth and frames, which always stay with the frames, and when the cloth is put back on, the bees get out from between it and the brace combs before the cover is put on. I would rather take off four cloths than one cover without it.

FILLMORE, CALIF., May 29, 1889.

Humanity Demands a Shade for Bees.—The Apiarist Needs It.—Best Supplied by Large Trees.

JAMES A. GREEN.

I BELIEVE it to be not only unwise but almost inhuman to allow bees in thin walled hives to stand in the sun without any protection from its rays.

No one who has ever seen how bees will cluster on the outside of the hive at such times, keeping in the shade cast by any projecting part of the hive, can doubt that they suffer greatly from the heat at such times. It seems almost certain that the work of the hives must be greatly interrupted when the combs are thus almost deserted by the bees. When the hives are unpainted or painted in dark colors we see plainly enough at times the necessity of shade in the shape of melted combs.

It is not from the heat generated by the bees themselves that we have to guard, nor from the heat of the atmosphere as a whole. When the thermometer stands at 100 in the shade, the whole atmosphere is heated up to that point, not altogether by the sun's rays passing through it, but largely by heat given off by the earth, buildings and other solid bodies that have been warmed by these rays. A piece of metal, for instance, or a board painted a dark color lying in the sun may become much hotter than 100 at such a time. Then the inside of a bee-hive, standing in the sun, whether tenanted by bees or not, may be much warmer than would be indicated by a thermometer hanging in the shade close by.

The walls of a chaff hive, being non-conducting, the heat absorbed by the outer walls does not readily reach the inside of the hive, so bees in chaff hives do not suffer so much from heat as those in thin walled hives.

Shade in the spring months is probably a detriment, and for a large part of the summer season unnecessary. For these and other reasons there are some decided advantages in the use of shade boards. If I were looking only to the welfare of the bees, I would shade my hives with shade boards. As I have considerable regard for my own comfort, though, I would prefer to have an apiary, or at least a part of it, shaded by large (not too large) trees. These should not stand too close together and should be trimmed so that the limbs will not come too close to the ground.

These, in connection with a few shade boards where required, will add very much to the comfort of both bees and bee-keepers.

My own apiary is shaded mostly by trees and grape vines. Grape vines answer excellently for shade. I like the looks of them. I like to take care of them, and I specially like the grapes they produce, but I do not believe they pay in an apiary. Better have them somewhere where they will not require such careful training to keep them within bounds. Many other plants, such as sunflower, tomatoes, &c., may be used for shading hives, but in a large apiary, for business, I should recommend only trees and shade boards.

DAYTON, ILL., June 6, 1889.

Quilts and Shade-Boards Unnecessary, and Why?

I LONG ago voted quilts a nuisance. The first quilts were made of two thicknesses of heavy cotton cloth and stuffed with cotton batting. In a few months use they became propolized to stiffness, and holes were eaten in them, making them disagreeable to handle, besides shrinking so as to allow bees to come up through.

The next improvement was enameled cloth. This was so much of an improvement that I went for it as a duck goes for water, and now, after using this for a few years, I wish to discard that also, for the enamel soon tarnishes, the edges become frayed, and holes will come through. The cloth cannot be put down evenly and just as it was taken off. In consequence the wax builders waste much time filling in all interstices. If I wished to start a bees-wax factory I think that would be the best way to get the bees to provide the crude material.

Early in the season the enameled cloth is hardly thick enough to retain the heat, then grain bags and rags of all kinds are resorted to, which, in turn, become the resort of ants and bugs. The enameled cloth is sure to catch more or less bees under it as it is put down, and as you pass from the hive you will hear a plaintive peep, peep, from bees so caught, and if you do not relieve them an accusing conscience will follow you.

Another point in favor of the bee-space cover is that we do not remove it in winter, and substitute chaff cushions, etc., and bees winter finely under such a cover.

There may be an advantage for the cloth in peeping into one corner of a hive, or removing one frame, but I think it so small that all the disadvantages enumerated heretofore in the REVIEW greatly counterbalance it. In handling hundreds of both kinds I find the bee-space honey-board and cover a great improvement.

In relation to shade boards I am trying to dispense with them altogether. Some people like to see stone heaps piled up on their hives, but I do not: bricks are handier, but why shade hives when there are but a few hours in a day, and only a few days in the year, when they really need it? And, when the temperature is so very hot, there is but little honey coming in: and, as I have recently stated in *Gleanings*, the bees may as well loaf on the shady side of the hive as to loaf inside. If there is honey in the flowers, has the heat made any difference with the bees in their work of gathering it? And to

get the matter down to a fine point, taking the seasons as they average, are there ten days in our northern states that a shade board is really necessary?

This question of shade boards is of great interest to those having out apiaries where, during a portion of the time, no one is on hand to replace them if blown off, as they surely will be in many exposed positions.

The shade board is an expense and a nuisance. That 's the individual and collective opinion of the

RAMBLER.

Fruit Trees and Light Boards for Shade.

C. H. DIBBERN.

I HAVE sometimes been surprised in reading articles by well known apiarists advocating "no shade" for bee hives.

It is perhaps true, as it is of most good things, that the shading business can be overdone, but that a reasonable amount of shade is beneficial, if not absolutely necessary, I firmly believe. Some bee keepers advocate a light board fence, on the north and west sides of the apiary, for a wind break, and a shade board for each hive, which may do for the bees; but what a place is that for a person to hive bees on a sultry June day when the mercury dances about 100?

I have experimented a good deal in shading hives, both by trees and various kinds of covers, and have finally decided that fruit trees, such as the plum, cherry, peach and apple, make the best shade, as well as being valuable for their fruit. Most of our native trees make a good shade, but they grow too tall, and, in time, give trouble in getting swarms out of them. My apiary is located in a grove of box elders, but it requires a good deal of trimming, and, on that account, were I to start anew, I would plant low growing fruit trees.

I also use trees, trimmed to make a screen, on a division line, to compel the bees to fly straight up, and not interfere with my neighbor working in the adjoining lot.

During many years I have had some hives that stood nearly all the time in the sun, while others were entirely in the shade, and I never could tell that it made any difference as to the bees doing well. Of course, we want as much sunshine as possible on the hives, early in spring, and late in fall, and the leaves seem to come and go just about the right time to afford this.

One season, before I had any trees for shade, I lost over twenty swarms by their going to the woods; some leaving hives, brood and honey, after being hived nearly a week. Since I have had shade I have had no trouble on that account.

I have also tried many of the different shade boards, and like a light board, that fully covers the hive, as well as any. A flat board, however, does not shed water very well, unless the hives are tilted forward. A very nice shade can be made by nailing shingles to a 2x2 in. piece forming a regular roof, and nailing lath on the under side to rest on the hive. Such a cover answers the purpose, is neat, light, and not likely to be blown off.

MILAN, ILL., May 27, 1889.

What Shade Upon the Entrances May do in Winter.—Asparagus for Shade.

E. E. HASTY.

THERE is one point connected with this matter of sun and shade which is seldom mentioned, and that is the curious result of unequal shading at entrances when bees take a flight in winter. In an apiary where all the hives face the east, turn one around so it will face the west and it is liable to get extra strong in bees *at the expense of the other hives*. The way this comes about seems to be as follows: Along about eleven o'clock bees come out for an airing from most of the hives. At that time the sun is shining into their doorways, and things are pleasant there: but a little later the entrances are shaded and rather chilly. Many of the bees linger out, and when they finally conclude that they must go in somewhere they make for the place where there is the warmest and liveliest doorway. This of course is the hive where the entrance is on the western side. Bees seldom guard their doors much in winter. Where one chooses to go in, there he goes in. I'm inclined to think that all hives should be faced to the south when fixed for winter. I am quite sure that any object which shades one entrance more than the adjacent one is liable to deplete that hive of its bees. The tendency to rush like school-boys to the spot where the crowd is merriest seems very strong in winter. It has been spoken of as a great puzzle why two colonies as like as two peas, so often come out so very different in spring. This is one of the reasons—the bees of No. 1 desert to No. 2 on pleasant winter days. As weak colonies can seldom have such a merry crowd at their doors as strong colonies have, they are pretty sure to suffer relatively from this cause. In fact, when the attempt must be made to winter weak colonies out of doors, I think it would pay to carry them to a different spot twenty rods away from their strong neighbors.

My summer shade is asparagus; but I am not going to blow its trumpet very loudly. For the first few years it is vexatious because it wont stand up as it ought. Strong old stools of asparagus, however, will stand against anything short of a hurricane. The main trouble is that too many precious hours must be spent in shearing it to keep it decently in shape. If left to itself it will grow all over the hive and make manipulation almost impracticable.

There seems to be considerable room for further invention before we shall have the best form of non-living shade. Meantime I incline pretty strongly to such double walls and roofs as shall need no shade at all. But even then, if the hives are to face the south, I should pity the little fellows so, roasting alive in their doorways, that I should be for giving them at least a few inches of cotton awning stretched on a wire.

RICHARDS, OHIO, May 27, 1889.

The Bee-Keepers' Review,
PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor & Proprietor.

TERMS:—50 cents a year in advance, two copies for 95 cents; three for $1.35; five for $2.00; ten or more, 35 cents each; all to be sent to ONE POST OFFICE. In clubs to different post offices, NOT LESS than 45 cents each.

FLINT, MICHIGAN, JUNE 10, 1889.

REMOVING QUILTS AND HONEY-BOARDS.

We had no idea such a discussion could be stirred up on this subject. Now that such able correspondents are coming forward and ranging themselves in opposing ranks, *we* shall keep still, at least for the present. It is very pleasant to note, though, as point after point is brought out, how one man arrives at one decision, and another at an opposite one, yet both are sincere.

ONLY SIXTEEN PAGES.

For the past three months we have been giving you twenty pages, and perhaps may do so again the next month or two, so we hope you will not complain if the advertisements do crowd the reading matter pretty hard, while we are taking the little rest that we feel we *must* have. We take it helping to clean house, running the lawn mower, making garden, and transferring forty colonies of bees. Not much rest about that? Ask the man who has been brought up out-of-doors, and then been tied to a desk or type-case a year and a half, if the greatest rest he could have would not be to be allowed to get out and *dig* with a hoe in the clean, mellow soil.

IS SHADE REALLY NECESSARY?

We are surprised to see with how little shade for their bees many of our best bee keepers succeed, and how difficult it is to *prove* that shade is absolutely necessary, or even profitable. Of course, we don't *know*, but we very much doubt if bees *suffer* because their hive is unshaded: if it becomes too hot, they simply walk out and sit down in the shade upon the north side of the hive. Whether it is profitable to allow this proceeding, is a question which the REVIEW has not so satisfactorily settled as it has some others. It has, however, brought out quite a number of valuable hints upon the subject. It has shown what an important relation there is existing between a good circulation of air and the necessity for shade. The ventilation that the bees can give the hives, also has a bearing. If the apiary is located where the cool breezes can fan the heating sides of the hives, wafting away the heat ere it accumulates, and a broad generous entrance is furnished each tidy, white hive, we are persuaded that shade is not so *very* essential. If the hives are dark in color, or the apiary located in any place where there is not a free circulation of air, we feel sure that shade is an absolute necessity to prevent the combs from being melted down, if for nothing else. What shall that shade be? For the comfort of the apiarist trees are advisable: but for the man who hasn't trees in number and position for the proper shading of the bees, the shade-board, to our mind, offers the most advantages.

MIGRATORY BEE KEEPING.

The followlng interesting bit of news is just to hand on a postal:

CAPAC, MICH., June 6, 1889.

W. Z. HUTCHINSON,—

DEAR SIR,—Your postal inquiring after Mr. Walker is at hand. He went to Kenton, Tenn., the 16th of April, bought 100 colonies of bees, has taken a crop of 1,900 lbs. comb and 1,400 extracted, and is now just on the road with them to Wis. I will write you again when he gets settled. I did not send him your letter as I knew he was so very busy. Yours truly,

MRS. BYRON WALKER.

Friend Walker seems to "get there" every time; not by "going west," but by "going south;" and it looks as though he wouldn't rest easy until he had proved the success or failure of migratory bee keeping. And this reminds us that we are thinking quite strongly of devoting, say the August REVIEW, to a discussion of this subject. It may not be advisable for all of us to go on a jaunt up and down the Mississippi, but some of us might find it profitable to move our bees a few miles to some other location where a fall crop could be secured.

QUEENS, AND THEIR INFLUENCE UPON SUCCESS IN BEE CULTURE.

As we expected, our views upon queens, as expressed in the review of Mr. Doolittle's book, have aroused queen breeders, and a few honey producers. Neither are we surprised at the difference of opinions express-

ed. For instance, one writes: "I can't agree with you in your review of Doolittle's book. *There is something in good queens and I know it.*" Another says: "I think your review of 'Doolittle on Queen Rearing' is just No. 1." And so it goes; while articles upon the subject have already come to hand. Now while the subject is fresh in the minds of our readers, and they are interested, we may as well devote the July REVIEW to its discussion. From the tone of the communications received it is evident that we have been misunderstood. We feared it would be so. We said that when so much "fuss" had been made over queens, we had sometimes *felt* like exclaiming: "Other things being equal, one queen is as good as another." But we did not so assert, and attempted briefly, to define our position; still many have jumped at the conclusion that we thought one queen as good as another. As we look upon the matter, in the light in which we are discussing it, the queen is simply the vehicle of transmission from one generation to another. It is the *qualities* that are to be transmitted, rather than the *vehicle* of transmission, that should receive our attentions. To illustrate: A man has a strain of bees that are of little value as honey gatherers. Can he, by any sort of "jugglery" at queen rearing, transform them into energetic workers? Some have written saying how much better the bees from such a breeder's queen, and the bees from the daughters of this queen, have done than the descendants of some other breeder's queen; and have argued from this that the queens, and the manner in which they were reared, caused the difference in results. We say *no*. The difference is in the *strain of bees*, and not in the manner in which the queens were reared. That there *are* circumstances in which much depends upon the queen, it is idle to dispute. Many of our best bee keepers have argued against extra prolificness in queens, some of them even going so far as to assert that prolificness in the queen is at the expense of quality in the bees; but that prolificness is all-important to the user of hives with large brood-nests cannot be dodged. *He* must have prolific queens, else one-half of his brood chamber is transformed into a *store* chamber. This extra prolificness is not secured by some peculiar method of queen rearing, but by *selection*—by rearing queens from the colonies whose queens are the most prolific. Here, again, the queen is simply the vehicle for transmitting the quality of prolificness from one generation to another. The *age* of queens may also have some bearing upon success. Where the harvest ends with white clover, more surplus will be secured if the bees do not swarm; and colonies with young queens are far less likely to swarm. Then again, young queens lay much later in the fall, and this has a bearing upon the subject of wintering, as also does the time when they begin laying in the spring. Old queens sometimes fail to keep their combs filled with brood, but this would be the same whether the queen had seen two years or four. Still, if these failures in egg-production are undesirable, and it certainly seems to us that they are, then the less frequently they occur the better.

As we have said before, we need queens sufficiently prolific to fill the brood-nest with eggs at the season of the year when this is desirable, and possessed of a reasonable amount of longevity. This secured, and nothing more needs consideration except the *stock* from which they come. Naturally, when a man *buys* a queen he expects to get the worth of his money. If he buys her to breed from, he expects her to be able to endow her royal offspring with the qualities and characteristics of her ancestors: and if she does this, he need not mourn if she lives only long enough to allow him to secure a goodly number of her daughters. If he buys queens in large quantities to re-queen an apiary, he has a right to feel that he has been cheated if the queens live only a few short months. That queens can be reared artificially equally as good as those reared under the swarming impulse, needs no discussion; most *certainly* they can; *how* it can be done has been repeatedly published.

"Good queens are at the foundation of bee keeping." "Bee keeping all centers upon the queen." "As the queen lays all the eggs, of course success depends upon her." It is to combat such ideas as these that we have written as we have. The queen is of no more importance than the hives, the combs, or the location. By importance, we mean, in this case, that which can by some decision, or management, of the bee-keeper, be made to contribute to his success.

Friends, we have tried to honestly and fairly start the discussion upon this subject, and it is with pleasure that we now turn it over to you, feeling sure that justice will be done.

LANGSTROTH ON THE HONEY BEE, REVISED BY DADANT.

Chapter VIII treats of "Queen Rearing." It is explained why queens reared during the swarming fever are such excellent queens. Honey and pollen are abundant, and the bees, especially the nurse bees, are numerous. By placing colonies in the same condition as to food, heat, and nursing, as during the swarming fever, just as good queens will be secured. Half-size frames, two of which will fill a regular frame, are advised for queen rearing. We have always used the regular-size frames in nuclei, but it has always seemed to us that there were advantages in these small combs. In fact, we have often contemplated taking section boxes for frames to use in nuclei; making a super answer for a hive for four nuclei, one nucleus occupying each row of sections. Should we ever again engage extensively in queen rearing we should give section boxes and supers a trial in this manner. Mr. Alley *does* use small combs for nuclei, the combs being only 4½ inches square. Messrs. Dadant object to such small combs for nuclei when the cells are to be built therein. They say that the stronger the colony in which the queen is reared, the better the queen. We have never employed nuclei for cell building, but we *believe* that a moderately strong colony will do exactly as good work at cell building, provided the room it occupies is in proportion to the strength of the colony.

Chapter IX takes up the "Races of Bees." Messrs. Dadant say: "We have never seen queens as large as some Carniolans which we imported some ten years ago. But, in spite of the prolificness and general good reputation of this race, we did not attempt to propagate it, owing to the difficulty of detecting their mating with the common bees." Our Authors place the Italian at the head, and assert that it is only a matter of time when it will supercede the common bee.

Chapter X has for its heading, "The Apiary." When it is necessary to move an apiary a short distance, the Dadants suggest that the strongest colonies be moved the first day, others not so strong the next, continuing the process until all are removed.—We were particularly interested in what is said upon out-apairies. When an apiarist wishes to make a specialty of his business, say our authors, he should expect to keep bees in more than one location. If he owns more than 120 colonies, they would advise him to start another apiary. While there are many drawbacks in managing bees away from home, there are also many advantages, not the least of which is the fact that when the honey crop fails in one locality it may be very good a short distance away. An out-apiary ought to be at least three miles away. Instead of renting ground, for out-apairies, our Authors give the owner of the ground a share (one-fifth) in the crop; he furnishing room for hives, combs, fixtures, etc., boarding the men and teams while present. He also gets seventy-five cents for each swarm he hives. The owner is at once interested in the success of the apiary, and does all in his power to make things pleasant and agreeable.

"Shipping and Transporting Bees" is the topic of Chapter XI. In early, cool spring weather, but little ventilation is needed. The Dadants have shipped hundreds of colonies with no other ventilation than that afforded by the joints of a rough block nailed over the entrance of the hive. When the weather is warm, plenty of air is needed. The Dadants usually replace the bottom board with wire-cloth, protecting it with slats. When the colony is so populous that a draft through the hive will not injure the brood, the top is also covered with wire-cloth, shaded with a board. The *entrance* should never be covered with wire-cloth, as the old bees worry themselves trying to get through it. In speaking of the failure of Mr. Perrine, in attempting to follow the bloom up the Mississippi, Messrs. Dadant say they are inclined to think that the failure was due more to the lack of practical knowledge in bee-keeping, on the part of the managers, than to any other cause, an opinion with which we are inclined to agree. Mr. Perrine also had accidents with which he had to contend. Mention is also made of the successful removal of an apiary to some other location at the proper time to harvest some crop that would not have been secured in the original location.—In shipping queens, only the *purest saccharine* matter ought to be used. Old bees, or rather those that have begun to work in the field, will stand a longer confinement than young bees. —In the South is the place to raise bees and queens for sale; but the superior quality of the Northern honey makes its production fully as profitable as honey production in the South.

Chapter XII is devoted to "Feeding Bees." We find little to criticise in this chapter. There is one point touched upon, however, upon which we have, for some time, felt like saying something. The recipe for making the Scholz candy is given as it originally appeared in Mr. Langstroth's book. After it, appears the following: "This preparation has been used of late years with success as a food in mailing and shipping bees, under the name of 'Good's candy.'" Of late, quite a little has appeared in the papers as to whom belongs the credit of discovering this kind of candy. For the purpose of feeding bees in the hive it was discovered many years ago by Mr. Scholz, but for provisioning queen cages it was discovered but a few years ago by Mr. I. R. Good, and the latter discovery outweighs the former a hundred fold.

Chapter XIII is devoted to "Wintering," and in it we find much to commend. Attention is called to the muscular exertions ("roaring") on the part of the bees, in cold weather, for the purpose of keeping up the proper temperature. This is undesirable as it leads to a waste of tissue, which calls for more food, and the more food consumed the sooner do the intestines become filled with fecal matter. Diarrhœa in bees is not *properly* a disease, so say the authors, and we agree, it is simply an overloading of the intestines with excrement, which, could the bees fly, would be regularly voided. "From numerous experiments made, it is evident that *the purest saccharine matter will feed them with least production of fæces.* Hence watery, unripe, or sour honey, and all honey containing extraneous matter, are more or less injurious to confined bees. Dark honey containing a large amount of mellose is inferior to clover honey or sugar syrup." Upon the next page, following the above extract, we find our authors mentioning and condemning the plan of extracting the honey in the fall from the brood combs, or so managing that there is none to extract and then feeding sugar. Their objections are the trouble in feeding, and the poor results (?) in wintering. When the proper feeders and utensils are used, the trouble of feeding is very slight indeed, and we are at a loss to understand why Messrs. Dadant should say that the bees winter poorly, especially so when they had just classed sugar with clover honey as a winter food, and had asserted that "*the purest saccharine matter will feed them with the least production of fæces.*"—Out-door wintering is to be preferred where the weather is seldom so severe as to prevent the bees from flying at frequent intervals. Large and populous colonies are more likely to be wintered successfully in the open air, in cold climates, than are weak colonies, as the requisite heat is more readily kept up. For wintering bees in the open air, in our Northern climate, protection of some kind is needed: but our authors object to chaff hives because they are so heavy and inconvenient to handle, and their thick walls prevent the sun from warming up their inmates in the winter, when a cleansing flight would be beneficial. Surrounding single-wall hives with packing held in place by outer boxes that may be removed in the spring is commended, in which we agree.—When the bees cannot fly at least once a month, the cellar is recommended, and we hold up both hands for this recommendation.—As bees begin to fly at 50°, the temperature ought not to reach this point.—The importance of placing each colony upon its old stand, when brought from the cellar, is urged upon the keepers. We have given this point considerable attention, and, with us, it is of no importance. When taking the bees out one spring we carried them to a new location about ten rods distant, and not a bee went back to the old ground.

To be continued.

THE BEE-KEEPERS' REVIEW

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How Much May Depend Upon the Queen?

DR. C. C. MILLER.

MUCH depends on the way you look at it. In a year of entire failure of the honey crop, a man is very apt to say "All depends on the season. My colonies all alike failed, and a change of queens would have made no difference." Another year when the harvest is good, he finds that a few colonies have far out-stripped the others, these few colonies having had given to them queens of fine blood, while the balance of his stock is rather poor. He is very likely to say "It all depends on the queen." Then, when my only dependence, white clover, has failed, and some one else has a fine crop from linden, I have felt like saying "All depends on the locality."

Doolittle says: "Bee keeping all centers upon the queen." Hutchinson says: "I have sometimes felt like saying, other things being equal, one queen is as good as another." The two men have their different ways of putting it, but at bottom I doubt if there 's much difference in their views. Look at their practice. Does Doolittle take all the pains in the world to raise good queens and then pay no attention to the rest of his management? He would be the last one to claim anything of the kind, and his teachings constantly show that he lays great stress on other things as well. Does Hutchinson think the queen of no consequence? Who is it that sells tested queens at a very low price just because he thinks it so important to change his queens?

But says one, "The difference is in the *strain of bees*, and not in the manner in which the queens were reared." Well, my friend, no one said that bee keeping centers on the way queens are reared but on the queen, and the strain is in the queen, and to get the strain we must get a queen of that strain, and to increase and perpetuate that strain we must know enough of queen-rearing to rear queens of that strain. And now I think I hear the editor turn on me and say, "Look here, friend Miller, do you go through all that fussing that Doolittle tells about, for every queen you raise?" No, I don't. I let the bees do a good deal their own way. Still I might be better off if I took the matter in my own hands a little more, and it's a good thing to have a book like Doolittle's to stir me up. By the way, that book is worth several times its price to me, not only for its teachings about queens, but for settling some things "along the line" of my own experimenting. Moreover, if I were making a business of rearing queens to sell, I think it would pay me well, and be economy of time, to follow out all of Doolittle's "fussing."

On the whole it's a pretty good thing to get specially interested in different topics so as to bring them prominently to the front. One time it is hives, another time supers, then control of swarming, and so on. For the time being we get stirred up about the one thing, and give it special prominence, whereas, in reality there are many other things of equal or greater importance. I don't believe a man with the best queens in the world would secure a good crop of honey without having several other factors in the problem. I'm not sure but I'd agree to give up queen rearing entirely to the bees if I could have a satisfactory answer to the question, "How can I prevent the desire to swarm without interfering with the crop of comb honey?" On the other hand I recall a queen I once raised which laid, if I remember rightly, just three eggs and then gave out. When I think of that and that the difference was entirely attributable to the manner of raising, and that the difference in queens may make all the difference between success and failure, I feel sure that the queen, both as to the strain of blood she possesses and as to the manner of her rearing, is a very important personage.

MARENGO, ILL., June 5, 1889.

Good Queens, Why?

PROF. A. J. COOK.

FRIEND HUTCHINSON, it may seem and doubtless will seem to many, very presumptious in me to offer a word of criticism regarding your position on this question of quality in queens. You have doubtless reared a *score* of queens to my one. You have watched your queens as carefully as was possible. Are you not then much more likely to be right than one of so much less experience? Yet I do differ with you. I would emphasize the importance of a good breed or strain as strongly as you. I would also bear equally on the importance of the proper care. I believe all animals are much the same. In all animals

we find breed very important in any line, but we find that proper care is no less important. For instance, were I to buy a cow simply for butter and cream I should take a Jersey. Then I would not stuff her with all she could eat while young. If I did I would spoil her. Should I desire the best results in beef I would buy a Short Horn, then I would feed this animal very liberally from the very first. Then I *am not*, *cannot* be disappointed.

So with queens, I would wish queens from the *very best strain*. Queens that were business from the tip of their antennæ to the tip of the sting. And queens that produced workers that were business from the tip of their feet to the tip of their wings. But more, I should wish queens reared under the best conditions. If difference in quantity or quality makes active ovaries in lieu of abortive ones, as is certainly the case, then surely the more liberal the food the better the queens.

Thus queens, reared under the swarming impulse, or under such artificial conditions as shall secure the same attention from the nurse bees, are, I believe, the best.

AGRICULTURAL COL., MICH., June 5, 1889.

Queens, and their Influence Upon Success in Bee Culture.

W. J. ELLISON.

FRIEND H.—The above is a very important subject, not only to queen breeders, but to honey producers, and to every one at all interested in "Dollar and Cent Bee-Keeping." Bee keepers will be under a debt of gratitude to you for introducing it, and bringing before your readers the opinions of those who have most to do with that line of apiculture, viz., queen rearing.

Prof. Cook says, in his Bee-Keepers' Guide, that "The function of the queen is simply to lay eggs," and he gives lots of good authority to prove his assertions. Then one of the essential qualities of our queens is that they be good layers, even if their whole force is not at all times exerted. Now what do we want to show? "Their influence upon success in bee culture."

I know some will say, if their being prolific was all one wants, why not get queens from a race noted for that quality? Cyprians, for instance, are said to outstrip Italians in that office. But, that is not all: I have had extra prolific queens, and very handsome ones they were, when to all appearances ready for a good, old age, they would have an egg in every available cell, and an immense lot of bees in their hives, that seemed to take up their whole time in nursing. But does all that display of their good qualities, without the actual, nicely filled sections, warrant all this "stress upon the queen?"

I did not misunderstand you in your review of "Doolittle on Queen Rearing" when you said "You felt like exclaiming, other things being equal, one queen was as good as another," as I was sure your knowledge of queens would not permit you to make such a broad assertion without the important prefix "other things being equal," for if that were the case it would apply to animals, vegetation, etc., and we might expect as much from a common cow as from our best Jersey. They are both cows. Or why pay high prices for choice strawberries when we have the old ones of our father's? They are both strawberries. Just so with queens. My ideas are that a good queen is a very important attachment to a colony of bees; and to get them so that "their influence will be a success in our business," we have to observe two important things in their rearing; first, to have brood of the right age, and from a pure tested queen, whose workers have been proved, "extra, double-superfine" honey gatherers; in other words, first class stock, whether home-bred or imported. We can raise queens as good as ever were imported.

The next point to be observed, and one that is often overlooked, is that the cells should be raised by bees having the same, or as good, qualities as the ones from which we have obtained the brood. The nature, color, and qualities of the queens, will be largely effected by the bees that rear the cells. Now we have only to get lots of drones from queens reared as above, and have them, if possible, in every colony in the apiary; not begrudging them their daily bread that natnre has provided so bountifully for them, and made the workers their menials to store it. A few purely mated queens will pay for the keep of hundreds, yes, thousands, of them, during their whole lives. Discard all other kinds, and we will not hesitate long upon queens and their influence upon success in bee culture.

STATEBURG, S. C., June 6, 1889.

Queens, as Related to Success in Bee Culture.

JAMES HEDDON.

I HAVE not as yet been able to read one page in Brother Doolittle's book on queen rearing. My views upon the subject are recorded in my own book, and I do not know that I have had any reason to change the ideas therein expressed even upon minor subjects since I wrote it. If I have I have forgotten it for I have been too busy to read my own book.

There is not only something in good queens, but there is a *good deal* in good queens, and the question arises, what constitutes a good queen? And right there is where I shall begin to differ with some other bee keepers. The records will show that I was the first person to publish a different view of honey production as a business, or present different views in regard to profitable bee culture. Allow me to go over the old ground again a little, for I notice that very few bee keepers seem to agree on that ground, or at least fail or forget to take it as the true basis of bee keeping. Here let us suppose we have an unoccupied honey area of about six miles in diameter. Now then,

that can be successfully worked by putting to it brains, muscle and money. The one great question relating to successful honey production is, "in what way can I get the most surplus honey from this field, with the least outlay of these brains, this muscle and that money?" That is the whole question. Now look at it fairly and start right. It is not a question of how many eggs a queen can lay in a day, nor whether she looks in the cell before depositing the egg therein, nor whether she does it head up or head down, nor any of these details only in so far as they have a direct bearing upon the object in view. To get honey we must have, not only that field, but one of the main products of this brain, muscle and money, BEES. Now it takes capital as well as muscle and brains, to get bees. We must have combs and hives to protect them. The most important feature in connection with hives, is to have that hive which can be handled with the least outlay of time and muscle. It is also an advantage to have the hive that can be bought the cheapest, but that is of minor importance compared to the former point, because a good hive when once made, if properly cared for, will last a life time. Now sir, queens cost the least of any part of that capital which begets worker bees. It takes combs and honey as well as capital and time to get the workers. Now, it takes no more time, no more combs, no more hives, no more labor, to get energetic, honey making bees than poor, lazy, robbing, ill-natured bees. It only requires that the apiarist will look about him until he finds the best strain of bees, bees of the best quality, and then take the time and pains to breed that strain into his apiary. Let the question of extra prolific queens go. Supply each queen with combs and other incidental capital sufficient to give room for queens of minimum prolificness, and you will not lose a dollar because the most prolific queens have not room enough for their prolificness. The reason of this is, that this room is where your capital is invested, and the queens cost absolutely nothing if you do not have to buy them.

Now in regard to re-queening: just let that alone. Let your bees do the re-queening and superseding, except where you find an abnormally unprolific queen, that for some reason is harbored by the bees which usually replace such queens; then you can step in. But to keep a record of the age of all your queens, and undertake to forestall your bees in superseding them, is time badly spent. Now remember, again, that all you are trying to do is to get sufficient workers to gather the greatest amount of surplus honey that can be gathered from this area or honey-field, with the least amount of capital and labor. Do not forget that point, but always keep it in view. If you are rearing queens for sale, *then* there is a cost. This queen-rearing apiary should have a record of the age of its queens. It costs something to rear queens and hold them till you receive an order for them. While I assert that the bees can create queens for you for the purpose of superseding your queens, or increase in colonies, so that they will not cost you a cent apiece, you cannot make much profit on rearing them at will, holding them for customers, and shipping them at a dollar apiece. The conditions are as foreign from each other as they possibly can be.

I will tell you how I have managed to breed for qualities, and will further add that I would not give a cent for a successful system of artificial fertilization. By the use of comb foundation we almost perfectly control the amount of drone comb built. By the use of movable frames we control the place where we will have this drone comb utilized. By the use of common sense and strength enough to tell the truth, both in conversation and in writing for our local papers, we keep other bees out of our field, and the result is, we control the drones which are flying, as well as the kind of queens we breed from. Then with natural increase and natural swarming we have a large majority of our queens reared in a few of the best colonies. Whenever our apiary contains poor colonies, (as it sometimes does after buying), we keep the drone combs in the choicest colonies and the worker in others. It is the simplest matter in the world to almost completely control the quality of your drones. Now it seems to me this is about all I have to offer and enough for the practical dollar and cent honey producer to want from one writer.

DOWAGIAC, MICH., June 15, 1889.

Some Emphatic Words in Favor of Good Queens.

E. T. FLANAGAN.

WHEN Bro. Doolittle's "Scientific Queen Rearing" appeared, of course I procured it, and I need not say that I read and studied it with interest and profit. Then I watched to see how the apicultural press would approve of it, and it was with more than ordinary interest that I turned to your article in the May REVIEW; for, do you know, that I look on the REVIEW as the *very cream* of our current, apiarian literature. Judge then of my surprise, yes, almost indignation, when I found you treated it in the manner you did. You did not seem to realize the great importance of the queen, and intimated that it was not so much what the queen was, as what her bees were: as if the quality of the bees, their energy, industry, hardiness, and honey-gathering qualities, *did not depend on their mother*. I felt like the poet, when he said: "I would that my tongue could utter the thoughts that arise in me." One thing, though, I can say, and that is, I have demonstrated that queens reared with care, and in the proper manner, and under the proper conditions, *are superior* to those raised in the careless, indifferent, harum-scarum, happy-go-lucky way that so many are raised, and that the dollar and cent results depend *as much or more on the queen* than any other factor in bee keeping, locality, alone, excepted. This is not theory, it is practical experience. I purchase every year queens from the most noted breeders in this

country, and from time to time import directly from Italy, and I can say truly that the queens (and the young queens reared from them) procured from men like Doolittle, and Alley, who have given years of study, thought and experiment to the subject of rearing good queens, have uniformly proven to be the best, and have given the best results in wintering, in longevity, *in reproducing themselves*, in honey gathering—in short in dollars and cents. And when such men give their methods to the public, methods that if carefully followed would work wonderful results, we should honor them for it and uphold them, and speak a good word for them, instead of casting a doubt on the merits of their methods, or intimating that almost any kind of queen will do, so she fills a medium sized hive with bees at the proper season. I have for years used a modification of Alley's methods of queen rearing, and with excellent results. In regard to Doolittle's method as given in "Scientific Queen Rearing," I think it more suitable to the specialist or large honey producer and queen breeder, as there is too much "machinery" about it for the average bee keeper who would prefer to buy his queens from one who does raise them as they should be reared, than to make so much effort for the few he may need, and then probably not succeed to his satisfaction. One more point in my experience and I am done. It is not the size, or color, of the queen that makes quality. A very large queen has seldom, with me, proven to be super-excellent, and were I to be given my choice from a hundred queens, a medium sized one would be chosen every time.

BELLEVILLE, ILLS., June 1st, 1889.

It will be seen that the above was written before the June number was out, and it is but justice to say that, upon its receipt, Bro. F. sent a postal saying that, had he waited until he had read our introductory editoral upon queens, he would have written a little differently, but lack of time would prevent his preparing another article.

Good Queens vs. Poor Queens.

G. M. DOOLITTLE.

WELL, what do you mean by a good queen? I do not know what definition many of our apiarists would give of a good queen, but what I consider a good queen is one having all that is requisite to queen nature, and one that is susceptible of being brought up to her full powers of egg laying *at any time* when desired by the apiarist. What is meant by a poor queen? One that is not fully developed in all her parts, so that she is not susceptible of being used by the apiarist to bring about the results which he wishes brought about. I am well aware that hives, combs, location, etc., have much to do with our success in bee culture, but when any one claims that they have as much to do with honey production as has the queen, I cannot help thinking that the matter has not been fully considered. We could have no bee-keeping without the queen. As well talk about having milk without mammals of some kind to produce it. Milk comes from the mammal which produces it, and bees come from the queen which lays the eggs for those bees; while the bees gather the honey. Now, what is the difference between one of the scrub cows of our fathers as to milk production, and one of the thoroughbred Short Horns of to-day? Simply the difference between profit and loss. How came this to be brought about? Was it simply by selecting a certain strain of cattle? Not by any means. Who ever heard of any great improvement of stock being brought about by simply selecting a certain strain and then letting it take care of itself? No stock producer of any reputation will work in that way. On the contrary, after selecting the *strain* he wishes to breed from, he gives these animals all the care and all the feed possible, to push them speedily forward to the end designed. What is the difference between the bees of to-day and those kept by our fathers of 100 years ago? I listen: do I hear any one say "not any?" If any one says so, then *I* say that we as apiarists of the nineteenth century have not been as wise as our brothers who are raising cattle. Judging the present by the past I am willing to go on record as saying that any one can take a "strain of bees that are poor honey gatherers" and by "jugglery," (the same kind which stockmen use, such as feed, currycomb, selection, etc.,) bring them up to a perfection, as honey gatherers, scarcely equaled by any of the strains of bees of the present. Yet a man would be unwise to start with such an inferior strain when he could just as well have a better one to start with. No, friend Hutchinson, the difference is not in "the strain of bees" entirely, and by saying so you go against all the history of the past as to methods used in perfecting a more valuable race than we already have, be that "race" bees or animals, and give approval to a carelessness as regards important matters not admissable for an editor.

There must be used all the requisites which tend toward a full development of all the parts of the queen, if we would succeed; and the bees must be carrying out their natural instinct to its fullest extent in order to give us the greatest energy, and develop an activity in our queens which can be so moulded by the apiarist as to give him the bees just at the right time so that they can accomplish the most usefulness while they live. Do any object? Let me quote from one of the best of books, "Hutchinson on Comb Honey." On page 32 we find these words from Samuel Cushman and endorsed by W. Z. H, "When bees hang in festoons, secrete wax and build natural combs, they are carrying out a natural instinct. Its gratification stimulates their energy and a colony so managed will gather more honey than if not allowed to build natural combs. The suppression of this instinct, in a measure lessens energy, or prevents development of activity, and affects the future usefulness of

the bees." This Mr. Hutchinson believes correct, calling it "present condition;" yet when I come to argue along the same line in behalf of our queens, he says, Oh, no! "The difference is in the *strain of bees*, and not in the manner in which the queens were reared. Queens can be reared artificially equally as good as those reared under the swarming impulse." Mr. H. was either right in his book, and wrong now; or else he is right now and was wrong then. Which is it? I claim he was right in his book, and by that claim I am willing to stand, till we have some proof that it is wrong. Again, on page 29 of the same book, Mr. Hutchinson thinks it very fortunate when his desire and the bees' instinct run parallel, yet here he claims that equally as good results can be accomplished when he goes contrary (artificially reared queens) to their instinct. I do not claim that my plan of rearing queens has nothing "artificial" about it. My claim is that by this plan the bees are only carrying out that instinct which "stimulates energy" and "develops activity," instead of forcing them to rear queens under conditions which "affects their future usefulness."

Before closing, I wish to go on record as saying, that the more prolific a queen is, the better the queen every time; and that the raiser can have much to do with this prolificness by "the method" which he employs in rearing them, as well as by "selection." This I know by years of experience along this line, for I have raised many prolific queens from very unprolific mothers. I claim that the extra prolificness of queens has more to do for the man who uses a small brood chamber than it has to do for the one who uses a large one. I was nearly, if not the first, to recommend a small brood chamber, and I lay the success I have had in the past in producing comb honey, largely to using small brood chambers, in connection with very prolific queens. And why should this not be so, seeing that we must get all the brood possible in a few short weeks, if we would be successful honey producers? By "brood possible," I mean all that our small brood chamber will hold, and this is to be done at just the right time so that the bees which hatch from this brood will be the laborers in our harvest. Failing in this, we fail of a harvest or surplus. What I have been breeding for was to have all queens equally prolific to the greatest extent possible, and yet have them susceptible to my dictation, so that I could get the hive full of eggs just when I wished them. It has taken me several years to accomplish this, but after I had worked out the problem, I believe I knew how I did it, and how I could not do it by the old plans of artificially reared queens of the past. At least I believe I am entitled to my opinion fully as much as he who has never tried any but the old way.

BORODINO, N. Y., June 13, 1889.

Bro. D., when bees swarm, or when they supersede a queen, they rear queens *naturally;* at other times they are *forced* to do so by man. The latter are reared *artificially*. They may be as good as those reared naturally, and they may be very short lived, abnormally unprolific queens; all depends upon *how* man has directed the matter. We fail to see how our views upon this subject conflict with those quoted by Bro. D. from our book. We said, and still say, that the building of comb stimulates the activity of bees; and we also said, (which Bro. D. fails to mention) and still say, that the use of foundation, (which is *unnatural*) in certain places, and under certain conditions, is very profitable. It *is* fortunate when "our desire and the bees' instinct run parallel," but when they do not it sometimes pays us to cross them, and at other times it does not; and we must not hesitate simply because it is *unnatural*. A large share of modern bee-culture is artificial, and we ought no longer to inquire, is it "according to nature," but, "all things considered, is it desirable?

A Letter From Jared Hasbrouck—Something in Favor of Hiving Swarms on Empty Frames.

YEARS AGO, we very much enjoyed reading, in the *B. K. Magazine*, the scientific and practical articles written by Jared Hasbrouck of N. J. But, with one of the changes in the ownership of the *Magazine*, our friend dropped the apicultural pen, and we have missed him. When a subscription for the REVIEW came, a few weeks ago, signed: "J. Hasbrouck, Lima, Ohio," we thought: "Ah, ha! wonder if this isn't that same Hasbrouck." In reply to an inquiry, we received the following letter. Thinking that his old friends would like to hear from him, and hoping to induce him to again take up the pen, we publish his letter; and, if it is no secret, we would be glad to have him describe that little plan of his for "running bees on an intensive system without increase."

LIMA, OHIO, June 18, 1889.

W. Z. HUTCHINSON:—

Dear Sir—Your card of the 14th inst. received. Yes, I am the same fellow that used to live it N. J., and who used to write occasionally, or oftener, for the *B. K. Magazine*. I am really yet living in that land of red shale and garden "sass"—that is, my better "$\frac{3}{4}$" and babies are still there, and I am only staying here in Ohio for the honey season. I am out here for the summer, running 200 stocks of bees for J. J. Cole, as a sort of speculation. He has gone to California, and is running about the same number there. From all the accounts I could get of this locality before I

came, I thought it a kind of bee-keepers' paradise, and that Cole didn't know when he was well off to leave it. It is in the great basswood belt of Ohio; and, as I have developed a little plan of my own for running bees on an intensive system, without increase, I expected to get about the biggest crop of honey ever reported from one yard. But I guess I came on a "fool's errand," as the basswood is not budding. It is the "offest" kind of an "off year." White clover is very abundant, but it has rained every day in June, so far.

I have not touched bees, personally, for some years, as the sumac propolis poisons my hands. They wrote me there was no sumac here; but the first thing I did after I came was to overhaul some sections that had been on the hive last year, and my hands were so poisoned that I was about helpless. Since then I wear gloves, and get on pretty well.

I like your book and the REVIEW very well. Do you know that your plan of hiving swarms on empty frames used to be treasured among those Eastern New York fellows, twenty years ago, as a of sort valuable *secret*. They lost lots of bees every winter, but they soon found out that, rather than use the old combs, they had better melt them down, and hive on empty frames. After foundation was invented, Betsinger thought he would get ahead of the others, so he went out to A. I. Root's and had him build a foundation machine according to his (Betsinger's) own notions; and, the next season, he hived all his swarms on foundation, and handled his bees the same as he formerly had with empty frames, *and got no crop*. He said it was a loss of $1,000 to him in honey.

Hiving on combs is, without doubt, the correct thing when *increase* is desired.

J. HASBROUCK.

Inferior Looking Queens, When Purely Bred, as Good as the Most Handsome.

R. B. WILLIAMS.

I HAVE had six years' experience at queen rearing. I have some very fine looking queens—large and yellow—and some of them are good; while I have killed some of this kind that were not profitable, I also have some very inferior looking queens that produce excellent workers. I have one stock that is non-swarming. The queen is four years old and has never swarmed. She is small, and dark, but very prolific. Her bees are gentle and excellent workers. I have been breeding from her for two years, and almost stocked my entire apiary of 140 colonies with her daughters. Have sold over 100 queens raised from her this spring; and the young queens have the same characteristics as their mother.

So thoroughly am I convinced that the whole thing hinges on the mother, or grandmother, of a stock, regardless of *looks*, that, for my own use, I pay no attention to the appearance of young queens. Select the queen producing the best honey gatherers, and breed from her, and an apiary of honey gatherers will be the result.

The handsomest bees and queens I ever saw belonged to a neighbor, and he said they were the most worthless. All handsome bees may not be worthless; but all good ones are not handsome. I had a queen returned because she was small and dark. I kept her for myself, and I would not ask for a better queen nor better bees. A lighter queen was sent the customer. He thought her "rather small," but gave her a trial, when he was fairly enthusiastic over her performances and those of her bees.

WINCHESTER, TENN. July 1, 1889.

Bro. W., we have been "through the mill" several times. If we can send a customer a large, bright yellow queen, all is lovely; if she is small, or dark, there may be some fault finding. Each queen may be equally valuable. Bright yellow bees appeal to our love of the beautiful, and if we can have this taste gratified without sacrificing any bread and butter interests, well and good; but, in financial bee-keeping, this ought to be the last consideration.

Many of our correspondents have the habit of enclosing a little private note with their contributions. How personality shines in these little notes; what glimpses they give us of the writers; how we are sometimes tempted to share these with our readers. Along with the foregoing article came one of these chitty, chatty letters, that make us feel so acquainted with the writer. We must give one little extract. It reads as follows:

The little photograph on business card enclosed is a good picture of your humble servant. I have one of yours that came in *Gleanings*. I live on a farm; own a photograph galley in my town, and run it two days in the week; the balance of the time I spend in my apiary, and with the wild turkey, squirrels and deer. I live just at the foot of Cumberland mountain, and if you should ever visit Tennessee, and will spend a week with us, I will insure you a royal time hunting and fishing, if you are fond of such sport. I have finely trained bird dogs, also dogs for deer. I live to enjoy life.

R. B. WILLIAMS.

Oh, friend W., little do you know how you tempt us! Do you know that we were brought up in the woods? Father had to cut a road through the woods to reach his "forty." He built a log house right *in the woods*. This was when we were four years old; and, as we grew older, we hunted, and fished, and trapped, and gathered butternuts, and went in swimming, coming home sometimes so tired that we could scarcely "wiggle," vowing to never go so far again, but

usually going still further before the week was out. Now the woods that stretched away for miles and miles have given place to fields of waving grain, and the happy, care-free youth that tramped through them with shot-gun over his shoulder has——well, friend W., we may never be able to go hunting with you, but think of us sometimes.

The Bee-Keepers' Review,

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W. Z. HUTCHINSON, Editor & Proprietor.

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FLINT, MICHIGAN, JULY 10, 1889.

A HINT TO ADVERTISERS IN SECURING DESIRABLE CUSTOMERS.

A few months ago, in an editorial upon advertising, we called attention to the different class of readers that gathers about each periodical. "Like paper, like readers." "Birds of a feather," you know. As an illustration, "That Pittsfield Smith," in ordering his advertisement continued another year, says: "I like the tone of the REVIEW, and the class of trade secured by my advertisements therein. As I am now situated, I would not give $5.00 a *page* for advertising space in ———— (mentioning another bee-paper), as every customer wants me to give him *poor* goods at *low* prices. No satisfaction in such a deal for me." As the REVIEW is devoted more particularly to advanced and financial bee-culture, it naturally gathers about it a class of practical readers whose years of experience have taught them that *excellence* is more desirable than *cheapness*.

WHAT DEPENDS UPON THE QUEEN?

It is very evident that much does, or at least can, depend upon the queen. A queen that from age, or any other cause, does not keep her combs filled with brood in the spring, that allows the bees to get the start of her and crowd her out with honey, places her colony in a condition to be of little value. If the field is stocked to its fullest profitable capacity, if we are endeavoring to secure all the honey in our area, this may not be so great a misfortune as it appears, as the honey that would have been gathered by this colony, had it prospered, is left for the *other colonies to store*. Still, we are not all so situated, and, even if we were, there would be no profit in such colonies. We need queens that will fill their combs with brood in the spring. It is during the first two years of their lives, that queens, as a rule, do their best work; and while we believe that most bee-keepers would prefer to have their queens under that age, we doubt if it will pay, as a rule, to supersede them. It must be admitted, however, that some most excellent bee-keepers make a practice of rearing queens each year, and superseding old queens. We believe Mr. Manum does this. Bees are far less likely to swarm with a young queen: and, when swarming is undesirable, here is another instance where the queen may have a bearing upon success. But all these comparisons of the improvements in cattle, poultry, fruit, etc., with improvements in bees, are not, to our mind, exactly in point. Care and feed in the case of the stock: manure and cultivation with plants: and selection and cross-breeding in the case of both, have worked the improvements. Care and feed, chaff hives and cellars, planting for honey, feeders, all this fostering care that we have given our bees, has it improved them? Nay. We fear that some of our correspondents have overlooked the fact that improvement of bees lies in a different direction from that of cattle, poultry and fruits. The law of the "survival of the fittest" pushes to the wall, in cattle, fruit, etc., the very qualities that we desire; while, in bees, there is not a desirable trait that is not developed and cherished by this same law. If we have any better bees than we had a century ago, it is not the result of better care, in the sense in which that word is usually employed, that of better shelter, better food, etc., but it is the result of cross-breeding and selection: and we look upon the queen simply as the connecting link between two generations—as a sort of "seed." It is true that as the seed is, so is the plant; but it is equally true that as the plant is so is the seed; and we are inclined to look with a more critical eye upon the stock or strain from which a seed is secured, than upon the individual seed. It is true there is *something* in having good seed, that that is well developed and possessed of a strong vitality: and the same is true of queens; and while

we have no desire to discourage the rearing of good queens, we do feel that too much stress has been laid upon the matter; that the practical honey producer need only select the best strains of bees and let the bees do their own queen rearing. For instance, if a man has a stock of bees that are excellent workers, can he step in, and, by some sort of "jugglery," induce the bees to rear a queen that will furnish better bees than they are? That's the point. As we have already said, our bees may be improved by crossing and selection, and, of course, this must be done through the queens; but that anything can be done by queen rearing, in itself, we very much doubt.

MIGRATORY BEE-KEEPING.

Our father lives in an adjoining county, where there is an abundance of boneset and goldenrod. One year, when we lived at Rogersville, a younger brother, who has not yet left the old home, came down early in August and carried home with him twenty colonies of our bees. An upper story filled with empty combs was placed over each colony, and the top covered with wire cloth. A hay rack was covered with hay to the depth of two feet, the hives set upon the hay, and held together in a "bunch" by passing a rope around them. The journey of twenty-five miles was made without mishap. These twenty colonies furnished 400 pounds of surplus; besides, they needed no feeding for winter, while the bees kept at home stored no surplus, and each colony required feeding, on an average, about fifteen pounds. We gave one-half of the surplus to our brother as his share of the "spoils." Had buckwheat yielded well, which, with us, happens about once in half a dozen years, nothing would have been gained by moving the bees. Last year, Mr. R. L. Taylor's crop of honey was almost an entire failure, while enormous crops were secured a few miles north of him. Byron Walker lives only forty miles from Flint, on a direct line of railroad, and his main crop comes in the fall, while scarcely anything is secured here at that time. But why multiply instances? All know that the distance of only a few miles often makes all the difference between no crop and a bountiful harvest; and the question is, can't bee-keepers take advantage of this fact? If they can, why don't they do so more than they do? Either the moving of bees to take advantage of transient, neighboring flows is unprofitable, or else this part of bee-keeping has been neglected. Bee-yards, honey-houses, hives, etc., are all gotten up with permanency of location in view. The bee-keeper gathers about him these conveniences and appliances; arranges his apiary; and, if the honey *comes to him*, all right; if it doesn't, he does not think of *going to the honey*. The expense of moving to and from a locality a few miles distant need not be so very great. From thirty to forty colonies can be moved on a large hay rack; or a special rack might be constructed by means of which one team could move fifty colonies. Small, light, readily-movable hives would be an advantage. But the preparation for moving, the moving, and other details, need occupy no great amount of space in the discussion; all these can be managed if the moving of bees to secure a crop is *correct in principle*. That is what we would like decided. Some localities are blessed with white clover, basswood and fall flowers. To the apiarist in such a locality, this question may not be so very interesting. Still, the difference in rainfall, or in other conditions, may make a difference in the yield from the same variety of blossoms in localities only a few miles apart; and might it not pay a beekeeper to have everything so arranged that, with a day's warning, he could load up his apiary and set it down 20 miles away where a "honey shower" is passing? Then, again, how shall a bee-keeper in such a case learn of these "passing showers?" But when a bee-keeper has only white clover, or basswood, or fall flowers, from which to secure surplus, yet lives only a few miles from one, or both, of the other sources, it does seem to us as though he ought to seriously consider the advisability of moving his bees to these other fields when the harvest is ready for the laborers. To us this appears like a more promising field for experiment than that of planting for honey. Instead of spending time and money for seeds, land and cultivation, let us move our bees where Nature has already scattered the flowers with a lavish hand. We should be glad of the views and experiences of our subscribers upon this subject, that we may publish them in the August REVIEW. If you have moved bees to "pastures new," tell us about it, and let us know whether or not you found it profitable. If you have only theory to offer, send it on; we have not such a horror

of theories as some folks have. We have said nothing about moving northward with an apiary, keeping pace with the advancing bloom, but if anyone has anything to offer upon this point, we shall be glad to publish it.

LANGSTROTH ON THE HONEY BEE, REVISED BY DADANT.

Continued from June No.

Chapter XIV is devoted to "Robbing, and How Prevented." We find nothing particularly new in this chapter, and have no criticisms to make.

"Comb Foundation" is the title of Chapter XV, which begins with a brief but concise history of the invention, adoption and manufacture of foundation.—Upon the point of manufacture, there is one paragraph that we quote entire with our heartiest endorsement. It is as follows: "The manufacture of foundation, which, at first, seemed likely to be undertaken by every apiarist, has become an industry of itself, owing to the greater skill and speed acquired by those who make it daily. It might be compared to cigar making. Any apiarist can make wax into sheets and run it through rollers, and any farmer can raise tobacco and roll its leaves into cigars, but, to the uninitiated, a neat sheet of foundation is as difficult to make as an elegant cigar." Yes, this is fast becoming a world of specialties, and one has only to compare the foundation made by our Authors, with the manufacture of some novice, to be glad that 'tis so.

Following the Chapter on Foundation, comes one on "Pasturage and Overstocking." Brief descriptions and illustrations are given of the principal honey-producing plants.—The Dadants believe that a locality can be oversotcked. They have found eighty to one hundred colonies to be the number from which the most honey could be expected.

Chapter XVII treats of "Honey Production." Our Authors say that the production of comb honey is less advantageous than that of extracted honey, but that the former is more salable. In our opinion, all depends upon circumstances: such as locality, pasturage, market, and especially upon the apiarist.—It is asserted that more honey will be stored in a large box than in several small ones, the united capacity of which is equal to that of the large box. The reasons given are that, in cool weather, the animal heat cannot be so well maintained, and, in hot weather, the ventilation is less perfect. With the modern surplus case, in which there are communications in almost every direction, we very much doubt if there is any advantage in large sections, so far as the amount of honey secured is concerned, as the whole surplus apartment is practically one great box. Many bee-keepers who have used half-pound sections, secured no less honey by their use.—Side-storing is condemned; in fact, we think it would now be difficult to find, among practical honey producers, many defenders of this system.—In speaking of the necessity of using queen-excluding honey-boards when raising comb honey, our Authors touch upon an important point when they say: "The condition of the honey crop has something to do with the queen's propensity to move out of the brood apartment. When the crop is heavy and of short duration, there is no danger on this score, as the combs (in the super) are filled as fast as they are built, and the queen, should she move to the super, would soon leave it, owing to her inability to lay there. In localities where the crop is intermittent and lasting, much advantage has been derived from the use of the Collin perforated zinc." Over an established brood-nest, *we* have never found it necessary to use a queen-excluder when raising comb honey. When hiving swarms upon empty frames it is indispensible.—Our Authors draw a very graphic and truthful picture showing what is lost by compelling the bees to build combs in the supers, instead of furnishing them drawn combs. Very few, if any, bee-keepers now allow their bees to build their combs unaided in the supers; the sections are filled with foundation, which can be changed to drawn comb in an incredibly short time. We are surprised that this important factor is not shown in the picture. It is true that drawn combs have an advantage over foundation for use in the supers, but not so great as foundation has over *nothing*. We do think, however, that drawn combs are *most important* in getting the bees at work *early* in the season. They begin work sooner, at least they do with us, when the supers contain drawn combs. Pressure upon the brood-nest is relieved; more bees are reared; and the energy of the colony is diverted from swarming to storing. For this purpose, we look upon a case of sections filled with drawn comb, as worth almost as much as a case of

finished honey. But after the work has begun, and this one case is filled and being sealed over, we think foundation almost as good as drawn combs.—The Dadants say that the running of an apiary for comb honey requires twice the labor that is needed in raising extracted honey. We think this is putting it too steep; besides, there is another consideration. Nearly all of the work of raising comb honey is done in-doors in the shade, instead of in the broiling sun. The putting together of sections, putting in of foundation, removing the finished honey from the super, the cleaning and crating of it, is all in-door work.—The Dadants have had much experience in raising extracted honey. They use half-depth combs in the supers, and tier-up without waiting for the honey to be sealed. Unsealed honey is not necessarily unripe. No extracting is done until the honey flow is over. As robbers are troublesome at such times, the work is done quietly, swiftly and carefully, and all combs kept covered up. If robbing is begun, work is stopped until it subsides. At such times, the extracted combs are not returned until sundown. In localities where there are two distinct crops of honey, each crop should be harvested separately.

Chapter XVIII has for its title "Diseases of Bees." Nearly the whole Chapter is devoted to Foul Brood. The description given is good; and the use of Salicylic acid recommended as a curative agent.

"Marketing Honey" is the heading of Chapter XX. In putting up extracted honey, the one pound package is too small. A consumption must be encouraged in which the expense of packing will not materially advance the cost. The one and one-fourth pound package is in less demand than it was a few years ago. Tin is the cheapest package; but it is better not to put the honey in the tin pails until a short time before it is to be marketed. The pails are more bulky, and may rust on the outside.—Several pages are devoted to "Uses of Honey," in which are given recipes for cooking with honey, and for making medicines containing honey, etc.

In the Chapter on "Beeswax and its Uses" there is one point mentioned that bee-keepers seldom heed. It is that of soaking old combs twenty-four hours before rendering them into wax. The old cocoons and other refuse become saturated with water, and do not then absorb *wax*.

Chapter XXII treats of "Bees, Fruits and Flowers" and shows that bees do not injure sound fruit; but, wherever there is a crack, or a decayed spot, they will help themselves, and, undoubtedly, do some mischief; but, on the whole, they are far more useful than injurious.

The book closes with a "Bee-Keepers' Calendar," which gives brief instruction, in a general way, as to the best management for each month.

EXTRACTED.

The Law of "The Survival of the Fittest" Furnishes Better Bees Than Cattle.

AS HAVING a bearing upon some of the points brought out by correspondents in this issue, we make the following extract from an address delivered by R. L. Taylor, at the North American Convention, held in Indianapolis, in 1886:

"Let us take, at the outset, a brief view of what nature had done for the bee before it came to the hand of man. We must not forget that, in a state of nature, the rule of the survival of the fittest is a very different thing from what it is when guided by the hand of man. In a wild state the chief quality required by the bee to fit it to survive—to persist in living—is the ability to provide under the severest stress of circumstances sufficient food to supply its wants during the ensuing period of repose; in the ox it is not good beef, nor rich milk, but horns, strength, courage and agility to enable him to overcome or to escape his enemies and to master his mates that are not so highly gifted with these qualities.

During the roll of unnumbered centuries, nature has been training the bee in the gathering of honey, and the greater the stress of circumstances under which the bee has existed, the more thorough has been its education. With the ox, most of the qualities that fit him to survive in a wild state, specially fit him in domestication to die early. To fit him for man's use, all these qualities must be changed, and to effect the change the rule of the survival of the fittest must in its application be entirely changed. Now the qualities, that make fitness to survive, are the most and the best beef and milk. But note that nature's education of the bee has all been precisely in the line calculated to produce the character and qualities which man so much desires it to possess, so much does the constitution of things favor the bee-keeper. Of the ox, man gets from nature little but a germ: of the bee, the well-nigh ripened fruit.

But on the other hand, in the domesticated state the bee runs great risk of positive deterioration. The ox naturally improves under the hand of man, because selections

for breeding will be made almost without thought, and his better food and protection will favorably affect the growth and development; but, with the bee, better pasturage and better protection too often prolong the existence of the poorest, and so their blood is perpetuated in subsequent stock. This would be true under what is known as the old method of bee-keeping, but with how much greater force does it apply to bee-keeping under our new methods, with our feeders, and packing, and cellars, and the ready means which the movable comb furnishes us of preserving the lives of queens which are ready to perish on account of a lack of attendants."

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THE BEE-KEEPERS' REVIEW

VOL. II. FLINT, MICHIGAN, AUGUST 10, 1889. NO. 8.

Inability to Foretell Honey Flows is the "Snag" in Migratory Bee-Keeping: Seek, Instead, a Location of Many Resources.

E. L. TAYLOR.

IT IS WELL KNOWN that the honey flow at a given time often varies greatly within a few miles, caused no doubt, by differences in the rain fall, in the soil, and perhaps by differences in the atmosphere. Only last fall, my south apiary gathered nothing, my home apiary gathered, on an average, half enough for winter stores, while, in one case I know of twenty miles north, one colony and what were nine nuclei in July gathered more than 1,000 pounds and increased to forty colonies well supplied with winter stores. Without question, had I distributed 100 colonies in that locality in July I would have obtained 15,000 pounds of surplus honey and doubled the number of colonies. *But I didn't know it until the season was over.* This is a case that exhibits the advantage which "hindsight" has over foresight. And my want of foresight was double: I could not say beforehand but the home apiary would yield well and the other nothing. I could have made $1,000 clear by moving 100 colonies there last year, but I might expend $200 each year for the next five years in moving bees back and forth and find at the end of that time that I could have obtained more honey if I had not moved them at all. This, I admit, is not likely, as the advantages of that locality for a fall crop are so much greater than this, but it is *possible*.

What a bonanza we would have in bee-keeping if we were gifted with perfect foresight! But we have it not, and that fact discloses the chief objections that present themselves to the policy of "Migratory-Bee-Keeping." The whole atmosphere of the matter is thick with inscrutable risks. Is there at present such a lack of the element of chance in the business that we may properly tempt fortune further? Basswood is in bloom but ten days at most, and only once in three or four years does it yield bountifully, and what the result of any day, not to say season, is to be, no one can tell until he has weighed the product. The season of fall flowers is longer, and one may perhaps make a better guess as to what the crop will be, but the weather is capricious, and the brightest promises of August may be blasted long before October.

Then, again, of late, many have been insisting upon the necessity of reducing the cost of producing honey, and bee-keepers have generally agreed upon this point, but migratory bee-keeping, I cannot doubt, would be a long step in the opposite direction. Besides, it would be very laborious, and the labor altogether uninviting.

Is there not a better way? Only those bee-keepers who are specialists could think of moving bees to seek new and better pasturage, and such are free to select for homes those localities which combine the advantages of all the sources from which honey is obtained, at least this is true in Michigan. The lesson to be learned is, *look well to the field before making it yours permanently.*

Though there may be exceptional cases in which bees may be moved to better pastures with reasonable prospects of profit, I am compelled to believe that, as a general rule, it would be found vexatious and profitless.

LAPEER, Mich., July 29, 1889.

No Profit in Moving Bees Long Distances, or Up the Mississippi.

O. M. BLANTON.

WITH THE present low prices of honey, migratory bee-keeping will scarcely pay. At *long* distances, either by railroad or wagon, it will be too expensive. For thirty or forty miles, as practiced by Messrs. Dadants, it may be profitable, but a bee-keeper must be perfectly equiped with suitable frames on his wagon for carrying twenty-five to thirty colonies, tents and other outfits. There is so little profit in it that I would not advise a Northern bee-keeper to try it unless it be for short distances.

In our country, where bees are wintered in the open air, it is easy to find some permanent location with neighbors. Our roads are so bad in spring that moving bees would be very troublesome and expensive. I practiced the plan two years, then abandoned it. I now have my bees in two permanent apiaries.

Bee-keeping by water will not pay in this country, as was fully demonstrated by Mr. Perrine. He admitted to me that he lost

$15,000 by his experiment. It is impossible to keep up with the season on a river flowing south like the Mississippi; besides, immense quantities of bees are lost by drowning, and some are left when changing locations, by being belated over night in the woods and fields.

I would advise migratory bee-keeping only for short distances; and then there ought to be excellent outfits, and good roads to travel.

GREENVILLE, Miss., July 26, 1889.

Accompanying the foregoing was a little note headed:—

ASIDE.

For the last six weeks we have had a large flow of honey, and, if I could have given the business my personal attention, I would have secured a heavy crop. As it is, I have shipped thirty-six barrels (550 lbs. net, each) of Cypress honey, and 800 pounds of wax; having melted many of my old combs.

O. M. B.

If the Conditions are Right, Moving Bees to Other Localities may be Profitable.

JAMES HEDDON.

AS YOU ask for thoughts from bee-keepers who have had no personal experience, I will write as one of that class. You see, here, we have the spring, summer and fall honey crops, and we would hardly know what to move for, and as for the difference in climatic influences, rainfall, etc., we never can tell where the same blossoms are going to yield best with any degree of certainty. From my twenty-one years experience, had I the power to fix the weather during the basswood bloom of 1887 and 1888 I would not have made it different from what it was, and yet we did not get half a crop, and why?

Well, I do not know. The nectar yielding principle is to deep for me. I frankly admit that I do not understand it. I have concluded to prophesy like Josh Billing's hen; that is, do my cackling after the things come to pass, in regard to good honey yields.

Before C. O. Perrine took his fatal Mississippi river, migratory, honey producing exploit, he came down and spent four days with me, testing comb foundation (he then having the only foundation machine in the world) and talking over his chances. I advised him not to undertake it. I told him I did not thing he could compete with the fellow who stayed in one place and ran on the cheap basis. He lost over $15,000 and met with nearly all the mishaps that I predicted, and some that I did not think of. But that is not here nor there with the kind of migratory bee-keeping you refer to, and I will say that I believe that if hives are made right and things otherwise fitted for the moving of bees to certain pasture fields that do not exist near them, that there are many locations wherein it will pay, and pay largely. So far as I know, I was the first to adopt the hay-rack with the one-fourth load of hay on, upon which you can place thirty or forty hives with a rope around the whole and then over all, fastening them in position. Of course the readily movable hive such as you mention, and, let me add, with fixed frames, is almost a necessity. Perhaps when this system is fairly inaugurated, it would pay to have colonies on scales in different parts of the adjoining country with some one to let us know when a shower had struck.

Yes, you are right, this is a more promising field for experiment than planting for honey. I feel like cautioning all bee-keepers against planting for honey except under the following conditions: First, that they be sure to plant something tough and self sustaining, only requiring a few seeds scattered here and there to give it foothold, when they can let it run and it will run in instead of out. At the same time it must not be a noxious weed like a thistle or anything that will injure cultivated fields.

Now, another important matter is that you do your planting very secretly. Not because the plants are going to hurt anybody, but they will almost surely stimulate some "critter" near you to go to keeping bees, for he will fancy that all the honey you get comes from these sown seeds.

Well, you see I have given my opinion but cannot make much of an article because I cannot speak from experience. Before I close, however, I wish to say a few words about the subject you touch in your first editorial of last issue. I have had precisely the same experience as has "That Pittsfield Smith." I have found that very many of my customers are readers of the REVIEW, and they are of a different class from many who see my advertisement in other papers. We have a class of customers which we call the "baby" class. They do not seem to comprehend rational commerce, but want everything, and that too without giving anything like an equivalent. We have never had one of this class from the REVIEW that we know of. As young bee-keepers grow older, the REVIEW list will become larger.

DOWAGIAC, Mich., July 15, 1889.

Moving Bees to Basswood and Fall Flowers—It Pays in Good Seasons.

L. C. WHITING.

MOVING BEES to new pastures to take advantage of the flow of honey has been practiced here to some extent. It has in it many points of success, and some exactly the reverse. We have about this town a large yield of white clover honey that is much in excess of that produced on lately cleared land. Basswood trees have disappeared, and the fall flow is of small account. If we take off all sections and extract the clover honey from the body of the hive, then take bees to the basswood forest at the right time, our hives will be as full in eight or ten days as before, and about as much comb honey secured as we could have had without extracting.

If the basswood location is favorable for fall flowers, the bees may remain where they are. Take off all sections suitable to crate, and extract the partly filled ones. Extract from the body of the hive but not as clean as at first, as usually a few days or weeks pass before the fall flow commences. Extracting from the body of the hive gives the queen a chance to lay, and there will be a large force of workers to close up the season.

The fall flow often yields as much section honey as clover and basswood combined. The colonies become very populous and do an immense amount of work, and they must have room or they will fill the hive and then refuse to do any more work for the season. This programme is only for a favorable season. If the season is poor, and the location a fair one, it is better to make no change.

Some objections to this migratory system ought to be considered. To take advantage of the last flow of honey, the bees must be left on the ranch until quite late in the fall. The work of preparing the honey for market may so absorb the bee-keeper's attention that the bees will be left until too late before moving them to winter quarters; and when moved late, they do not winter so well. One year, when practicing this migratory plan, thirty colonies were brought home early, and every one lived through the winter. A month later, thirty more were brought in; cold weather came on immediately, and they had no chance to fly until January. Every one of these late-moved colonies died before spring. The sixty colonies were all packed alike out of doors. Some bees from the same yard were placed in a cellar and they wintered poorly.

We have much less trouble in wintering since giving up this migratory system. Some might say there is too much work about this method. If work brings honey, the honey will bring money, and that is what we keep bees for.

If the bees could be wintered at the fall location it would suit me. The hives are likely to be very heavy in the fall, with too many bees to carry safely.

EAST SAGINAW, Mich. July 21, 1889.

Locations Differ and Change—Two Mammoth Migratory Exploits, with Widely Differing Results—A tip top Article.

E. T. FLANAGAN.

NOT LONG after I had taken the "bee fever" "right bad" I increased my bees to such an extent that I found my locality overstocked. I took down the county map, which gave all the land in cultivation in distinction from the uncultivated, and selected a part where there were several small lakes and considerable bluff land. I took the cars and visited the locality, and found considerable land in pasture and abounding in white clover. I secured from a worthy family the privilege of keeping my bees in their orchard, and moved thirty-two colonies there. The result was that I secured over 5,500 pounds of comb honey, considerable extracted honey and increased my bees to seventy colonies in good condition for winter. I kept bees there several years, with results exceeding those of the home-apiary; and I would yet have bees there were it not that *localities may change in honey production*. The lakes have been drained and the white clover pastures turned into cabbage and potato fields. The apiary ceased to furnish surplus, and I moved the bees away.

Shortly after the removal of the bees, as given above, I went South, and, in connection with another party, purchased 100 colonies of bees near New Orleans. The purchase was made early in February, and, by the 15th of the same month, they began to swarm. As increase was my object, I encouraged it; and, by April 25th, we had 300 strong colonies, eighty good three-frame nuclei with laying queens, 200 pounds of beeswax, and 2,500 pounds of extracted, white clover honey. The bees were then put on board a steamboat and taken in safety to East St. Louis, where the greater part was sold at once and the rest put in four different apiaries where they did well.

Our success encouraged us to further effort. We reasoned that, if we did so well with 100 colonies, why not with four times that number? So preparations were made, cars procured and an able bee-keeper, who has written considerably for the papers, put in charge. Our plan was to start from East St. Louis the last of September after the fall crop was secured, go direct to our old apiary near New Orleans, where unbounded fall forage would enable the bees to get a large surplus, keep them strong through the short winter by stimulative feeding, secure a large crop from willow and white clover in the spring, then, late in April, take the bees to our home apiaries in Illinois. From there, as soon as the white clover season was over (June 20), we would take them to the white clover region of northern Illinois and to the basswood regions of Michigan. After the white clover and basswood season of the North was over, the bees were to be brought back to our home apiaries in Illinois for a heavy fall crop, then South again, if all went well. Quite an extensive programme, wasn't it? I may, sometime in the future, give all the reasons why it was not a grand success, but I will say here that the plan was, in a great measure, carried out; and, but for unforeseen, and, at the time, unavoidable obstacles and accidents, it would have proved as profitable as the venture of the previous year. I will say further, that one reason why it was not the success it might have been, was the poor season. Not enough honey was secured at New Orleans to keep the bees alive, and barrels of sugar were fed. The season in northern Illinois was nearly a failure, and, in Michigan, where we sent a car load of bees, white clover and basswood failed entirely. In the fall we secured only half a crop at the Illinois apiaries.

Do I think migratory bee-keeping can be made a success? Yes, and no. Yes, if the conditions are all favorable, and the right man takes hold of it and manages it in the

right way, it may be made a *grand success*. No, if conditions and seasons are unfavorable and one of no experience attempts it.

Would I advise any one to attempt it again? That depends. I feel sure that some man of pluck, energy and ability, one who dearly loves his chosen pursuit and is willing to endure hardship and privation, and to risk the loss of considerable money in case of failure, will yet some day undertake it and make of it a *wonderful success*.

Upon reading again your "migratory" editorial, I was struck with the force of your remarks as illustrated here last season. The very dry weather of the previous year had killed all the white clover and nearly all the red clover. Some localities were favored with good showers, and there the red clover revived. Here at my home apiary there was scarcely an acre of red clover within range. Six miles east it was quite plentiful, and one bee-keeper having some thirty colonies took eighty pounds of comb honey per colony and had his hives well filled for winter. Directly west of me, about the same distance, another bee-keeper with forty colonies secured nearly ninety pounds per colony. My knowlede of these localities is such that I know the grearter part of the surplus came from the second crop of red clover. Now, had I been prepared to move my bees quickly and safely to the above places, I too might have had an excellent harvest. The distance was tritling, the roads good, and a place to keep the bees easily obtained.

I now have an out-apiary of 100 colonies, and am making preparations for starting two more to which I expect to move my bees in a short time for the fall crop.

BELLEVILLE, Ill., July 25, 1889.

The "Wandering" Bee-Keepers of Germany; Some Well Considered Views Upon Migratory Bee-Keeping.

L. STACHELHAUSEN.

THE EARLDOM of Luenburg Province, Hannover, Germany, is a sandy plain, buckwheat being about the only crop grown. The rest of the plain is covered with heather, upon which rough-haired sheep barely keep themselves from starving. This is the country where bee-keeping is an occupation, and a well paying one too, and has been for hundreds of years. In the spring, the heather bee-keeper moves his apiary of 50 to 100 hives to rich, alluvial, bottom lands along the rivers. Here they get honey from fruit blossoms, clover, etc., and the colonies increase to 200 or 300. About the first of July, the bee-keeper wanders back to his home, where the buckwheat is beginning to blossom. After buckwheat, heather gives a good flow until late in the fall. The bee-keeper whose home is on the bottom lands, moves his bees, the first of July, to the heather, then home again late in the fall after the buckwheat and heather honey flow has ceased.

For this transportation, the old straw skep is an excellent hive, and is mostly used. Does it pay? Surely it does to the heather bee-keeper. His crops of honey are counted by the tons, while bee-keepers with all the better applances, such as movable frames, extractors, etc., in other localities, count theirs by the pounds. He is conservative in adopting movable frame hives, because his hive and its management give him more profit than the movable frames and their management, without wandering. Only Mr. Gravenhorst's hive is suitable for wandering, and it is gaining friends more and more among these bee-keepers.

By the experiments made in this country, I think migratory bee-keeping can be made profitable if the bees are moved from a locality having spring flowers only, to one abounding in fall flowers, the moving being done after the first flow has closed. A difference in rain fall sometimes causes quite a difference in the honey flow of the same kind of blossoms, but I scarcely think the moving of bees will pay in this case. By the time we have found out where the better honey flow is, and made preparations for moving, the best of it may be passed; and then an unexpected shower in our own locality may start a better flow, and we would be obliged to move back at once. We are dependent upon the weather in all localities.

Migratory bee-keeping may be recommended if we can secure a honey flow in the new locality at a time when none would be gathered in the home apiary. In some years, unfavorable weather, or other circumstances, may cause a failure, but, in other years, it will pay twice. The distance and number of colonies to be moved must also be considered. It is clear that the transportation of a few colonies to a far distant pasture would be unprofitable. In short, the whole matter requires the right management and calculation, the same as any other business.

One difficulty is the loss and expense of moving. For this purpose we need a hive of special construction. The Langstroth is not a good hive for this purpose. It requires too much preparation, such as fastening frames, closing up the top and entrance. If we take a straw skep, for instance, it may be turned up side down, a cloth tied over the opening, then set on the wagon, and all is done. A movable comb hive for this purpose, ought to be as easily and quickly prepared.

It would be foolish to bring newly gathered honey to the new location where we expect another crop, hence the old heather bee-keeper utilizes the early flow to increase his apiary as much as possible, depending upon buckwheat and heather for the main crop, and he gets a big force of workers just before they bloom.

With movable frame hives, we can easily take off the supers for transportion, and give new empty ones in the new location. The whole management must necessarily be different. Very correctly, Mr. Doolittle says that all depends upon having our force of workers at the right time; and a colony that has gathered a big crop of honey (say in May and June) is not generally in condition to do the best work in a second crop in July and August or later. The queens of such

colonies are exhausted for the season, and their colonies come to the fall harvest in poor condition, and also inclined to swarm as soon as honey comes in. There are different ways of overcoming this, but it would be easier to write a book upon migratory bee-keeping than to give, in one short article, the most important points. I will add, however, that, for a good, short and early flow, a colony ought to be as strong as possible, that is, have a large brood chamber, yet I would prefer a smaller hive and a medium colony for migratory bee-keeping. This for two reasons: a strong colony is more likely to be killed by transportation, and the queen is more exhausted.

SELMA, Texas. July 25, 1889.

Good Returns for Moving Bees to Fall Pasture.

SCHLICHTER BROS. & CO.

LAST YEAR, on the 25th of August, we moved twenty colonies, six miles, to a locality near a large swamp, where they had access to acres of boneset, golden rod, fireweed, etc. On the 29th of September, we had taken from those twenty colonies about 1,500 pounds of nice comb honey; while forty-nine colonies at home stored only about 400 pounds of comb honey and 300 of extracted.

We moved the bees on a lumber wagon having patent springs under the box. This year we intend to move them on a hay rack covered with straw. Two months ago we moved 130 colonies this way twenty miles, with good success. We are going to move sixty strong colonies, eight miles, in a few days, to where they will have access to acres of excellent pasture until frost.

BROWN CITY, Mich., Aug. 5, 1889.

Migratory Bee-Keeping Correct in Principle; Several Fine Points Considered.

JAS. A. GREEN.

I WISH my experience with the topic for this issue were equal to my interest in it. I consider it a very promising field for investigation. Undoubtedly it is correct in principle, and there are often times when the honey crop would be greatly increased by a timely removal to better pasture. We all know that the flora of a country differs widely within a few miles. Forest, prairie, river bottom, upland and low land, cultivated fields and grazing land, offer wide variations, not only in the varieties of honey producing plants, but in the conditions under which they secrete nectar. Practical experience confirms the supposition that the honey crop of these various localities will vary in proportion. Bee-keepers carrying on out-apiaries have frequently given testimony to the fact that apiaries less than ten miles from each other, vary widely in both the quantity and quality of the honey gathered. Under these circumstances, does it not seem highly irrational and unwise for the bee-keeper to leave his bees where they are but making a bare living, or perhaps less, when but a few hours labor would take them to a region of plenty? I believe the apiarists of Europe are somewhat in advance of us in this respect, as we read that, in some places, it is a very common thing to move bees from one locality to another to take advantage of a honey flow.

There is not such an inducement for me to hunt up new pasture for my bees as there is for some bee-keepers I know, as, in this locality, we are blessed with a variety of the best honey plants. Yet, I am by no means certain that it would not pay me to move my bees for this purpose. To begin with, this is not a very good locality early in the spring, or else it is badly overstocked with the bees I keep. Every spring I find that bees not over four miles away are getting more honey and building up faster than mine. As this is a critical time and much of the season's success depends upon brood rearing being pushed to the utmost, would it not pay me to scatter my bees out in detachments during this season, where fruit trees, willows, etc. are abundant? The objection is the bad roads we usually have at this time of the year, making hauling and visiting difficult.

It might pay me to move to basswood. This tree is almost exterminated in my immediate vicinity, though abundant ten or twelve miles away. An out-apiary will help, next year, to settle this question. The abundance of sweet clover in my neighborhood, which yields honey immediately after basswood, has perhaps delayed action in this direction heretofore.

Basswood and autumn flowers are probably the sources of honey to which it will best pay to move bees. In central Illinois, we usually have a good flow of honey in the fall. The best yield of honey I ever knew, came from heartsease in September; yet bee-keepers living only sixty miles away (how much less I don't know) got no honey at all from this source, and very little of any kind at this time.

Would it pay for us Illinois bee-keepers to go up into Wisconsin to help the bee-keepers there in gathering the basswood honey, and, in return, invite them down here to help us take care of the crop from heartsease?

An apiary may be so arranged as to be very quickly and easily prepared for transportation, and the expense of moving, loss included, need not be great.

If there is any time in the summer when your bees are usually doing nothing, look about you and see if you cannot find some place within reach where there is honey to be gathered at that time. Make yourself familiar with the sources of honey in all easily accessible places, together with the time they may be expected to yield. This done, you are in a position to make the most of your bees.

As to the more local and unexpected "honey showers," that seem likely to happen in almost any locality, they are a little more difficult to manage. Those whose neighborhoods are diversified as to soil, elevation, etc., might find it profitable to mak

frequent inspection of experimental colonies situated in varying locations. In this connection, something might be done by correspondence.

The problem is an enticing one. I believe its solution will prove valuable. Who will work it out?

DAYTON, Ill., July 27, 1889.

The Outs and Ins of Migratory Bee-Keeping, As Given by a Veteran.

BYRON WALKER.

MY LIFE as a bee-keeper began with the moving of twenty colonies of bees by boat from Toledo, Ohio, to Port Huron, Michigan; from there by rail to Capac; and thence by wagon four miles north. They gave me a surplus of 100 pounds per colony, mostly extracted, besides having abundant winter stores. I do not recall the amount of increase. It will be in order to mention, right here, that I secured one result not aimed at by their removal: viz., the complete destruction, by dysentery, of every colony put into winter quarters (packed in chaff); caused, I believe, by too much boneset and other fall honey for winter stores. No doubt the bees would have wintered better if they had been left at Toledo.

From that time until now, scarcely a season has passed without the moving of a portion of my bees to one or more different locations; and, while it has frequently paid well, occasionally, on account of unfavorable weather, or a lack of careful inspection of the sources from which a yield was expected, the results have not been all that could be desired.

The chief drawback with which I have had to contend is the poor wintering quality of the honey likely to be secured from fall flowers. Only last season, I located two apiaries of about twenty colonies each. One was placed about four miles distant, where raspberries and clover, with the aid of buckwheat, allowed strong colonies to store 100 pounds of surplus comb honey, besides some extracted. The other, three miles in another direction, secured (partly from basswood, but chiefly from fall flowers) an equal amount of comb honey and twenty pounds extracted per colony. The one lot, wintered upon the summer stands, with only ordinary protection, came through in perfect condition; while the others, which were moved home and given special protection (high wind-breaks, etc.) in addition to chaff packing, were in poor shape to take the harvest when clover bloomed; in fact, several colonies would have been lost had they not been united with others more forward. Had the winter been more severe, doubtless the disparity between the two lots would have been far more marked. The only practical remedy, or rather preventative, that I know of, has been hinted at in a former article. In fact, I may mention, in passing, that the last lot mentioned were part of 100 colonies bought in Arkansas to repair the loss, from this cause, of the previous winter. They (brood and all) were shipped to Capac in light cages, after having stored, in Arkansas, some 2,000 pounds of extracted honey. At Capac, several colonies stored nearly fifty pounds each, extracted, before their removal to the out yard.

When the number of colonies moved to one locality is not large, and surplus is the chief object, it pays best, other things being equal, to run for extracted honey; having the queens clipped, and visiting the yard only as often as may be necessary to extract to prevent swarming. A large number run for comb honey, requires almost constant attention, and the board and wages of a competent apiarist is the chief factor of expense.

Before leaving this branch of our subject, I will say that the yields mentioned in connection with the two contrasted apiaries, were not uncommon with us before our neighborhood became overstocked; and, subsequently, a removal of five miles not infrequently would secure like results.

WAUZEKA, Wis., Aug. 1, 1889.

It will be seen that our enterprising friend is yet in Wisconsin, whence he migrated, with an apiary, from Tennesee. We wish he had told us about *this* year's operations—perhaps he will when the season is over.

LATER—We thought the above article closed rather abruptly, but there was no intimation that more was to follow. However, just as we were "making up" the "forms," another "installment" came to hand, giving, among other things, a very interesting account of this year's operations—just what we wanted— which, very reluctantly, we are now obliged to lay aside until next month.

Loss of Brood the Great Obstacle in Following up the Season.

T. F. BINGHAM.

THE FACT that the queen will cease to lay, and the nurse bees remove all the small larvæ within a few hours, at least within one or more days, from embarkation, places the profitable production of honey by moving to fields that are later, on account of difference in latitude, beyond the bee-keepers' control.

It must be borne in mind that while degrees of latitude figure to a certain extent in the advancement of seasons, they do not count so much in the conditions favoring the secretion of honey. In Tennesee, spring and autumn are long and cool. In the North, autumn and spring are short. Almost within a week the pollen bearing trees bloom—then summer comes swiftly on. Clover blooms, and *summer* conditions favor honey secretion. The same is true of Linn: it is a summer bloomer in all latitudes. The idea I wish to convey is this: the difference of time in the honey secreting season of our best

honey plants does not allow of the raising of bees to gather the honey from them after the yield in any other latitude has been secured. If then, only old bees and sealed brood can be transported to the coveted fields, the shipment must be very well and accurately managed, else, just as the flow comes on, only a few old bees, with a hive more or less filled with immature brood, are left to gather the harvest.

Many bee-keepers will, of course, flatter themselves that the absence of water, or too much heat, or whatever destroys the brood, may be overcome. Well, suppose they can, another factor comes to the front. Can honey be produced by such expensive methods and sold so as to leave a fair margin? The uncertainty of bloom, the precariousness of the weather, the close margins, all tend to show that, with minor details omitted, the migratory management of bees for honey alone offers little reasonable reward.

ABRONIA, Mich., Aug. 2, 1889.

A Criticism of the Latest Bee Books—How Many Frames Shall be Used in a Hive.

H. SAWYER.

WHERE is scarcely a day that I don't wish for information upon some point that I can't get in "Root's A B C of Bee Culture," written with the express purpose of persuading me to buy something, and very careful not to give information that would enable me to help myself. Then there is Heddon's "Success." Perhaps it is a success for him, but it isn't for me. Alley's "Handy Book" is a story half told. Then there is your book, and Foster's and Miller's, and Simmin's, and now last, but by far the best, Dadant's. None of them have enabled me to decide the following: Suppose at the first appearance of clover blossoms, some ten days before the general crop; I have 1,000 combs well covered with bees, and filled with brood, and I am possessed of plenty of good queens, and wish to raise comb honey, shall I put four combs into one hive, or shall I give twelve to one queen, or is the proper number somewhere between these extremes, and, if so, where? If I am to raise extracted honey, what is the number of combs to use in the brood nest? This year my smallest colonies have given me the best satisfaction in raising comb honey.

BURLINGTON, Iowa, July 11, 1889.

Friend Sawyer, no one, perhaps, has criticised Brother Root more vigorously than we have done, but, in this particular instance, we are going pick up hammer and tongs in his defense. While we do not agree with all of the teachings contained in the A B C of Bee Culture, we regard it as one of the most consistent books ever written. Instead of bewildering the beginner with a thousand and one descriptions of different hives, "traps and calamities," its author sticks to one hive, one system, and one everything else down through to the last chapter. And, while they may not be the best, they hang together; each part fits the other; and if Mr. Root can furnish these things cheaper than the reader can make them, said reader ought to be thankful. We think many of the accusations of "axe grinding" are unjust. A man doesn't always think an article is best because he adopted it; rather he adopted it because he thought it best. We don't wish to be understood as saying that the A B C *mentions* only one hive or system, but that the reader who follows the instructions given will never find himself in a muddle by having adopted the parts of two opposing systems. The same can be said of Mr. Heddon's book, and *we* have found the methods therein described a most decided success. We are glad to see our friend speak a good word for Dadant's book, but we notice that its teachings (large brood nests) are somewhat at variance with his experience for the present year.

Friend S., if you have read all the books you mentioned, and the REVIEW for the present year without being able to decide upon the proper size for the brood nest, we doubt if we can help you. We will give, however, a recapitulation of our views on the subject. The brood nest ought to be of such size that an ordinarily prolific queen can fill it with brood in the spring of the year. At the beginning of the main harvest, the brood nest ought to be full of brood, then the honey *must* be carried into the supers. If the queen be given too many combs, even though they be "full of brood and covered with bees" at the beginning of the honey harvest, she cannot *keep* them full of brood; and, as the bees hatch out, the cells will be filled with honey that would otherwise have gone into the sections; and the result is that fifteen, twenty, or twenty-five pounds of choice honey is stored where its value is depreciated one-half. Combs of honey hanging undisturbed at the side of the brood nest from one year's end to the other, are so much dead capital. They are pretty expensive "dummies." In raising extracted honey, the size of the brood nest is not of so great importance, as we *can* get the honey out of it; but how much more convenient to have the brood in one compartment and the surplus in another. Only recently, in a plea for large brood nests, we came across the following: "If I had a queen that

would not fill seven Langstroth frames with brood in twenty-one days, I would exchange her for a better one." Almost involuntarily came the exclamation: "If we used a hive so large that an ordinarily prolific queen could not fill it with brood at the proper time, we would exchange it for a smaller one." No one advocates large hives without bringing forward as an argument that colonies in such hives store the most honey. Well, suppose they do. Doesn't it take more and higher-priced lumber to build them, and more combs to fill them, and a longer time to extract the honey from them? Where is the gain? Attempting to secure the largest yield per *colony*, is the narrowest kind of bee-keeping, and will never lead to perfect success. We must endeavor to so employ our labor and capital as to secure the greatest *profit*, irrespective of the yield per *colony*. The largest yield per colony and the greatest profit are not always found in the same apiary. A specific answer to our correspondent's hypothetical question would be, give each queen combs equal in quantity to about eight Langstroth combs.

Wide Top Bars vs. Honey Boards.

SHEFFIELD, Ill., July 8, 1889.

FRIEND H.— If I remember aright there was, some time ago, a few words in the bee papers as to discarding honey boards, or something to that effect.

Some seem to think that we can't get along without them, but I have found that we can, and that they are a waste of money; besides, it is a sticky job tearing them off every time the hives are opened.

I have been trying for two summers to discard them, to have nothing between the brood frames and sections and yet not have brace combs built against the sections, and I've got it.

I have one hundred hives in use this summer without the honey board, and not a single piece of brace comb in one of them.

I never had any pleasure handling bees before. A hive can be looked through in half the time, and every thing will be as neat as a painted floor.

If this will be of any benefit to the readers of the REVIEW I will give directions.

Yours truly, A. L. KILDOW.

In reply to the above we said: "Certainly, friend K., if the honey board can be dispensed with, let us know about it by all means." Here is his response:—

SHEFFIELD, Ill., July 11, 1889.

FRIEND H.:— Your card at hand. I am using a hive that holds eight frames, 17x9$\frac{1}{8}$, my frame is made of $\frac{7}{8}$ stuff, except the top bar, which is made 1$\frac{1}{8}$ wide by $\frac{1}{2}$ thick, leaving a 3-16 space for the bees to come up through; which is as near a queen excluder as is perforated zinc.

My gauge was misplaced when I was sawing one day, and some of the top bars were cut nearly an inch wide. In using this kind of a frame, and hive, I have done away with the honey board for two years. Last year I did not know how they would work. It did not take long to find out, but I had all my frames made then. This year I made all my frames as above, and have been scolding myself for not seeing it long ago, and that some of these old bee-keepers haven't dropped on to it long ago.

A. L. KILDOW.

Bro. K., let us state a little experience of ours "along this same line," as Bro. Doolittle says. Years ago, when we first began hiving swarms on foundation, or upon starters only, and transferring the supers from the old hive to the new, we had trouble by the queens entering and occupying the partly finished sections. To remedy this we set about making some queen excluding honey boards. The first step was to move the slats in the Heddon honey board so close together (5-32) as to make them queen excluding. To lessen the likelihood of trouble by the slats shrinking and swelling we made them narrower ($\frac{5}{8}$) and had them planed smooth, and then painted them. As queen excluders they were a success; but the end of the second season found the spaces plugged so full of wax, not propolis, but *hard wax*, that they were thrown aside. We cleaned a few by pouring boiling water upon them, but it was too fussy. We then tried making queen excluding honey boards by perforating thin board (3-16) with a 5-32 saw. These worked better, simply because they were only one-half as thick as the slat honey board. We still have some of these perforated wood honey boards in use, but they require cleaning once a year. Being so thin, the accumulations of wax can be taken out with a nail fastened into a handle. We do not doubt that wide, deep top bars will largely prevent the building of brace combs above them, but, if the bees behave with these as they did with us when the slats of the honey board was placed close together, what things these frames would be to handle! They would be stuck together from one end to the other, and the lateral movement entirely destroyed. We believe that the older editions of Langstroth's book gave 1$\frac{1}{8}$ as the width of top bar. Mr. Heddon used them that width three or four years, then began to make them narrower, only to

be surprised that, as he widened the space between the bars, he lessened the number of attachments between them. We have often heard him relate his experience in this matter; and his experience has been that of others, else why has the 1⅛ top bar been so universally abandoned for the ⅞? With us, 5-16 has proved to be *the* bee space. If made larger, the bees fill it with comb; if reduced in size, they protest with wax and propolis. Bro. K., we cannot help thinking that *your* bees will eventually "protest:" if they don't, let us know. Let us know *anyhow*. Then, again, if the management is such as to lead the queen above, the spacing of top bars can never be made sufficiently accurate to keep her below. It is possible that wide top bars may act as a discouragement to the queen's leaving the brood nest, but it is wholly impractical to make them queen excluding.

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W. Z. HUTCHINSON, Editor & Proprietor.

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FLINT, MICHIGAN, AUGUST 10, 1889.

TWENTY pages once more.

A LOAD of our bees will next week be sent away twenty miles or more to our father's, where they can revel in acres and acres of fall flowers.

ALTHOUGH Bro. Newman has reduced the price of his new paper, *The Illustrated Home Journal*, to only $1.00, it grows brighter and better each issue.

WE WISH to get out the next issue a little earlier—go to press September 1 if possible—in order to give us time to get away to our State Fair. Correspondents will please send in their communications as early as possible.

NORTH WESTERN CONVENTION.

After its long period of "hibernation," the "Northwestern" Bee-Keepers' Society is to wake up afresh this fall at Chicago. It is to be held at the Commercial Hotel, where the North American gathered in 1887. The time is Oct. 16, 17, and 18. Reduced rates at the hotel, and *very low* rates on the railroads, on account of the Exposition.

ONE-FRAME NUCLEI AT THE MICH. STATE FAIR.

If bees are to be shown at fairs, it is apparent that, for several reasons, single-comb nuclei are preferable to full colonies. The "copy" furnished the Secretary of the Michigan State Agricultural Society, for the apiarian department of the premium list, read: "Single-comb nucleus:" but, for some reason, the qualifying words, "single-comb," do not appear in the printed list. We have been having considerable correspondence upon this subject, and the leading exhibitors (all with whom we have corresponded) have agreed to bring single-comb nuclei, and to use every effort to inform other exhibitors upon this point. The superintendent of this department will sustain the one-frame arrangement.

THE MIGRATORY DISCUSSION NOT YET CLOSED.

We had a "summing up" of our special topic all in type when the second installment of friend Walker's article (see page 130) came to hand. After reading the continuation of his article, we felt inclined to modify some of our conclusions. The next mail brought an article from Mr. C. I. Balch, who was with Mr. Perrine when he made his unprofitable venture up the Mississippi. His views and those of Mr. Walker are somewhat conflicting, and we decided that the time had not yet come for a "summing up." We set out our editorial upon this subject, and put in its place one or two other items that have been standing around a month or two waiting for a place. If any one has anything further to offer upon Migratory Bee-Keeping, let it be sent in; and, if valuable, it will find a place in the September REVIEW.

CARNIOLAN BEES.

Bro. Alley has been trying a colony of Carniolans from the apiary of Andrews & Lockhart, and, in the July *Apiculturist*, is quite enthusiastic in praise of them. Some of his correspondents, however, are not so

favorably impressed with them. We have never given the Carniolans a fair trial. We have, for three or four years, had one or two colonies of them: keeping them to exhibit at fairs rather than for anything else. Taking bees to a fair just about takes the life out of them; thus it happens that our Carniolans have not had a "fair show" in *every* sense. But we have seen enough of them, and read sufficiently encouraging reports in regard to their merits, to induce us to give them a more extended trial. We have bought quite a number of untested queens of Andrews & Lockhart and of S. W. Morrison, and all have proved purely mated and good layers. By the way, both of these firms put up their queens in a little the neatest cages we have ever seen.

COMBINED SHIPPING AND INTRODUCING CAGES.

As a rule, "combined" appliances are not a success. The *combined* reaper and mower gave way before *reapers* and *mowers*. Combined shipping and introducing queen cages have not given perfect satisfaction. The requirements differ. The Peet cage does very well, but it has faults in both directions. We received a nice queen a few days ago from I. R. Good, and she came in a cage that, for a combination, struck us as a good thing. The outside is simply a long, narrow, wooden box. Inside is a long, narrow cage of wire cloth containing the queen. The inside cage is not quite so long as the inside of the box, and is open at one end. The open end is closed with a wooden plug, through which is a hole filled with Good candy. When the cage arrives, it is opened, the plug removed and the bees allowed to escape in a closed room. The queen is returned and the plug replaced. Then this inside cage containing the queen is thrust down between the combs or laid over the frames, and the bees release the queen by eating the candy out of the hole in the plug. There is an advantage in allowing the bees to enter the cage before the queen leaves it. She cannot "run," and the bees do not attack her, and she finally emerges in company with bees that have practically accepted her. Friend Good writes that he has used this cage with the best success for three or four years. Dr. S. W. Morrison also uses a cage for shipping that can be used in something the same way. The opening is covered with a piece of queen-excluding zinc, with a piece of tin over this. After the queen has been in the hive a few hours, if the bees "behave" well they are admitted to the cage by turning aside the outer tin, but the queen can't get out. Just before dark the next evening she is released by turning aside the zinc.

MAKING ONE-PIECE SECTIONS SO THEY WILL "STAY SQUARE."

We are using some one-piece sections this year. If put together on a damp day (and there were plenty of them this year) there is very little breakage. On a dry day they need moistening, or many are broken. After a one-piece section has been put together, it has an inclination to fly open again; and, in its efforts to straighten out, the dovetailed corner (the only one that *can* be bent outwardly) is thrust out, making the section diamond-shaped. When put into a case, the section is not wholly changed to a square, as the 1-16 of an inch "play" allows it to still hold considerable of its former distortion. Mr. Luther Cudney, a bee-keeper and manufacturer of one-piece sections, living near here, called on us a few days ago and showed us some one-piece sections that go together square and *stay* so. The reason for this is very simple, but we have never heard the idea mentioned. It is that of making the middle groove (the one that comes diagonally opposite the dovetailed corner when the section is folded) not exactly square, but so that it "binds;" this has a tendency to "throw out" the other two grooved corners, and to "draw in" the dovetailed corner; and when this change in the angle of the middle V groove is made exactly right, the the result is a section that folds up exactly square.

BEES CHANGE THE CHARACTER OF THE SWEETS THEY HANDLE.

Ever since Prof. Cook characterized honey as "partially digested nectar" there have been attempts to disprove his statement. Among the arguments used is that of cane sugar remaining the same when handled by the bees and stored in the combs. We make no pretentions as a scientist, but we *do* know that bees change the character of cane sugar when they handle it. Many a time in the fall, after frosts had come and storing ceased,

have we given colonies dry, clean combs in exchange for their natural stores, and fed them a syrup of cane sugar. After the combs were filled and sealed we have often cut out small pieces of this "sugar honey" and eaten it. We did this simply to "see how it tasted." We had read that molasses, or sugar, ar any sweet, would remain unchanged when stored by the bees, and we wished to know if it were true. It isn't. Bees *do* change the taste and the *feeling* of sugar syrup when they store it. They not only give it a "twang" but a "mucilaginousness" that it has not before they handle it. It tastes like sugar and it tastes like honey; and, were we to judge by the taste, we might almost say "sugar honey" in the same sense as we say "basswood honey."—As we understand the matter, digestion begins in the month. When we have chewed our food and saturated it with saliva it is "partially digested;" and when bees in bringing in nectar, and handling it about, add to it the secretion of their glands, thereby changing, or partly changing, the cane sugar to grape sugar, and giving it that delightful twang, why isn't it, in a certain sense, "partially digested nectar" just as much as our food is partly digested by the addition of our saliva? Let us not be more nice than wise.

THE BEE-KEEPERS' UNION.

Thanks to the Bee-Keepers' Union and the efforts of its indefatigable Manager, Mr. Thomas G. Newman, we now have a decision from a Supreme Court, that of Arkansas, that "Neither the keeping, owning or raising of bees is in itself a nuisance. Bees may become a nuisance in a city but whether they are or not, is a question to be judicially determined in each case." This decision was reached in the well known suit between Z. A. Clark, and the city of Arkadelphia, Arkansas, and it will, as the manager of the Union says: "Be a guide to the rulings of judges, for the information of juries, and for the regulation of those that may dare to interfere with a respectable pursuit, by law, or otherwise." A brief history of the suit, together with argument of counsel, has been published in pamplet form and can be obtained by enclosing stamp to the Manager.

Let not bee-keepers think, however, that there are no more battles to be won, for there *are*, and the "sinews of war" are needed *now*. The honey crop of the present year promises to be a fair one and all who can spare the money ought to support the Union that has so faithfully defended their rights. The entrance fee is $1.00, and that pays for the dues for any portion of the unexpired current year, ending December 31st. Then it costs only one dollar for annual dues, which are payable every New Year's day, and must be paid within six months, in order to retain membership in the Union. If membership ceases, all claims against former members cease; and all claims to the protection of the Union are dissolved. The entrance fee and dues must be sent direct to the general manager, Thomas G. Newman, Chicago, Ill., who will record the names, and send receipts for every dollar sent in.

NEW METHODS OF QUEEN REARING.

In *Gleanings* for July 15, Mr. Stachelhausen says:—

"Doolittle's new book is very interesting; but I know by experience that his new plan of raising queens in full colonies over a queen-excluding honey-board does not work every time. In this locality, during the horsemint flow, every queen-cell will be destroyed. May be it would work with the cell-protector. I have not tried it as yet; but I believe the plan will always work in the spring, and as long as the colony is inclined to swarm."

A correspondent writes us that it is not practical to have queens fertilized over a queen-excluder, below which is a laying queen. He says such results are exceptional—when the queen is old or something of the kind. Before putting any of this into the REVIEW, we thought it better to allow Mr. Doolittle an opportunity of explaining. In reply to our inquiries we received a letter from which we extract the following:—

BORODINO, N. Y., July 22, 1889.

FRIEND H:—

Your *good* letter of the 18th at hand, and I hasten to reply. Before doing so, however, I wish to thank you for writing me instead of rushing into print with the matter as some of our publishers do without calling for an explanation till after much harm has been done to innocent parties.

Let me assure you that the plan of getting cells *built* in upper stories, as I have given it in my book, *is a success every where it has been tried*. I have had thousands of cells thus built at all times of the year without a single failure, and I have not heard of a failure.

As to the matter of fertilization, I enclose a manifold copy of what I have sent to friend Newman to insert in my book at the end of chapter XIII, the same as "Errata" is put in at the back end, till this edition is exhausted, when I shall re-write this chapter. This will explain to you exactly how the matter is.

Your letter came late Saturday night, and that I might write intelligibly I have just put up twenty-four queens which I had to send off to day, a part of which were taken from upper stories, the same as given in my book. In some of these from where I took queens I had a nursery containing fourteen, two days old queens, cells being furnished with royal jelly, others nearly ready to cap, virgin queens two and six days old, and a laying queen in the hive below at the same time. Now this I know to be so for I saw it with my own eyes; but why it would not work a month ago, as far as virgin queen were concerned, is what puzzles me.

The honey crop will be very light here. So wet a season has not been known for many years, and crops of all kinds have suffered from it.

G. M. Doolittle.

Here is the matter that Bro. Doolittle has added to Chapter XIII of his book:

"Owing to my selling all of my stronger colonies of bees, so that I had none of suitable strength to tier up earlier, the above experiments, in having queens fertilized above a queen-excluding honey-board, were conducted during the height of the basswood honey harvest, and later. This season, having more strong colonies, owing to the bees wintering well and to fewer sales, I tiered up several hives and tried the plan early in the season, when they were living only from 'hand to mouth,' or getting honey slowly from clover, and met with failure; the bees worrying and killing the young queens after they had been hatched from two to four days. Now that basswood is at its height again, I am having the same success as formerly. I have, therefore, requested the publishers of my book to insert this by way of caution, and advise all to try only one or two colonies at first, to see if the plan will work in their locality, for I would not knowingly deceive anyone. This is evidently one of the few things about bee-keeping, in which locality makes all the difference in the world."

It appears that the plan of having queens fertilized over a queen-excluder, below which is a laying queen, is not *always* successful (and Bro. Doolittle is to be commended for the promptness with which he has reported failure), but that it works sometimes, is a step towards a less expensive method of queen rearing.

Mr. Alley secures the building of queen cells at any time in full colonies having *old* laying queens, by feeding, when necessary, until the cell building disposition is aroused.

Dr. Tinker has patented and brought before the public a queen-rearing chamber which will allow the hatching and fertilization of a large number of queens in one colony. The chambers may be tiered-up and the colony divided into many nuclei. We say divided: in one sense it is divided, in another it is not. The bees live and work all in a mass, passing readily from one nucleus to another, thus enjoying the combined heat of all, allowing queen rearing to be commenced earlier in the season and continued later. There is no trouble from robbers, nor from fertile workers, and no uniting of nuclei in the fall, as they will be already united. The Dr. feels sure that, with this arrangement, good untested queens can be reared for fifty cents, and tested ones for one dollar.

And now Bro. Hill, of the *Guide*, comes forward with a scheme for securing the fertilization of queens. Combs of brood are placed above a queen-excluder until all brood is sealed. The bees are then brushed off, a queen-cell just ready to hatch attached to each comb, and then each comb placed in a cage by itself. He has an incubator oven that will hold eighty of these caged combs. The bees that hatch will not not need to fly until the queens are old enough to mate, which they are allowed to do by flying through openings in the walls of the house.

The indications are that the next great step in bee-culture will be in the direction of queen rearing. From the novel features lately brought out, we would not be surprised if there were yet developed a system of queen rearing by means of which good queens could be furnished for a "quarter." Were it not so late in the season, we should be tempted to make queen rearing the special topic of the next issue of the REVIEW; as it is, we will allow this season to pass in experimenting, and devote one of the early numbers of 1890 to a discussion of the subject.

OUT-DOOR WINTERING OF BEES.

If bees can enjoy frequent flights, out of doors is the place to winter them. If deprived of these flights, a temperature of about 45° enables them to bear a much longer confinement than does a temperature below freezing. In the South, frequent flights in winter are assured; in the North, no dependence can be placed upon the matter. Some

winters are "open," or there are January thaws, allowing the bees to enjoy cleansing flights; while other winters hold them close prisoners for four or five months. It is this element of uncertainty attending the wintering of bees in the open air that has driven us to the adoption of cellar wintering. Still, there are some bee-keepers who, from some peculiarity of location, or of management, winter their bees in the open air with quite uniform success; others are compelled, for the present, at least, to winter their bees out of doors; in short, a large portion of the bees, even in the North, are wintered in the open air, and probably will be for a long time to come; and, while our preference is the cellar, we have no desire to ignore the out-door method. Now then, if we *are* going to practice out-door wintering, let us try and learn the conditions from which the best results may be expected.

The question of food and its relation to success in wintering bees was discussed in the REVIEW one year ago, so we can take up the next most important point, that of protection. We might remark, in passing, however, that where there is a certainty of the bees having two or three thorough cleansing flights during the winter, a poorer grade of food may be given to bees wintered out of doors than to those kept in the cellar; but if they can have no winter flights, the chances, even with poor food, are with those in the cellar. Now for protection. Shall it be given, if so, what shall be its character and quantity, when given, etc., etc. It might seem as though the question of whether or not protection be given in winter, in the North, need not be discussed at all; but it *has* been objected to upon the grounds that the packing becomes damp, that it deprives the bees of the warmth of the sun, and that they sometimes fail to fly in winter (because the outside warmth is so slow in reaching them) when bees in single-wall hives may be in full flight. There is occasionally a still, mild day in winter upon which the sun shines out bright and strong for an hour or two, and bees in single-wall hives enjoy a real cleansing flight, while the momentary rise in temperature passes away ere it has penetrated the thick walls of a chaff hive. On the other hand, there are days, and weeks, and sometimes months, unbroken by these "rises in temperature;" and the bees must depend, for their existence, upon the heat generated by themselves; and the more perfect the non-conductor by which they are surrounded, the less will be the loss of heat. Referring again to the matter of securing the flight of bees from chaff hives, we may say that several have reported success by removing covers and cushions, and allowing the sun to shine directly upon the frames, the bees flying from the tops of the hives. For several winters we left quite a number of colonies unprotected. We discontinued the practice only when thoroughly convinced that, in our locality, and with our methods, the losses were lessened by protection. In mild winters the bees came through in pretty fair condition. In severe winters the bees in the outside spaces, or ranges of comb, died first, the cluster became smaller, the bees in more ranges died, and, by spring, all were dead, or the colony so reduced in numbers, and the survivors so lacking in vitality, as to be practically worthless. If bees are to have winter protection, what shall that protection be? Chaff hives have the advantage of being always ready for winter, and of doing away with the labor and untidiness of packing and unpacking, but they are expensive and cumbersome. It is some work to pack bees in the fall and unpack them in the spring, but light, single-wall, readily-movable hives during the working season, are managed with enough less labor to more than compensate for that of packing and unpacking. Then there is another point. The work of packing and unpacking comes when there is comparative leisure, while the extra work caused by having great, unwieldy hives is brought in at a time when the bee-keeper is working on the "keen jump." For packing bees we have used wheat chaff, forest leaves, planer shavings and dry sawdust without discovering that one possessed any particular advantages over the others, so far as the wintering of the bees was concerned. At present we are using sawdust, because it is the most readily obtained and makes the least objectionable litter about the hives. In fact, a thin coating of sawdust on the ground about each hive is rather to be desired. We suppose that cork dust is the best packing material. Its non-conductivity is nearly twice that of chaff, while it never becomes damp or mouldy, nor settles down. But it is not readily obtainable and costs something, while the other substances mentioned cost nothing and answers every purpose. What they lack in non-conductivity

is easily made up in quantity. And this brings up the point of the proper thickness for the packing. We have often thrust our hand into the packing surrounding a populous colony of bees, and found the warmth preceptible at a distance of four inches from the sides, and six inches from the top. This would seem to indicate the thickness when chaff or sawdust is used. Hollow walls with no packing have been mentioned; and it has been asked if these dead (?) air spaces were not equally as good non-conductors of heat as those filled with chaff. They are not. In the first place the air is not "dead," it is constantly moving. The air next to the inside wall becomes warm and rises; that next to the outer wall cools and settles; thus there is a constant circulation which robs the inner wall of its heat. If chaff hives are not used, how shall the packing be kept in place? We know of nothing better than boxes made of cheap, thin lumber. If there is lack of room for storing them in the summer, they can be so made as to be easily "knocked down" and stacked up when not in use. So far as they will go, we use shade boards for the sides of these boxes. When put together, ready to set on the hives, the box is without top or bottom, and is two feet deep, two feet wide, and three feet long. A bridge is placed at the entrance of the hive, the lower edge of the front end of the box resting upon the bridge. This raises the front end of the box and gives the proper slant to the roof. The sawdust is kept stored in barrels, and after a box is placed over a hive, the cover to the hive removed and a piece of burlap placed over the honey-board to prevent the sawdust from rattling down among the bees, a barrel is lifted and the sawdust poured in until the hive is covered to the depth of six inches. About two bushels of sawdust is required for each hive. The cover is next laid on and a stone placed upon the cover to prevent its being blown away. And now that we are about it we may as well tell how the packing is removed. The box is taken off first, raised right straight up, and then set to one side. The sawdust is then taken up with a scoop shovel and put back into barrels. One who has never tried this method will be surprised to see how quickly the work can be performed. Of course bees can be packed up more cheaply by setting the hives in long rows, building a long box about them and filling it with the material used for packing. With this method, the packing must be postponed until there is little danger of the bees flying again until they have forgotten their old location, else some bees will be lost, or some colonies get more than their share of bees. Then when the bees are unpacked in the spring and moved to their proper places, there is more confusion and mixing; but we don't look upon this as so very serious a matter. At this time of the year, other things being equal, a bee is worth just about as much in one hive as in another. If there is any difference in the strength of the colonies the weaker ones might be left nearest to where the bees have been packed. Speaking of being compelled to wait about packing the bees until they were not likely to fly again until sometime in the winter, reminds us that advantages have been claimed for early packing; that the bees in single wall hives only wear themselves out with frequent flights that are to no purpose, while those that are packed are not called out by every passing ray of fall sunshine, that they will sooner get themselves settled down for their winter's nap, and are in better shape when winter comes. It is possible that there is something in this, but there were two or three years that we tried packing a colony or two as early as the first of September; and continued to pack a colony every two or three days until the fore part of November, and we were never able to discern any advantages in very early packing. If the bees are protected before freezing weather comes, we believe that is sufficient. We have never seen any ill effects from dampness. When the warm air from the cluster passes up through the packing it is met by the cold outer air and condensation takes place. This moistens the surface of the packing, but, it is dry underneath. When shall the packing be removed? When warm, settled weather has come for *sure*. When it is almost time to put on supers. In this latitude, about the first of June. When in conversation with Mr. Heddon last spring, he said: "I tell you, Hutchinson, this is the last time 'Jeems' is going to try bringing bees through the spring without protection." "How will you protect them?" we asked. "By boxes, of thin lumber, made two inches larger every way than a hive. The two inches space between the hive and the box will be filled with dry sawdust, and the boxes painted black. The bees will then get the

benefit of the sun, while they will have sufficient protection against spring freezes."

Oh yes, we forgot to mention, in the proper place, the importance of putting a two inch rim under each hive. This not only allows the dead bees to drop away from the cluster where they will dry up instead of moulding between the combs, and, if there is an entrance *above* the rim, there will be no possibility of the entrance becoming clogged.

Now, friends, we wish this discussion continued in the September REVIEW, and we would like it discussed most thoroughly, even though extra pages may be the consequence. If we have left important points untouched, or have made mistakes, or if you can furnish any hint that may help, please let us hear from you.

THE BEE-KEEPERS' REVIEW

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Out-Door Wintering—Success Largely a Question of Locality—Thin Packing Preferable—Several Excellent Ideas.

Migratory Bee-Keeping.

JAMES HEDDON.

NOW IF YOU are going to insist upon exhausting, in an advance editorial, every subject you bring up for the REVIEW, leaving nothing for us to do but to agree with the most of it and pick flaws with the rest, you must expect to get just what you advertise for. Now I will try to do your readers, yourself and myself a little good by dissenting from your leader wherever my experience has caused me to believe differently.

You think some bee-keepers, from some difference of location or management, winter bees in the open air with more success than others. I think the first part of that clause all right, but I fully believe there is little in the management: it there were, a quarter of a century spent in freely exchanging ideas and methods would have reduced it to a common knowledge. But you are just right about its being a question of location.

Like yourself, I have learned to never attempt the wintering of bees without protection. When they are packed in wintering boxes, I have found out-door wintering best *if the weather is not too severe.* When it is, the cellar is best. What we most need, is to know what the coming winter is going to be, and that we cannot tell until science has further progressed.

As your readers well know, bee-diarrhœa is the one great cause of our winter losses. And I believe that many of them further know that the consumption of pollen produces that disease; and, as low temperature is the main cause of pollen consumption, and dampness produces an equivalent to a low temperature, your leader is right to the point just the same. Certainly, cleansing flights remove the trouble as fast as it accumulates, provided they occur frequently enough.

Now to the question of protection. Can you tell why chaff hives, with such a narrow space between the walls, have shown a better record than the thicker packing where outside boxes were used? (Didn't know they had. ED.) I cannot, but such is the case. W. H. Shirley, a close observer and skillful apiarist, declares that two inches of space between the outer boxes and hive proper are better than more. He cannot explain why; neither can I, but I have a great big suspicion that it is true. Like yourself, I use sawdust for packing, because I believe it is as good as anything and cheaper and handier to get.

I am just making 200 of the boxes you describe at the latter end of your leader. They will be absolutely water tight, and the packing will be put in so full that it will require a weight to settle the cover into place. Now sir, I am arranging in this way purposely, that the whole thing will not be a non-conductor, but a *partial* conductor: because I propose to receive the heat of the sun's rays all through the winter whenever it shines. By painting these boxes black, or dark red, the sun's rays will heat them very rapidly, yet the color will have nothing to do with the heat radiating outward from the bees when the sun does not shine, and I am expecting to see this arrangement winter bees better than larger boxes. I shall make these little boxes to stay made, not to be knocked into the flat, and I can pile them up anywhere, only keep them out of the sun. The rain will not injure them, and the sawdust can be kept right in them. But little material will be required for each colony.

In order to experiment with very shallow frames, I filled a set of eight Bingham frames, which are 22 inches long and have only 1⅝ inches of comb in depth, and I wintered the colony eight times out of doors. It was packed with just such thin packing as I have described, and it was among my very best colonies every year except one. One winter it died with the di-ease, but other winters, when my other stocks died in the cellar, it always came up booming and strong. Shallow frames are better than deep ones for wintering bees, as experience has demonstrated. The reason is obvious.

Yes, as I told you, what bees I winter in the cellar will be packed in these little, dark colored boxes all the spring, clear up until the surplus honey receptacles go on. I am making the boxes deep enough to take two brood cases of my new hive. Then when I desire to use one section I can do so handily either with or without the rim under it.

I tried the rim business pretty thoroughly with my new hive in the cellar, and did not realize from it the beneficial results that I expected. I thought I saw some points in its favor, and believe it will prove valuable in case of severe winter losses.

I agree with you exactly in regard to chaff hives. No one who has once learned how to handle readily movable hives, and enjoyed the great benefits to be derived from that kind of bee-keeping, would take chaff hives as a gift.

Ten or twelve years ago I conceived the idea of packing bees in outer cases *having no bottoms*, letting the packing come right down on the ground. I had some fears, and my friends had more than I, that absorption would raise the moisture from the ground clear up above the bottom stand and thus affect the hive, but actual experience demonstrated that the moisture did not rise one inch; and it is all right except that more material is required.

For three or four years I tried packing eight hives together in a clamp, and had no trouble at all with the bees mixing. I just moved eight hives up together anywhere in the apiary at any time I pleased, and never had a bit of trouble, either when I moved them together or took them apart; but I do not like the plan. It is not so handy, nor so quickly arranged as when the boxes are all made, and a box for each colony.

Well I have found one thing, that is, one idea, not in your leader. Please give me a credit mark. In this part of Michigan, severe cold is always attended with copious snows, and I have found it advantageous to cover the boxes with snow, the deeper the better, until the severe spell is past. Care must be used, and the hives not rubbed, even with the broom, when banking up the snow.

Do not pack late. Pack just as early as possible; as soon as your surplus receptacles are off. Let the late business come in at the other end of the deal, the unpacking. I presume you will agree with me in late unpacking, but I disagree with you in regard to early packing. I say the earlier the better. I don't know why, but then I believe some things for which I cannot account.

Well, to conclude, I will say that all this, like the most perfect cellars, will not always keep bees from consuming pollen during confinement; and when they do that they cannot pass out the residue either by sensible or insensible perspiration; consequently, in spite of the best arrangements, bees may be lost from the one cause worthy of notice—bee diarrhœa.

Now I wish to say a word about the special topic of the last REVIEW. Like yourself, I have changed my mind some since reading all that has been said, but I am more than ever in favor of moving bees. My man and I have been talking it over, and we have both had considerable experience in moving bees. We have carefully noted Bingham's argument, and we both believe we can ship bees 200 miles north of here on the cars without the loss of any brood, provided we give them plenty of water and take other precautions. The most valuable migration of all, however, is in moving bees from five to fifteen or twenty miles to some field or pasture, the like of which does not exist at the home apiary. For instance, there are some thirty miles difference in latitude between the two sides of our three-mile swamp, *in the development and ripening of vegetation*. Corn, buckwheat, berries and even fall weeds are a week or more *earlier* on *this* side of the swamp. After our basswood is all over, it is still in full bloom down about South Haven. Their fall flowers yield honey two to four weeks every year after ours are all over. Now, suppose my apiary was five miles south of here; I would have a much better clover, whitewood and basswood harvest, but no fall flowers. Then, of course, it would pay me to move down here for the fall harvest. But, while the bees were on the wagon, it would pay me much better to go on to within ten miles of South Haven, where there are lots of fireweed, acres of boneset, and oceans of golden rod.

We do not know how to compute dangers and expenses, because we have had no experience in overcoming them. But I can see how, with my hive and fixed frames, and cheap fixtures ever ready to clamp them together with, I could all alone prepare for shipment twenty-five colonies an hour; and I am now firmly convinced that these short migrations (not the Mississippi river kind) open up a splendid field for profit to the bee-keeper.

DOWAGIAC, Mich., Aug. 1, 1889.

Plenty of Bees, Food and Packing; and Several Other Things Essential to Success. A Splendid Article.

O. O. POPPLETON.

FEW ARE aware how short the time is since the science of out-door wintering of bees in protected hives has been generally known. It is only about a dozen years since one of Michigan's oldest bee-keepers, Mr. J. H. Townley, first described the principle. I had used essentially the same method for two or three winters previous, and Mr. Townley had still longer. Cellar wintering had engaged the attention of our best bee-keepers for many years previous. It is reasonable to suppose that the principles of successful chaff hive wintering have not yet had time to become so thoroughly understood as those of the other method.

A few essential requisites to success are already known; the following being the principal ones:—

1. Colonies in good condition, and of at least medium strength. I have carried three-frame nuclei through all right, during severe winters in northern Iowa, but this is exceptional. Strong colonies have more advantages over weak ones, in out-door wintering, than in the cellar.

2. Good food. My ideas on this point have already been published on page 139 of the REVIEW for Sep., 1888.

3. Plenty of food. This is an indispensable requisite: and is where many have failed. Years ago, we used to frequently see the advice that "the lower half of the center combs ought to be empty to give the bees a place to cluster." No attention should be paid to such nonsense. If every comb is solid honey, so much the better. Mr. Wm. Foos, of Iowa, several years ago advanced a theory that whenever bees became short of stores, though lacking quite a little of being out, they seemed to realize what their condition might be, and becoming uneasy were soon diseased: while if they had possessed ample stores, of the same quality, no such condition would have resulted. Since then, I have watched the matter closely, and I am inclined to think his theory correct. I certainly do think that the giving of ample, or even more than enough stores to carry them through, is of more importance than quality of stores. (? Ed.)

4. The apiary should be protected by ample wind breaks. This point has rarely been given the importance it deserves. I consider it an absolutely essential requisite north of the 41st degree, or about that of Ft. Wayne, Indiana: and very desirable much south of that. Small apiaries can be sufficiently protected by high board fences, but large ones need something more effective. A thick, very thick, grove of bushes or trees should surround all sides unless it be the south, and it would be much better to have it on that side too. My experience and observation in a prairie state taught me the absolute necessity of this condition: and anyone who cannot command it, would better give up all idea of out-door wintering, unless the hives are likely to be covered with snow during severe winters. The failures of many have been due, probably, to this unsuspected cause.

5. Proper kind of packing material is important. It must be such as will best afford protection from cold and freedom from dampness. Any material that is fine and light is better than the same would be if coarser: hence, all fine kinds of chaff are better than the coarser kinds: and any kind of chaff is better than hay or straw. In fact, the latter are utter failures unless used in very large quantities. Sawdust from fine saws is preferable to that from large lumber mill saws: in fact, I should hesitate to use the latter. Some kinds of material retain, in a much greater degree than others, the moisture thrown off by the bees: become damp and mouldy, and in time rotten. In the latter case sinking down and exposing part of the hive to cold. Such materials ought never be used. I find timothy seed chaff gives the best satisfaction of anything I have tried: it being the finest, driest chaff I know of, with the least affinity for moisture. Next to that in value is sawdust made by fine saws from dry, white, pine boards. Wheat chaff and forest leaves come next, but they are far less valuable than the first mentioned, probably on account of being so much coarser. Oat chaff is unfit to use on account of its retaining dampness: and buckwheat chaff is the poorest for the same reason.

6. Enough packing must be used to insure good protection. This, of course, depends somewhat upon the kind of material used, and the latitude where used. Enough must be used so that the bees can keep the interior warm, else moisture and frost will accumulate, to be followed, in many instances, by the old, old, sickening story, so well known by northern bee-keepers. But for the fact that any increase in the amount of material increases the size and bulk of the hive itself, I should say it was practically impossible to use too much. In my hives in Iowa I used four and a half inches of fine timothy chaff or fine sawdust, but am satisfied that six inches would have been better—enough better to have paid for increasing the size of the hive. For coarser kinds of chaff, an increased amount would be necessary. This is also a point, or condition, the non-observance of which has caused many failures. I know one style of hive, sent out by a prominent manufacturer, that has only two inches of space for chaff. Whoever uses such a hive invites failure.

7. Bees ought to be closed down on as few frames as possible, leaving only room enough for ample stores. The less space there is enclosed by the outer packing, and the nearer the bees fill this space, the less will the cold be able to penetrate it. I used to cut my strong colonies down to the equivalent of eight L. combs each, and from that down to five, according to their strength. This is a more important point than in cellar wintering, because all the air in the cellar can be and must be kept much warmer than the air surrounding hives out of doors.

There are other conditions not so absolutely necessary as the foregoing, but which are of help. I prefer a hive large enough, or at least tall enough, to allow empty space between the packing and the cover. The bees seem to winter better than when the cover rests upon the packing. I consider winter passages through the combs a requisite to success in out-door wintering.

How far dampness causes disease, has been a much discussed question. A few years ago, in an article on this subject, I said: "Show me a practical method of preventing dampness in hives, and I will have no more fears of unsuccessful wintering." The statement is true, but, instead of dampness being the prime cause, as I then thought, it is only the effect of other causes. The value of any kind of packing is not so much in its power to absorb moisture as in its power of keeping out cold: then the bees can keep the interior of the hive too warm for the moisture to condense in it, or even in the packing itself to any great extent. This is the real underlying principle of all successful wintering, either in-doors or out, to keep the conditions such that the natural heat of the bees will expel all moisture from the hive, and as much as possible from everything around it: and to the greater extent this is accomplished, the more perfect will be the success. If a certain amount of material will accomplish this in southern Indiana, a much larger amount would be necessary in northern Michigan. The proper amount of material to be used varies with

the kind used and the locality where used; but too little has been used in a hundred instances where too much has been used in one; I doubt if the latter mistake has ever been made.

As it is only by a comparison of opinions, that truth can be reached, I will now criticise some of the points in your editorial. You start out with the idea that bees can be well wintered only when they can have frequent flights. While flights are probably an advantage, I years ago came to the conclusion that they were far from being as valuable as generally supposed. About fifteen years ago I made some quite extensive experiments in flying bees under glass, covering dozens of colonies during three winters, and finally abandoning the plan as not being worth the trouble. Such flights were, I thought, a preventive of disease, but not a cure after it was once started. The real reason bees winter better when they have several flights during the winter, is not, I think, so much on account of the flights themselves, as because such winters have a much less amount of severe cold weather, and the cold does not succeed in penetrating so far into the packing. If I am right, and my experience in Iowa sustains this view, then all that is necessary to enable bees to pass severe winters as well, or nearly as well, as mild ones, is to pack them with more or better material, and in a more thorough manner. Northern Iowa is in about the same latitude as your own home, but it is colder on account of the more open prairie country, and the lack of the protecting circle of great lakes which nearly surround Michigan.

I have never failed of wintering my bees in excellent condition, except when I failed in giving them one or more of the "requisite conditions" already mentioned; especially Nos. 2 and 3. In that severe winter of '80—81, which so nearly swept the bee-keeping industry out of existence in many northern localities, my bees were confined to their hives from October 28 until March 25 without a single flight, yet I lost only six out of 115; and I think I never had bees come through in better condition, nor build up faster.

Some of our ablest bee-keepers, Prof. Cook and others, have so often made the statement that "out-door wintering is unreliable as far north as Iowa and Michigan," that they have come to honestly believe it: while the truth probably is that when the requisite conditions, which are only just becoming known, are complied with, it can be relied upon as well as any other.

Another train of ideas, more theoretical than practical, are those objections to packing on account of its depriving the bees of the warmth of the sun, not only in winter but spring, with results that naturally follow. My observation has led me to regard these as advantages instead of objections. As I have already said, I have learned to discount the supposed advantages of winter flights; and in the spring I prefer that the bees should not fly the moment the weather becomes mild enough for them to poke their noses out of doors. No danger whatever but they will fly from protected hives as quickly as it is best they should. I vehemently object to the plan of leaving the front of the hive without protection in spring, to secure the supposed benefits of the sun's direct rays. For those who do cherish a high idea of the value of the sun's direct rays, the plan proposed by our friend "Jeems" is unquestionably the best, as it will attain the object sought without sacrificing the principle of protection; but I don't consider the object worth the seeking.

The question, "When shall the packing be removed?" is easily answered. Never remove it at all, unless the space it occupies is needed; and in no case should it be removed until settled warm weather. The longer I handled protected hives, the more reluctant was I to do any removing of packing even when obliged to do so to make room for surplus. The more the outside temperature can be kept from affecting the interior of the hive, the better, either winter or summer.

If you referred to the use of coarse, lumber mill sawdust, in saying you found no difference between that and wheat chaff, forest leaves or planer shavings, then your experience and mine are alike, but otherwise if you referred to fine, dry sawdust. If your experiments have heretofore been with only four to five inches of the materials you mention, then I don't wonder you prefer cellar wintering. I should too, in that case.

The objection against chaff hives, that they are large and clumsy to handle, is, of course, true, and they must be quite objectionable with some methods of management; but it has not been so with me, as I rarely handle hives during the working season. They save instead of make labor, as they are always packed except the insertion of two or three cushions at the proper time. Did my method of management require much handling of hives, either the large chaff or the small single-wall hive, I should certainly use some such hive cart as we use in this apiary. With it we can move a colony anywhere in the apiary with no lifting at all; and large hives can be moved as readily as small ones. Much lifting of hives during the honey season is work which no one has any business to attempt, unless they are much stronger physically than I am.

Using loose chaff on top of the hives is bad management. I used to buy old gunny sacks at the stores for ten cents each. These, properly filled and sewed up, were laid on top of the hives, allowing us to open and examine the hives as readily as though not packed. This is an important point so far as convenience and labor saving are concerned.

My experience differs from yours as regards early and late packing. With me, early packing has been better than late. Early packing can certainly do no harm.

During the past three winters, my home has been in a land where this wintering problem loses all its terrors and much of its interest. Other difficulties arise that must be met and conquered, as has been practically done with wintering.

HAVANA, Cuba, Aug. 10, 1889.

Wintering Problems.

E. E. HASTY.

FRIEND HUTCHINSON, if you had not poked me up the second time, I should not have said a word on this topic. It is not very pleasant to write on a subject concerning which one's mind is unsettled. How shall I say "come" to the young bee-disciples when "death in the pot" is the only fare for them to come to? I'm badly unsettled as to whether out-door wintering is what we want at all—but then, the world was made out-doors; and bees have wintered out-doors ever since creation. Compromise between cellar wintering and out-door wintering has made a ripple in my ideas; and I am not through experimenting in that direction. Let the bees have the benefit of the fresher air, and the indirect influences that come from the sun, so long as their powers of endurance are in no danger of becoming exhausted; but, when that point is nearly reached, *then* take them into the cellar, and into a temperature continuously above freezing. It is noticable in colonies wintered in the open air that, for the first part of the winter, they raise no brood and consume very little food. As I have several times kept a colony on a delicate scale all winter, I have had a good chance to learn this. The consumption of food during this period is only about $\frac{1}{8}$ of an ounce per day. Later in the winter the bees get astir more, raise brood, and eat up the provisions at a lively rate. It occurred to me that a colony removed to the cellar just before the period of quiescence was broken would be induced by the darkness, and by the even and moderate temperature, to continue quiet for a much longer period. This would mean less consumption of stores, and less mortality among the bees: and, by no means to be forgotten, the individual bees, when spring fairly opened, would have more days before them. I have, for two winters, experimented a little on this line, using, however, only a single colony for the purpose. The first winter, I put the hive in Jan. 21, and took it out April 15. Last winter, the colony was carried in Feb. 2, and taken out April 19. The scheme seems to work according to programme. In the first trial, the bees had no brood at all when taken out, and were in excellent condition. In the second trial, they had, when taken out, less than a 1,000 head of brood, mostly sealed. So it is not yet certain but my future wintering method, when it arrives, may be a compromise on this line. This will offend the authorities who exhort in concert; "put your bees in the cellar early, early, *early*," but who cares a copper for what the authorities say on such an unsettled matter?

For this kind of "swapping horses in the middle of the stream," of course I shall not need packing boxes, nor very heavy hives, nor any such rattle traps as would get out of adjustment by being carried off and piled up. My previous arrangements have been rattle-trappy to an unusual degree—two colonies in a hive with an enamel partition between; a special bottom board for winter only, with a sawdust bed to keep all dry: and a drop chamber to prevent getting closed up: and a vertical entrance: and a do-funny entrance-board, etc., etc. Whether I continue to winter out of doors or not, I am getting tired of this thing. It makes too much work: and the benefit resulting from it does not seem great enough to pay cost.

One thing I think I shall hold on to for awhile yet, and that is hives made of lath, double walled, chaff packed and one story high. They are warm, cheap, and light enough for all ordinary handling, except, perhaps, for women and invalids.

Another thing I am pretty well satisfied I want to cast overboard at once, and as completely as possible, and that is all unnecessary air space inside the hive. Some of my hives have had, for winter, considerable side space not occupied by bees or anything else. I thought this an advantage, and looked upon it as very much the same as so much pure air within such easy reach of the bees that they could not be cut off from it. Now I feel sure this is a very damaging mistake—that the air, in such near but unoccupied space, is not crisp, pure air, but a much corrupted article, *and the readiness with which such air comes to them when they stir their wings a little, prevents the genuine pure air from coming in.* If arrangements were just right, a little stir of wings (which is as natural as breathing to bees when the quality of the air does not suit them) would bring in the outside fresh air. I take it as a prime principle of successful out-door wintering, that air space connected with the bees, but not actually occupied by them, be reduced to the lowest possible limit. When we can have a cluster of bees that fills the top of their chamber, with the space below, as nearly as practicable, reduced to a mere tube communicating with the outside, we shall have reached the ultimatum in that direction, I think. Box hives only partly filled with comb, movable comb hives with the combs not built fully down, and too many combs in a hive, and side chambers that have open communications, all violate the principle.

As to the amount of honey to give, or allow in the chamber to commence winter with, I have all along held, and shall continue to hold until I see some very different light, that the general usuage is to allow a great deal too much—it tempts the bees to eat too much and give themselves the dysentery; tends to increase winter brood rearing; wastes the vital heat of the colony in keeping so many pounds of material several degrees above the outer temperature; and, in zero weather, it condenses moisture into frost and ice at wholesale; then when a warm spell comes the melting drenches the interior, if not the bees themselves. Let at least half the honey that the authorities prescribe be hung in the comb closet, and given back to the bees in the spring if desirable.

It may transpire that the most practical way to meet the two troubles of wintering and excessive swarming, from both of which I have suffered greatly, is to just let the bees double or treble their census in the summer, and then unite two or three colonies in the

fall. Choose out from six to nine of the best combs in three colonies, put them a little farther apart than for summer use, shake in the bees of all three colonies, and put the rest of the combs away in the comb closet. In this way we can get the chamber pretty full of bees, and the communication pretty close and direct with the outer air. I have practiced somewhat the plan of uniting six or eight of the later swarms in one huge colony, then dividing it early in the spring. I rather like this way of doing. Such a huge aggregation can make itself comfortable under almost any circumstances, unless allowed to get out of honey: and they are not usually exhorbitant in their demands about that. Queens from dwindled and worthless colonies can often be had to make the heavy lot into two colonies very early.

The scheme I think of most longingly and most frequently is neither cellar wintering nor out-door wintering, nor yet a compromise of the two—but, until I find out whether or not it is merely a fool's vision, I am disinclined to trot it out. Don't you wish you knew, now?

By the way, can't somebody devise a way to make Byron Walker and H. R. Boardman swap locations, and enlighten us as to whether winter results inhere in the apiarist or in the location? You know the former gets famous crops of honey, but resigns himself to buy a good part of his bees afresh every spring, while the latter sports the rather tall title of "The man who always winters his bees." If we could condemn them to exchange places we should have a most interesting experiment at their expense. As for myself (as well becomes the man who usually loses a lot of bees) I believe it's the location.

RICHARDS, Ohio, Aug. 9, 1889.

The Outs and Ins of Migratory Bee-Keeping, From Tennesee to Wisconsin.

(Continued from Aug. No.)

BYRON WALKER.

THERE is one more point in this connection that deserves attention. While but few will question the soundness of the opinion you have expressed in your opening remarks on this subject, relative to the comparative advantages of planting for honey or moving to new pastures, I fancy some will say: "Why all this ado about moving bees, are there not plenty of locations one may choose combining all the advantages you speak of?" Possibly, yet is it commonly the case that a first rate location for clover and basswood, for instance, is also equally good for fall flowers? And does not a permanent change of location often imply sacrifices—social, financial and otherwise—that few are willing to make for the sake of uncertain gains? Remember, also, the better your permanent location the more willing will others be to share it with you. Will not the majority prefer to watch closely the indications of a flow within reach and hold themselves in readiness to take advantage of it on short notice? Again, is not the season too short in any given location, even the best, for obtaining the best possible results? This brings me to the consideration of the second part of our subject, that of moving bees from the South, keeping pace with the season.

From previous statements made in these columns, it is probable that most of your readers are aware that I have been in the habit of shipping bees from the South. From the same source they have become acquainted with some of the advantages and drawbacks of this plan of securing bees; and as many of the conditions of success are the same as those of following up the season, repetition may be avoided. It is obvious, however, that shipping bees from the South during the spring months is one thing, while their delivery North *in time and in shape* to take the flow from clover, after waiting to secure the yield from poplar, and hot weather has set in, is quite another. The interval marking the closing of the one harvest, in Tennesee, for instance, and the opening of the other in Wisconsin, is usually only about two weeks. Now, supposing that 100 or more colonies are to be handled, at least one week of this time will be required to extract the bulk of the stores from the brood nests and several days more to complete shipping arrangements. Allowing forty-eight hours to make the trip, saying nothing of delays likely to occur because of unfavorable weather or failures to connect at junction points, and this interval is well nigh exhausted. Then, too, as everyone knows who has had experience in shipping bees long distances by rail, the worry of long confinement tells upon the working force of strong colonies; so much so that, even when the apparent loss in bees and brood is but trifling, such colonies are seldom in good condition for taking an immediate harvest.

Right here theory steps in to bolster up a rather limited experience in shipping bees by water, and says that, notwithstanding the time lost in shipping long distances by boat, other things being equal, far better results can be reached by this plan. It tells me that extracting before shipping would be scarcely needed; that there would be less danger of over-heating during hot weather; that entrances need not be closed at night during ordinary weather, nor in the daytime if the weather is cool; hence the worry of confinement and jarring incident to shipping by rail would be in a great measure avoided. Then, the boat lines (on the Mississippi at least) will grant what railroads will not—the privilege of stopping off a week or more at any landing. It was my intention last year, when shipping bees from Arkansas, and again this season, to test my belief on these points, but adverse conditions prevented.

Should fortune favor in the future, I expect to take the flow from willow in La., during Feb. and March; that from poplar in Ark. or Tenn., during April and the fore part of May; the clover harvest in Ill., the latter part of May and first June; the basswood flow in Wis., during July, and also the late yield in Aug. and Sep.; returning to the

starting point for safe wintering, if deemed advisable. It may be taken for granted that opportunity for furnishing each colony with a young queen will not be neglected. I am aware that there is nothing very original in this plan; and that M. M. Baldridge says he wants nothing to do with boats; that O. M. Blanton will say that he supposed that C. O. Perrine had settled this question; while friend Heddon has, I believe, expressed the opinion that such a scheme could not be made profitable though a golden harvest be encountered every ten days. Perhaps they are all right, but give me the golden harvests and I'll take my chances with the other conditions. I know that the labor, expense and risk involved are not to be passed by as trifling matters, but, to my mind, the inability to forecast coming crops is by far the most weighty factor in the problem. Nevertheless, as the willow, poplar and basswood harvests seldom fail in their respective localities, as mentioned above, I am inclined to be careless of even this consideration. Indeed, at the risk of being dubbed a utopian schemer and apiarian "crank," I will engage, health and family permitting, to take twenty-five colonies of bees and $500 to cover each season's expenses, and, for five successive seasons, increase the number of colonies, on the average, to 100 each year, and secure an average yield, each season, of 10,000 pounds of surplus, half comb, or forfeit the amount above mentioned to the Bee-Keepers' Union.

Why can't I forget that you are expecting me to tell your readers about my present venture? I had hoped to be spared the recital of the story of comparative failure, for a month or two, when, mayhap, a late flow might allow me to retrieve my shattered fortunes; but the facts will come out sooner or later, and even my failures may help others to succeed.

The 20th of last April, I took charge of 100 colonies located on the M. & O. road in northwestern Tenn. I had bargained for very strong colonies, in ten-frame L. hives, with straight combs full of honey and brood. Examination showed that not more than one-fourth of the number answered this description. The remainder ranged from very weak to medium, and several were on the verge of starvation. Sixteen were in box hives, while nearly all the others had combs running across the frames. I had been detained at home several weeks on account of sickness, and poplar was already in bloom; hence there was no time to look for a better showing elsewhere. The party of whom I had bought the bees said he was selling because he hadn't the time to care for them; but, from the scarcity of poplar and the abundance of bees in the neighborhood, an over-stocked location might also have been mentioned with propriety. It took over two weeks to straighten crooked combs, get rid of drone comb, transfer from box hives, etc. Luckily, the honey flow was kept back during this time by cool weather. That from poplar lasted two weeks longer; after this the gums and clover furnished a little for a similar period, during which the brood nests were extracted in part and preparations for shipping completed. In round numbers, 2,000 pounds of comb honey and 1,500 of extracted were taken. Queens had been clipped and but little increase allowed. Ninety-four colonies were handled. Previous to shipping, about twenty of the strongest colonies were divided, queens having been reared for that purpose.

With a view to controlling temperature, a refrigerator car had been ordered. When about to load, I learned that no steps had been taken to provide the car with ice as agreed upon. Only 500 pounds of ice could be had in the place, and what there was proved useless for the purpose. It was already late, and I feared hot weather if longer delayed. Neither stock nor ventilated car being available, I determined to start, relying on open doors for ventilation. There were small doors at the top, at each end of the car, as well as the side doors. The mercury ran up to 95 outside, and the colonies farthest from the doors became overheated. Night coming on, the temperature moderated, and the loss would not have been great had direct connections been made at junction points and a circuitous route avoided. Forty hours would have been ample time in which to have reached my destination; as it was, in spite of protest and entreaty, several long and unnecessary delays were permitted, and ninety hours were consumed in making the trip.

Upon arriving at this place (Wauzeka, Wis.), June 11, seven of the best colonies were melted down, and, upon an average, fully one-half of the working force in the other colonies was dead; but, *as the bees had been furnished with sweetened water twice a day on the route, the brood was commonly in good condition.* (Italics ours. ED.) Clover was in full bloom, but cool weather again kept back the honey flow, and gave the bees a chance to build up in a measure. Several weak colonies swarmed out, and nineteen in fair condition were added to the lot by purchase.

I had been led to believe that an unoccupied field awaited me at this place, and was much disappointed in finding nearly 200 colonies already on the range. To make matters worse, my supply of sections, crates, etc. was allowed, through the gross neglect of railway officials, to remain three weeks at a station near by. When finally secured, the bees were beginning to swarm for lack of room, and basswood was about ready to blossom. To cap the climax, the sections (not my own make) were found to be so wretchedly inexact as to be almost worthless.

The swarming fever took possession of the apiary and lasted through basswood; but out of more than 100 swarms that issued, only eight were hived in new hives; the rest were either returned or used in strengthening weak colonies.

After working almost night and day during this time, having the aid of a 17-year-old helper, only 4,300 pounds of section honey (not all sealed at that) and 1,200 of extracted were taken. As the hives are large and the bees lacked for room, at least 1,000 pounds more extracted might be taken and yet leave enough for winter stores.

Had conditions been favorable from the outset, it would have been an easy matter to have taken twice the surplus. There is, however, a sort of negative satisfaction in learning that the 200 colonies left at home have not, so far, done as well.

My location is on a hilltop, overlooking the valley of the Wisconsin on one hand and the Kickapoo bottoms on the other, so that, with favorable weather, the prospects of a late yield are good. It also is very gratifying to know that the honey from this source is light color, good flavor, and well adapted as a winter food for bees.

I now have 133 colonies, mostly in good condition; and it may be of interest to learn that my expenses, including cost of bees, have, thus far, been about $700.

WAUZEKA, Wis., Aug. 5, 1889.

PRAIRIE DU CHIEN, Wis., Aug., 28, 1889.

Friend H.— Your postal asking about the speed of Mississippi boats was duly received, but as I was preparing to move some bees to near this place, I thought I would wait and I might learn something more definite. Since coming here I have seen an engineer who has worked several years on Mississippi boats and he says the time of the general freight and passenger boats is from ten to twelve days from New Orleans to Prairie du Chien; but there are raft or tug boats that usually come up empty, stopping only for fuel, that make the trip in little over half the time, and will take tows at reasonable rates. He says, also, that barges may be bought, at Memphis, for a song—$25 or $30. They will hold several hundred colonies, and originally cost several hundred dollars. They are built by parties moving down stream, who, having no further use for them, sell them for what they will bring. As there is plenty of time between harvests in coming up the river from New Orleans to Memphis, the bees could be shipped that far by regular boat, then transferred to a barge. It is quite likely, however, that such barges can also be bought as cheaply at New Orleans. I am confident that by this means we can keep up with the season; and, if in the hands of the right man in an ordinarily favorable season, this is the only thing necessary to make a success of the undertaking.

I have recently fixed on a location near the mouth of the Wisconsin, where basswood covers the bluffs six miles up the Wisconsin (on one side of the river) and for some distance down the Mississippi. Raspberries and clover abound, while thousands of acres of bottom lands are covered with fall flowers. The other night I moved sixty-five colonies twenty-two miles on two hayracks, to this location. The route lay over one hill nearly a mile long, I should judge, and so steep that the wheels had to be locked with chains most of the way. The sparks from the tires grinding on the rocks furnished about the only light except that given by the stars twinkling above the bluffs that towered hundreds of feet high, hard by on either side.

BYRON WALKER.

Incidents in the Perrine "Up the Mississippi" Scheme—It was Terribly Mismanaged.

Boating it up the Mississippi Is too Slow.

C. I. RALCH.

ABOUT April 3, we took the train for New Orleans. In central Miss. we found the early honey harvest past and gone and the wild red plum half grown. Arriving at New Orleans about April 7, we found the bees nearly done swarming and entirely through storing surplus; and Mr. Perrine and Graby taking things very cooly. I stayed there eight days; one or two swarms per day coming from 500 colonies. We then went to Yazoo city to get together 300 swarms as fast as they came out. (These Mr. Perrine had bought of Mr. John Smith.) Here I stayed and put together 300 hives. Smith had 300 colonies just ready to swarm but the honey harvest was over. Only about forty swarms came out, and we made ten or twelve more. Not enough honey came in to supply the needs of the bees, and we had to feed the young swarms to keep them alive.

About June 1, we put fifty colonies on a steamer for Vicksburg to meet Mr. Perrine with his steamer which had 800 colonies on board and was away down in Mississippi. In the meantime, the honey harvest was away up at Burlington, Iowa.

Now I would say that in my opinion, no boat can start from New Orleans, when the honey harvest is done there, and keep up with it so as to have the bees gather the honey in the next place above. In the next place, when bees are put on board a boat, no matter how much ventilation is given, they will carry out their brood. In one day and a half mine had carried out theirs. There were two-inch holes in the back of the hives, the whole tops of the hives so that the bees could go up into them, and the whole fronts covered with wire cloth, yet the bees could be seen running about with brood in their mouths.

At Vicksburg, I took the bees out on an island to let them have a flight in a grove of not very high trees. In a short time I had nearly ten bushels of bees, queens and all, in one mass in the tops of the trees, and no ladder to get them down. This, I think, would be all the experience that one man would want in "Migratory Bee-Keeping." I finally succeeded, however, in getting them down with the loss of only one queen.

That night Mr. Perrine came up with his steamer.[5] He had taken the bees off the barges and put them on the boat. We ran out to the island, put on the fifty colonies, and steamed up the river.

The next morning Perrine took me around the aisles to see the bees. There were from two to three quarts of dead bees in each hive, while the stench was enough to take away one's breath. I went to work removing the dead bees, and bushels were removed every day until we arrived at St. Louis. We went about forty miles above there, and found white clover nearly gone, but we made up our minds that something must be

done; so we tied up, took the bees off the boat, and set them out in a sort of open grove. Within one hour, they were nearly all in the tops of the trees, dropping down bushels at a time, with queens and without them. Here I was taken sick and obliged to leave for home, reaching there June 22.

This, in brief, is my experience. As to my views, I doubt if any steamer can stem the current of the Mississippi fast enough to keep up with the honey harvest; but I think there might be a car made that would be a sucess. Everything must be done promptly. If we knew, or could calculate closely, when the willow was going out in one locality and coming in north of there, it might be successfully utilized. Having made the most of the willow, then go to the white clover.

The colonies must not be too strong, the queens should be clipped, and the hives so placed that, if the bees come out, they can return.

I am no longer working with bees: the fifty colonies that I own are let out on shares and I am now giving more time to the raising of horses.

KALAMAZOO, Mich., Aug. 7, 1889.

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THE DISCUSSION ON WINTERING TO BE CONTINUED.

Even though the last REVIEW contained twenty pages, the "Migratory" discussion extended over into this number—yes, and crowded so hard that it has pushed out articles from such men as Taylor, France, Bingham, and Larrabee. Mr. Manum has also promised to write on "Out-door Wintering" in time for the October issue. Taking everything into consideration, we have decided not to try to put all the discussion upon this subject into this number, even by adding extra leaves, but let it run over into the next issue; and if what we now present moves some one else to write, well and good. We would prefer to have all of the discussion upon one subject gathered together in one issue, but that the truth be arrived at is far more important.

FAIR PROSPECTS FOR THE SUCCESS OF MIGRATORY BEE-KEEPING.

We are proud of the discussion upon "Migratory Bee-Keeping." We doubt if anywhere in this wide world could there be found so much reliable information as we have gathered together. When judiciously conducted, the migratory plan has been, and will be, remunerative. It is true there have been failures, most disastrous ones, and so have there been in stay-at-home bee-keeping. We must remember that this is a comparatively new branch of bee-keeping, at least in this country, and the "precedents" are few and far between. There is one grand fact upon which to make of migratory bee-keeping a success in the fullest sense. It is that the honey flow opens in the South in February, and advances northward with the season. Could bees be kept "in clover," or some other excellent honey field, several months, the yield would be something enormous. The difficulties to be overcome are those of transportation. To quickly, cheaply and safely move the apiary, without loss of bees or brood, solves the problem. We still have faith in the Mississippi plan. In this there are no "junction points" to cause delays. When not "on the move," the bees may be "on the wing." Some of our correspondents have expressed doubts as to a steamer being able to climb the Mississippi with sufficient rapidity to keep pace with the advancing bloom. To us, this seemed so unreasonable, that we wrote to E. T. Flanagan for his experience on this point. He says: "The regular New Orleans and St. Louis boats, on which I have shipped hundreds of colonies, make the trip from New Orleans to St. Louis in seven or eight days; sometimes less. (This is nearly "half way" up the Mississippi. ED.) It is absurd to say that a boat that can and does make this distance in a week, can't keep up with the season. The plan is practical and feasible. It will not answer, however, to wait until the bloom is *entirely* over in the lower locality before starting for the upper one. This is the mistake Perrine made." Of course, bees moved in hot weather must have abundant ventilation: but, as a correspondent says, this alone will not save the brood. The bees must have *plenty of water*. It has been urged, and with a fair show of reason, that a colony that has just gathered a bountiful harvest is not in the best condition to store another crop. Re-queening at the right time

will, we believe, remove or mitigate this trouble. As obstacle after obstacle has been removed in home-bee-keeping, so the migratory plan may yet be robbed of its drawbacks. Right here a hypothetical question comes to mind. Supposing that an apiary moving up the Mississippi, secures six crops of honey—six times as much as a stationary apiary—would this be more profitable than six stationary apiaries? In other words, which is the more promising field for enterprise, following up the season, or establishing out-apiaries? Upon this point there are many things to be considered, and varying circumstances would probably lead to different decisions. Interesting though it would be, we have now neither time nor space to discuss this phase of the subject. When we take up "Out-Apiaries," as we probably shall ere long, then this part of the subject can be discussed. But the majority of our readers are probably more interested in that plan of migratory bee-keeping that consists of loading the bees on a wagon and moving them five, ten or twenty miles to some locality abounding in honey plants not found at home. As our friend Walker remarks, a good locality for clover and basswood is usually a poor one for fall flowers; and should we be fortunate enough to secure a locality affording an abundance of both early and late pasturage, the greater will be the likelihood of our being obliged to divide the field with some intruder. Both points are exceedingly well taken. We would never move bees to new pastures when there was a reasonable prospect of securing a yield at home; but we are fully convinced that it may be done at a profit when the home locality will furnish no honey, and the probabilities are that one a few miles away will.

Since the above was put in type, we have received a letter from Byron Walker (it appears on page 152, at the end of his regular article), and it would seem that, after its perusal, no would-be "migrator" need longer fear that the Mississippi cannot be ascended with sufficient rapidity.

BEE-CONVENTIONS AND ASSOCIATIONS.

This is to be our special topic for October. The season for holding conventions will soon be here, thus the topic will be a fitting one. These gatherings are intended for the interchange of thought, the exchange of views and experiences, and the enjoyment of the pleasures that arise from a personal acquaintance with those engaged in the same pursuit as ourselves. Years ago, bee-keeping literature was not so plentiful as it is now. Then, if a bee-keeper heard of a paper containing an article "on bees," he would tramp away off across the town for the sake of reading it. In those days, to attend a convention was a *great* advantage. Those days are past. Apiarian books and journals are plentiful and cheap. Through these mediums the diffusion of knowledge has become well nigh universal. Even a *thought* is no sooner born than it is wafted on the white wings of journalism from one end of the land to the other. So fully do the journals keep abreast, yes ahead, of the times that conventions can do but little more than talk over what has been already discussed in the journals. For a few dollars, the bee-keeper can have the best books and all of the journals published. With these he can sit down in the quiet of his home and read them at his leisure. Under such circumstances, every point is taken in and comprehended: in the hurly burly of a convention many things are not always clearly understood, or are driven from the mind. How many up-with-the-times bee-keepers now go to these meetings expecting, as the result, to come home loaded down with information? Not many. It isn't for that they go. It's to meet with the "boys." It would be too sweeping an assertion to say that no valuable knowledge is exchanged at these gatherings: but, owing to the thorough manner in which the journals do their work, conventions are, more than ever, great big, visiting bees. "But to meet our brother bee-keepers, to grasp their hands, to rub our minds against theirs in actual, personal conversation, is a great thing. It brightens us, it sharpens us, it gets us out of the ruts, and we go home with a feeling of vim and freshness about us." So we felt and wrote after returning from the last meeting of the North American at Columbus; and so we still feel, but can't our conventions and associations be improved; be made to help us more in a financial way? We know it is not best to so magnify the almighty dollar that it hides everything else, but of this there is no danger in this connection. The social feature "will out;" the bee-keepers *will* visit; so it is with a clear conscience that we may turn out attention to the more utilitarian advantages that may be gained by association. First, a few words about the management of

conventions. No convention can be a success in the highest degree without a goodly attendance: and this cannot be secured without low railroad rates. For this reason, conventions, unless they number sufficient in themselves to secure reduced rates, ought to be held during the holidays; at the time and place of some exposition; or something of this sort that will secure reduced rates. Hotels will grant reduced rates, and often furnish a room free for holding the sessions. In many places, a public hall, or room, may be secured free of cost. Having reduced all other expenses to the minimum, let the *fees* be *doubled*, the best man possible secured for secretary, and *paid a good salary*. Pardon us friends, if we now relate something that sounds a little egotistical. The Detroit meeting of the North American Bee-Keepers' Society has been pronounced one of the best, if not *the* best meeting, that the Society ever held. Not all of those who enjoyed that meeting knew of the hard work behind it. As secretary, we kept up a "running correspondence" all the summer and fall, and during the three weeks previous to the meeting gave up our time *wholly* to completing the arrangements and attending to the correspondence. In all, more than 500 letters and postals were written. Then came the work at the convention, and afterwards the transcribing of the shorthand notes and the preparation of the report for publication. For this work the convention voted us $50. But friends, out of this came $30 to pay for stationery, postage, telephoning, telegraphing, and traveling expenses in making arrangements for the meeting. So we actually received, from the Society, $20 for as hard a month's work as we ever did. We are not complaining. With its present rate of dues, the Society could pay no more. But suppose the dues were raised to $2.00, or even $1.50? The secretary is the soul of an association. It is he that must enthuse the members with a desire to attend: must arrange for railroad rates: get up the programme: and, with quick ear and nimble fingers, furnish a report of all important sayings and doings. Without such work on the part of the secretary, a successful meeting is the exception: and it often happens that the man best fitted for this position is the least able to *give* the society so much time and labor. It ought not to be expected. An additional fifty cents from each member would pay a secretary so well that he could afford to put in a month's work in "getting up the meeting;" and its usefulness would be enhanced many times the cost. The American Nurserymens' Association this year pays its secretary $150. In this society the annual dues are $2.00. Referring to this society reminds us that, two or three years ago, it expended $300 or $400 in sending its best men to attend the meetings of railroad officials, with a view to securing a new classification of nursery stock and a consequent lowering of rates. After an immense amount of labor and many tedious delays, their requests were granted, and thousands of dollars have since been saved to nurserymen in freights. Bee-keepers may not need anything in this direction, and they may, but the illustration used shows what may be done by association, by united effort and a little *money*. As Bro. Newman remarks: "If the Bee-Keepers' Union had money, it could *compel* the newspapers to tell the truth about honey." Money talks. After a body of 100 or more bee-keepers have paid, upon an average, say $10 each, in attending a convention, one or two dollars more from each would be a comparatively small burden, but, in the aggregate, it could be made to work wonders. We have three International Societies. The Bee-Keepers' Union, (and its manager ought to have pay) that defends its members against unjust attacks; the American International Society, that holds conventions for the exchange and diffusion of apiarian knowledge; and the Honey Producers' Exchange, that aims to furnish its members with prompt and reliable information as to the honey crop. To be a member of all these societies one year costs $3.00; would it be better if they were consolidated under one management, with annual fees of $3.00? We know this idea has been broached before, but, after a little discussion the matter has been dropped. We know there are obstacles in the way of such a combination, but, if it is desirable on the whole, they can be removed. We feel sure there are many important advantages that bee-keepers may secure by a grand combination, earnest united effort, and the judicious expenditure of a little money; and it is with a view to this end that we invite a most thorough discussion of the matter in the next REVIEW; then when the fall and winter conventions are held we shall be prepared to discuss the matter still more intelligently and to *do* something.

THE BEE-KEEPERS' REVIEW

VOL. II. FLINT, MICHIGAN, OCTOBER 10, 1889. NO. 10.

The Influences of Conventions are Elevating.

DR. A. B. MASON.

WHEN I SAW an article by Mrs. Chaddock, entitled "Bee Conventions," on page 185 of the REVIEW for December last, I wanted to say something on the subject, but realizing that the REVIEW was devoted to some special subject each month, and fearing what I might write would find its way into the waste basket, I "held my peace." I now see that the October number is to discuss "Bee-Associations and Conventions."

It may be true, as the REVIEW says, that "not many up-with-the-times bee-keepers now go to these meetings expecting, as the result, to come home loaded down with information. It isn't for that they go. It's to see the 'boys.'" (And girls?) It may be that such "shining lights" as "ye editor" don't learn anything, but there are some who may not be classed with "up-with-the-times bee-keepers" who *do* learn many things at these meetings.

Is Mrs. Chaddock's opinion, that it does not pay to attend these conventions, unless one has an ax to grind, of any value? Has she had any experience in the matter? I have never heard anyone who has attended "these conventions" express any regret for the time and money spent in so doing; but I have frequently heard the expressions: "I'm glad I came." "I feel well paid." "It has been a real treat." Etc., etc. Mrs. Chaddock is certainly not posted when she accuses certain ones of having "an ax to grind:" unless her meaning of that expression is different from the generally accepted one. I had supposed that the saying meant that persons "having an ax to grind" were those having something to sell, or those working to secure some influence by which money was to be made. I have never known Prof. Cook to make any effort at any convention to sell his book, or to secure an honorable position, but he is always trying (and succeeding) to help others to get upon a higher plane of intelligence and goodness. So I guess, after all, I'll have to admit that it *does* pay him to attend conventions; and I *know* he helps make it pay others to attend.

Thank fortune, or any good influence, all the people in the world are not so many bundles of selfishness; and many have learned the truthfulness of the statement that; "It is more blessed to give than to receive."

That it pays Messrs. Hutchinson and Root, in dollars and cents, to attend conventions, I very much doubt. I have never known them to offer anything for sale, or to attempt to advertise any of their wares; and if Mrs. Chaddock thinks it is a necessity for "D. A. Jones to be there to keep up with the times," I think she is very much mistaken.

I have no doubt that "Mrs. Harrison gets better pay for what she writes because she attends the conventions," but if that is *all* she goes for, and all she gets, I'm sure she misses the better part that others get. If such is the case, then Mrs. Harrison is the only one who "has an ax to grind;" but we know it is not with the ladies as it is with the men; for I'm inclined to believe as Thackery says: "Since the days of Adam, there has been hardly a mischief done in this world but a woman has been at the bottom of it."

Mrs. C. can't even let *me* alone. She says I "can sell my recipe for preserving eggs." Well, maybe she knows more about it than I do. I never did sell anything at a convention, nor attempted to, but if I should have the pleasure of meeting her next December at Brantford, I shall try my powers of persuasion on her in that line.

If anyone can listen to one of our friend Newman's soul-stirring addresses; or one of Prof. Cook's familiar, interesting and home-like talks, and not feel *paid*, I would just like to know what he or she is made of. And it is worth something to give that everybody's-friend, A. I. Root, a racket, and listen to his friendly way of talking to us; and to shake hands with such Canucks as Pettit, Corneil, Pringle, Jones, McKnight, Macpherson, Hall and Emigh, is not to be lightly esteemed, to say nothing of the ladies we *don't* know but who will be at Brantford. Then add the United States to the galaxy, and say it doesn't pay if you *dare*.

It may be possible that it would not pay a large majority of bee-keepers to attend the meetings of the International, but for "such poor mortals as I" it pays if one has the "needful" to spare. I have never yet regretted having attended our International gatherings, and although it may not be a source of direct financial income to attend bee-keepers' conventions, farmers' institutes, horticultural meetings, political caucuses

and conventions, literary gatherings, the weekly prayer meeting, the Sabbath school and religious Sabbath services &c., &c., I believe it is a duty we owe ourselves, our families, our neighborhood, our country and our God, to make use of every right influence to help elevate the "standard of excellence" in every direction that lies within our reach. Poor as I am, I would not relinguish the kindly greetings, the pleasant and valuable acquaintance I've made, the information I've gathered and the elevating tendencies of such gatherings for many times what it has cost me in time and money, and if the purse will stand the strain and nothing unusual prevents, my "better half" shall, in the future, share with me, the benefits of our International gatherings, as she does the others I have named.

There may be a grain of selfishness in my wishing to take Mrs. Mason with me into Canada. Perhaps you know some of the Canucks have been threatening me with some pretty rough handling if I ever put my "foot on Canadian soil," and it may be possible that they will let me alone if Mrs. Mason is with me.

Let everyone who can afford it, be at the convention at Brantford, and if they think it doesn't pay, I'll see that some one passes the hat for their benefit.

AUBURNDALE, Ohio. Oct. 2, 1889.

Conventions no Place for Implements—Success of Conventions Largely Dependent upon Their Location.

JAMES HEDDON.

I WILL BE brief for two reasons. First, each topic is crowding each number of the REVIEW. Second, you very nearly exhausted the subject in your leader and said so many things that I cannot touch upon without using the same argument you have, that I will only try to make the points you have left out, and then quit.

I believe our conventions can be improved by leaving at home samples of apiarian supplies. Although I have been urged considerably to bring implements to conventions, I have very seldom done so. We naturally talk about hives, smokers, queen-excluders, knives, etc., but cannot we understand them without having to have a lot of traps lumbering up the room, most of which are worthless and which take a good deal of the attention of the members, when they ought to be giving their attention to something else. Touching this point, I will here say that if I have had one, I have had fifty letters from bee-keepers, asking me to send them one of my new hives to exhibit at some fair or convention. In every case I have written them that I do not want it exhibited. I want it to win its way, if it can, *by actual use in the apiary*, and if not in that way, certainly in none. You will remember, Mr. Editor, that my break-joint, bee-space honey board was exhibited by different persons at conventions in different parts of the country, over and over again, between five and ten years ago. You will remember that I wrote about it, that I illustrated it, that I declared that it was a great advantage to bee-keepers; in fact, almost an indispensible addition to a hive; but, for all this, bee-keepers at conventions and through the Journals, said, "No, we don't need any honey board; it is only an expensive and useless appendage." It took years for it to get to the front, but *now* it is there.

Every inventor who really thinks he has something of intrinsic value, very much prefers to have it tested by actual work in the apiary, and not piled on a table to be theorized over by bee-keepers who happen to attend a convention. There are a great many implements in the world, of which a very large majority of users cannot comprehend the value with their brains, half as quickly as with their hands. I mean to say that actual use with the nerves and muscles will find out the advantages of an invention long before the brain can conceive it by theory.

You have made many good points in favor of conventions. Another important point to be considered is that the value of a convention depends largely upon where it is held. The Northwestern Association, as long as it holds its convention in Chicago, at the time of the Exposition, will be, no doubt, the largest and most enthusiastic; consequently, the most valuable association of bee-keepers to be found in this country. The reasons are obvious. Chicago is a great central point. Every autumn very low rates can be had on all of the railroads leading thereto, and upon those roads reside a large number of practical and successful honey producers; so it makes no difference whether it is called the National convention, a Northwestern convention, a Cook County convention, or a Chicago convention, it will always be a good one and draw according to the convenience and nearness of the right class of bee-keepers. Please notice if the convention held there this fall does not prove to be the best held in the country.

DOWAGIAC, Mich. Sept. 16, 1889.

Conventions Bring out Practical, Modest men who Don't "Write."—Let the Secretary get paid by Increasing the Attendance.

R. F. HOLTERMAN.

YOUR special topic for October is an extremely appropriate one. The points taken up by yourself in the September number are excellent. I will take them up in order.

I cannot agree with you that bee-literature will enable us to learn all that a convention may teach us. We glean fresh thoughts from the remarks of others; we hear from our best bee-keepers, those practical men who, with all their knowledge, can never be induced to *put it on paper*. We hear there, privately, those who are too selfish or too modest to say what they may have discovered, except to a few individuals. I grant, however, that the usefulness of conventions

is *lessened* through the abundance of cheap literature.

We enjoy the social part of a convention and form an opinion of the worth of the writings of those we afterwards hear from on paper.

I heartily agree with you as to the secretary-ship. It requires more work than anyone can be expected to do free of charge; and if any association could get money enough ahead, through membership fees, to pay a secretary, it would, I believe, be money in pocket, and such an association would have more successful meetings. I am not in favor of increasing the membership fees; let the secretary exert himself to increase the membership list. This has generally been a good honey season, a secretary should make a success of a meeting with half the labor required in a poor season.

There is one more point you have not touched upon and which is important. Let each bee-keeper organize himself into a local secretary and make every effort to induce others to become members, and, better still, attend. So often a spirit of contention, party feelings and the like, creep in, to the injury of an association. If from no higher motive, the welfare of the association demands that we should do all in our power to prevent this. Anything like *wire-pulling* ought to be cried down; and I honestly believe that canvassing before elections for votes for friends or those we think will best fill the positions, does more harm than good. It genders strife.

ROMNEY, Canada. Sep. 20, 1889.

Protection of Bees When They Need it, vs. All the Year Round.

T. F. BINGHAM.

SMALL HIVES and the reduction of honey in amount to the absolute requirements of winter have rendered necessary some compensating appliances, or different management. The greed and avarice of bee-keepers who, copying the instinct of their bees, ruthlessly take all they can get and squeeze their subjects into the narrowest possible domain, prescribing rules and methods of diet and rate of consumption, carefully figuring out how long 5,000 bees can survive on half rations, has led to a vast amount of theoretic display and renderd more necessary and constant the care of bees, at the same time increasing the risks and multiplying the losses. How, and by what means to compensate for the lack of honey and room in which and on which to winter and spring a colony of bees, has long occupied the attention of bee-keepers, bee-conventions, bee-books and the makers of hives. How best to promote and perfect the time-honored plan of out-door wintering, with our present hives and system, is a difficult question to solve.

One theory, however, it may be well to combat at the outset; viz., that the air in a bee-hive passes up through burlap and sawdust laden with excreta and five gallons of water evaporated from the slow consumption of two and one-half gallons of thick honey. Does anyone suppose that such air under such conditions would do any such thing? He who covers his bees with so much slow-heat-conducting material as to prevent the too rapid escape of the heat generated by them, accomplishes all that is possible, irrespective of avenues of escape or means of absorption.

Lucifer matches are made of soft, pine wood, as that has proven easy of ignition without previous or more heat than that furnished by the material used by match makers. These pine sticks ignite more readily, however, just in proportion as they are slender; showing that even pine of the softest kind, which means the most porous to a certain extent, conducts from its surface the heat that is applied to it.

The above illustration explains why pine is superior to other wood as a summer or a winter hive. This principle carried out fully would adapt, so far as material goes, the protection to the exposure. To determine, then, how much of this slow-conducting material should be used, would simply be to ascertain the maximum of exposure. Right here let it be distinctly understood that no substance is a non-conductor, and that the greater the quantity of even the poorest conductor with which the bees are surrounded, the better will be their protection. One foot of sawdust would be of more than twenty times the value of one inch of the same material; while one inch might in some instances make all the difference between death and a narrow escape from it. It might be mentioned in this connection, that rotten wood is one of the best non-conductors of heat. When perfectly dry, it is equal if not superior to cork. Cork has one advantage not possessed by rotten wood, it is not easily wet.

It is well known that an extremely cold night, or a sharp, cold storm may come at almost any time, but such cold is rarely of long duration; and it is the province of this slow-conducting (not *non*-conducting) material to convey back to the bees the surplus heat that it has absorbed from them, and thus equalize and average the temperature enveloping the colony. No one will fail to notice that, in this way, a uniformity of temperature in surroundings is simply one of natural law, and not due to the escape of moisture, or moist air, or bee-breath, or any other escape, but simply to the retention and slow parting and absorption of the normal heat generated by the bees. A thorough knowledge of this fact lies at the foundation of success in any system of out-door protection, and renders many of the theories easy of solution.

Right here I wish to put in a word about the much-talked-of theory that bees "warm up and fly in winter from being in thin hives," while they don't warm up and fly from judiciously protected hives. In the language of the street, "they don't have to." The same heat that would warm a colony in a thin hive would more thoroughly warm one in a hive having an inch hole for an entrance, with a foot of fine hay or sawdust surrounding it. It is not because the bees

in the thin hive have been warmed, but because the conditions surrounding them are such that repose is impossible, and that instinct determines their hazardous flight. Not so with the judiciously protected bees. Their surroundings have been such that they have no disposition to fly. They do not feel the instinct to fly. They need not fly. Unlike their fellows in a thin hive, their comfort and safety have been and now are most conserved by repose.

The usual recurrence of cold, weeks after bees have been taken from the repository, has led to almost indefinently retaining them in the repositories to avoid the exposure incident to thin hives. Any method of packing requiring its removal to manipulate the combs has also necessitated the later continuance of protection. And while, in the out-door method, this ,'later" is not usually of importance, yet, in some instances, as, for instance, last spring, when the extreme wet and cold swept down upon us after a season much advanced and full of promise, much loss and inconvenience occurs from unpacked hives.

Heavy hives have objections, and to avoid these objections, other not unobjectionable devices have been attempted. And while successful in a certain sense, not much headway has been made in securing the advantages of packing without a corresponding inconvenience, either in weight and ponderosity of hive, or spring and autumn handling of material used.

One fact, however, of paramount importance, is that of spring protection. In the Northern honey-belt it is a desirable adjunct and cannot be omitted either in hives wintered in the cellar or upon their summer stands, with confident assurance of the best results.

One feature must always be a factor in Northern wintering, that of an ample space below the combs. Such space should be large enough to hold all bees that may die. It should be of two or more inches, whether in the cellar or out of doors, and susceptible of being reduced to the usual half inch in summer. Such a space below the combs, a foot or more of sawdust or chaff over the bees and as much elsewhere about them as can be stored, with good goldenrod honey, thirty pounds to the colony, the hive having a hole an inch in diameter for an entrance, will, as a rule, accomplish successful winter and spring wintering.

ABRONIA, Mich., Aug. 28, 1889.

Good Food and Protection Furnish the Key Note—A few Other "Kinks" That Help.

E. A. MANUM.

IT IS purely your fault, Friend Hutchinson that this article appears upon the otherwise clean and comprehensive pages of the REVIEW, you have proven yourself to be such a "sticker" that I finally decided to place my poor, feeble shoulder to the wheel and do what little I could to help you up the hill. I notice, however, that you already have some powerful men, and it is difficult to find a vacant place where I can be of any service, as they, with yourself at the lead, have covered nearly the whole ground.

But I will try to give you my method of out-door wintering. I agree with your friend Heddon that "success is largely a question of locality." I believe it is not only the locality—or place—where the apiary is situated, but the quality of honey which the locality furnishes for winter stores, that has much to do with the successful wintering of bees. I prefer a locality where no honey-dew or but little pollen are gathered late in the fall: as I prefer to feed sugar syrup rather than risk my bees on honey-dew. In either case, however, I would choose a well sheltered spot for the apiary. It is not always an easy matter to find exactly the right spot, but if not already well protected by nature, I would construct artificial wind breaks by setting out a hedge or building a tight board fence. I have already done this to protect the bees from the chilly winds of autumn and spring, as well as to prevent the snow from drifting around, and over the hives as much as possible. I once thought that when the hives were well covered with snow the bees were better off than in those that were not so covered, but experience has taught me that too much snow is a damage, especially when drifted over the hives.

I use chaff hives, packed on four sides with planer shavings made from kiln-dried pine or poplar lumber. The packing is two inches thick at the sides and three to four inches at the ends. These hives after once being packed remain so summer and winter. I believe the packing is beneficial not only in winter but in fall and spring as well, as it prevents the bees from flying out when the weather is not suitable. With thin packing, or single-wall hives, the sun shining on them, even on a cold day, has a tendency to make the bees uneasy; but with thick packing a few hours of sunshine seems to have no effect upon the bees, hence they remain quiet until the weather becomes warm enough for them to have a good flight and return to the hives in safety. I aim to put on the top packing just before winter sets in. I usually do this work about the first of November in order that the bees may have at least one good flight after they are prepared for winter, that they may form their winter cluster after the top cushions are put on and not to be disturbed again and the cluster broken. I prefer not to go near my bees again after this work is done, until it is warm enough for them to fly, even if not until April.

Believing that dampness or moisture in the hives is detrimental to the welfare of the bees, I aim to prepare them for winter in such a way that the excess of moisture may escape before it condenses inside the hive. This is done by placing a sheet of cotton cloth directly on the top bars of the frames and over this a cushion six inches thick made of cotton cloth and filled with planer shavings. When the cap is placed on the hive there is a large vacant space over this cushion for the full circulation of air, there be-

ing 1½ inch holes in each gable end to admit the fresh and dry air into the cap and over the cushion. In very cold weather I often see frost on the top of the cushions showing that the moisture from the brood chamber passes up and through the cushion. There is one thing certain, the interior of my hives is always dry. I have wintered bees in this way for 15 years with very good success, and I notice that my bees do not dwindle so badly in the spring as do those that are wintered in-doors, while the protection enables them to build up very fast early in the spring.

I believe that double-wall hives have many advantages over single-wall hives; not only for wintering but for summer as well; not only for the bees themselves but for the apiarist also, as the hives are never moved about after once being set. I prefer to save myself and my men much lugging and tugging of hives here and there by simply carrying a swarm—or cluster—of bees to the hive, rather than to carry the hive to where the bees are clustered; and, after hiving, carry hive and bees to the stand. It seems to me that the time is near at hand when bee men will learn better than to do so much carrying about of hives when it is so much easier and better to dispense with it.

Now a word about packing material. I believe that fine dry planer shavings make a better packing than fine sawdust, because they lie up looser than fine sawdust. The sawdust is very likely to pack down quite hard, forming more of a conductor, while the shavings, owing to their lying up loose, act as a non-conductor, forming, as it were, many small dead-air spaces within the walls of the hive. I do not mean to use large, coarse shavings made by planing unseasoned lumber, but such as are made by planing thoroughly seasoned lumber, then the shavings are small and curled up somewhat. I have used sawdust both coarse and fine, also hardwood chips from turning lathes, chaff, leaves, buckwheat hulls, also no packing at all. But, I prefer the fine planer shavings to all else that I have ever used.

When preparing the interior of the hives for winter I am usually very particular to see that there is honey enough in the hive for winter stores—to place the fullest combs at one side of the hive and those only partly filled at the other side, as these partly filled combs usually contain more or less brood the bees will of course cluster on these combs and when winter sets in, and the brood is all hatched, the bees commence there to consume their stores, and naturally work towards the full combs, hence are not obliged to shift from one side to the other over empty combs, as would be necessary if the full combs were on either side, and the empty ones in the center as they usually are when left as the bees naturally have them. This changing about cannot be so nicely done with the large "L" frame, because in this frame the honey is usually stored at each end of the comb, and the brood or empty space in the center. With my small frame the outer combs on either side are filled solid full down to the bottom bar, hence they can readily be shifted about.

And again, when the bees do not secure a sufficient amount of fall honey for winter (a very rare occurance here in Vt. when they do), by thus placing the honey at the back side, and feeding sugar to make up the deficiency, the sugar is stored last, and consumed *first*, which I consider better than honey for the bees during the coldest part of winter, while, on the other hand, I consider honey much better than sugar for brood rearing. Therefore, my preference is sugar for winter and honey for spring. But the prospect now is that for the coming winter it will be honey-dew for winter, and honey for spring, unless the apiarist comes to the rescue either by extracting and feeding sugar, or by placing the early gathered honey in front nearest to the bees and the honey-dew at the back side, and the further back the better.

BRISTOL, VT., Sept. 17, 1889.

Wind-Breaks, Protection, Large Hives and Plenty of Honey Needed in Out-Door Wintering.

E. FRANCE.

WE WINTER bees out-doors simply because we are obliged to. We have seven apiaries—six away from home—and to build cellars for them all would be a big expense. We would rather lose a few colonies.

To winter bees out of doors, we must have, first of all, a good wind-break. Our bees away from home are all in deep valleys with high timber close to them on the north and west sides. Our home apiary is on high ground with only a high fence (eight feet) to break the wind. We have plenty of cellar room at home, but we don't put the bees in it now. We did put a part of them in the cellar two winters, but had better luck with those out-doors, and we now winter all on their summer stands.

The next thing to be considered is the hive. We would not attempt to winter bees out of doors in a single, one-story, L. hive. We have 150 colonies on L. frames that we winter in the open air with little loss; but the hives are four in one—tenements—with chaff all around the outside to keep the little folks warm; and I find that in cold weather the bees all gather as near the centre as possible. The whole hive is covered with one roof, and we have additional stories to put on each division, so that we can tier them up as high as we wish. We always winter them two tiers high, having the upper tier of comb full of honey. Yes, a large hive and plenty of honey are the main things needed to insure success in out-door wintering.

I will now say a word about those "shot towers" mentioned by Mr. Root in August *Gleanings*. The most of our hives are quadruple hives; each division being a trifle over thirteen inches square by twenty-one inches high, with nine frames standing on the bottom of the hive. Five years ago last winter, just as an experiment, we made three of these hives two stories high. They

were used three years without the loss of a colony in winter or a swarm from them in summer. In the summer of 1886, those twelve colonies averaged 161 pounds per colony of extracted honey, while the balance of the yard (forty-nine colonies, mostly on two tiers of L. frames) averaged only 106 pounds. We then made two more "shot towers," and have never lost a colony in them. Last winter we made twelve more of these tall hives, each holding four colonies, so that we now have seventeen "shot towers," sixteen of them full of bees (sixty-four colonies in all), and we intend to make more of them the coming winter. We think them the most profitable hive we have.

Now we believe that bees will winter as safely in these large, tall hives as in a cellar, providing they have plenty of honey, and as we always have a rousing colony, the big hive is filled as soon as a small colony fills a small hive. We believe bees eat more stores out-doors, but we also believe that they come out in better trim in the spring.

PLATTEVILLE, Wis., Aug. 15, 1889.

Slight Packing Preferable to Chaff Hives—Quality and Quantity of Stores All-Important.

R. L. TAYLOR.

THIS IS a subject upon which I am all at sea. As I make no pretence of ability to say how to successfully winter bees out of doors, I shall make no attempt in that direction; and, at best, can only make suggestions indicating some methods which are not successful.

To be sure, I have wintered bees successfully out-doors, but the methods used on such occasions have proved inadequate at other and more trying times. Several winters I made use of a few chaff hives of the Root pattern, but with me they proved a decided failure. In such hives I used two chaff division boards, and a chaff cushion on the frames, but in every hard winter any other method I tried proved better than this. The other methods used to a considerable extent were two, viz., ten-frame L. hives with five to seven combs, a chaff division board on each side, chaff or chaff cushions in an upper story; and the same arrangement with the additional protection of an outer box, within which was a packing of six or eight inches of straw on all sides and top of the hive. Unexpectedly, the ones without the outer packing wintered the better. So that, so far as my experience extends, ten-frame single-walled hives, with internal packing, stand first in effectiveness; the same with outer straw packing, second; and the chaff hives last. The crucial and final extensive test came in the disastrous winter of '80-81. The best method proved so unsatisfactory at that time that I had recourse to cellar wintering, which has proved so much safer, cheaper and more convenient every way that I have since tried out-door wintering only in a small way, and that has only had the effect of wedding me more and more to cellar wintering.

Between twelve and twenty-five miles east of me are two considerable apiaries where out-door wintering so invariably fails that it is considered more profitable to destroy the bees in the fall, save the combs and honey, and purchase from the South in spring; while about eighteen miles northeast is an apiary where bees, packed, winter out of doors with great success. These facts are suggestive. Leaving out the question of food, who will say that any safe rule can be laid down for wintering bees out-doors in this latitude? If I could winter bees safely out of doors here, would it be safe to say I could do so ten miles from here? I think not. Not that ten miles of latitude or longitude is material in itself, but the difference in the flora which is the source of the fall crop of honey and pollen I think is. Unless I am right here, the frequent failures in wintering bees are to me as yet impenetrable mysteries.

I can sum up my knowledge on this subject by saying that, besides the matter of the quality of the winter stores, there is but one thing of importance I feel sure of, and that is the necessity of an abundance of stores. Sufficient for the use of the bees is not enough. There should be so much that the bees are entirely at ease with reference to supplies—never less than thirty pounds and that in compact form.

LAPEER, Mich., Aug. 11, 1889.

Several Aids to Wintering—All Fail When the Food is Poor and the Bees Can't Fly.

BYRON WALKER.

FRIEND H. your letter of recent date, together with REVIEW for August, at hand. Yes, you have reason to be proud of this number, in fact the REVIEW is a decided success in the field it aims to fill, and deserves a liberal support.

I agree with the correspondents referred to, that in introducing the special topic for the September number, you have covered the ground so fully, that but little remains to be said: and although I have had a large experience covering nearly all sorts of packing, and methods of preparation, there is really not enough remaining to be said to make it worth while to attempt an article on the subject. I will merely mention a few points that I have found important.

A wide entrance to the outside box, taking care that this is not deep enough to admit mice. An entrance protector made of two rightangled triangular pieces of inch board and a piece of thin board as wide as the longest side of these blocks and a little longer than the entrance to the outside box. This stands on a projection of the bottom board during stormy weather, and also serves a good purpose as an alighting board when needed. High, close wind-breaks on

the north, east and west sides of the winter quarters; that on the north side being much longer than the others. This serves not only as a protection from winds, but helps also in raising the temperature at times favorable for giving the bees a flight. Hives, of course, are supposed to face the south, when by raising the covers and giving the hives a pitch to the front, this object is facilitated. Shading the hives during winter and spring, when otherwise the bees will be likely to fly, when cold winds or light snows render this undesirable. Dark colored packing boxes put together with Quinby corners. This shortens the labor of packing and unpacking, and adapts the parts for use as shade boards during summer. Of course the covers of packing boxes must be water tight, and material for packing likely to retain moisture (such as *fine* sawdust) is to be avoided, especially at sides and ends. More than one inch space beneath frames is not desirable, and is likely to hinder building up colonies in the spring. The top packing should be so arranged as to allow of a free circulation of air above it, and also, so as to be quickly handled in a body to aid a rapid examination.

The absence of good stores when the opportunity for occasional flights during winter can't be had, will be certain to render all other precautions useless.

WAUZEKA, Wis. Aug. 16, 1889.

Good Stores and Protection Tell the Story of Successful Out-Door Wintering.

J. H. LARRABEE.

IN ANY discussion of the subject of out-door wintering, Vermont should, I am sure, have a voice. All over the state, but more especially in the Champlain valley, bees are wintered out of doors. Whether those who inaugurated this system did so with a full knowledge of all the advantages to be obtained with light hives and cellar wintering, I know not, but the fact remains that scores of bee-keepers here practice this method with scarce a desire for a change.

It may be that, as Mr. Elwood said recently in the REVIEW, our valley is favorably situated, the cold being tempered by warm breezes from the lower Hudson region, but an examination of the meteorological observations of the signal station at Burlington would convince many that this effect is not too apparent.

But there are other reasons beyond the control of the average bee-keeper, why our bees winter so successfully.

The character of the honey used for winter stores is generally of the best, as so little fall honey or honey dew is obtained that the major part of the winter stores, if of honey, must be of the white honey crop. This same lack of autumn forage also renders late breeding light and frees the combs of much surplus pollen. It is no rare occurrence to find no brood of any kind in the hives by the first of October.

Winter flights are very desirable at a proper time, but *may* be injurious. A good flight during December is always beneficial, but one between January 10th and the middle of February if often extremely injurious as breeding is induced; and should no flights occur until after the first of April, as often happens, dysentery may be the result.

If spring protection is of sufficient importance to repay all the trouble of providing, packing and cases for large apiaries like Mr. Heddon's, then should we who winter in chaff hives, congratulate ourselves upon having obtained this protection without an hour's extra labor.

The increased consumption of stores in out-door wintering is, I am quite sure, not as apparent at the opening of clover bloom as on the first of April; as honey is, I contend, consumed in much larger quantities at this season by colonies wintered in the cellar than by those wintered in the open air.

One word more with regard to the method of packing in use here. The material may consist of almost any porous non-conductor of heat; chaff and planer shavings having the advantage of lightness, are the general favorites. Care should, I think, be exercised that the packing be perfectly dry, that it may absorb as much of the moisture of the bees as possible, moisture being feared next to poor stores as a cause of winter loss. The packing is held in place by an outer case consisting of two rims of about ten inches in width each, with a *good* gable roof on top. These rims are about three inches larger inside than the brood chamber, leaving that amount of space for the packing.

After the close of the honey season, the bees are left as much as possible to themselves, the only care being that they have sufficient stores for the winter, until about the first of November, fall "tinkering" and excitement being avoided as detrimental. At this time the brood chamber cover is removed and a piece of burlap or cotton placed upon the frames and the top filled with packing to the depth of about six inches. Formerly this super packing was used loose but now sacks, or trays with cloth bottoms, are used to hold the chaff or shavings. These sacks are very handy in spring when upon some warm day it is desired to examine many colonies. The packing is not removed until settled warm weather, and then only from the top, the sides remaining packed throughout the year. This packing at the sides I consider an advantage even during the sultry days of basswood bloom.

In answer to the argument of cumbersomeness, I will simply say that nearly all of the improved methods of management at all seasons of the year may be practiced with chaff hives without the moving of a single one. How this may be done could form the subject of many long articles.

Last winter I wintered ninety-six colonies out of doors in chaff. On the first of April all were alive, one was queenless and one dwindled during April as a result of late "tinkering."

LARRABEE'S PT., Vt. Aug. 20, 1889.

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FLINT, MICHIGAN, OCTOBER 10, 1889.

NOT CYPRESS HONEY BUT CYPRESS BARRELS.

In the August REVIEW, Mr. O. M. Blanton is made to say that he had shipped thirty-six barrels of cypress honey. He writes that this is an error. The word "cypress" should apply to the wood from which the barrels are made; not to the honey they contain. Our friend wishes this explanation made, as he is receiving inquiries in regard to cypress honey.

CROWDED OUT.

This is what has happened to an article on "Conventions," sent in a little late by Dr. Miller; an editorial upon the same subject; also several other little items. Yes, and we were obliged to chop off the "tail" of Dr. Mason's article. It began with "Just a word more," but would have made at least a column. It was fully as interesting as the rest of his article, and may get into the next REVIEW. We should be glad to hear from others upon "Associations and Conventions." We dislike to dismiss a subject with such meager discussion.

OUT-DOOR WINTERING.

Well, we have had a grand, good discussion upon this topic, and the man who can't winter his bees in the open air now, would better—put them in the cellar. No matter where bees are wintered, if long confined to their hives, the food must be good. As to the quantity of food, opinions differ. Some think if given too much, the bees eat too much, or heat is wasted in warming it; others argue that a scanty supply causes them to worry themselves into a decline. It is a little tough to be asked to believe that the bees take an inventory of their "stock in trade" and decide whether or no they have sufficient to carry them through. We know, however, that they will slack up in brood rearing as the supply of honey runs low; coming to a full stop before the honey is entirely gone. Just how soon, or under what conditions, they discover that the "larder is getting low," is too fine a point for us to decide; but we *believe* that ten colonies are lost for a lack of food where one dies from a surfeit. If a colony is populous—has numbers sufficient to generate the requisite amount of heat—we very much doubt if it can be given too much honey without making the hive too large for the colony. First food, then warmth. A strong colony can generate sufficient heat to keep itself in comfort; the difficulty lies in preventing the escape of this heat. The most perfect method is that of surrounding the hive with a warm atmosphere—putting it in a cellar. Next to this is that of surrounding it with some material that is a poor conductor of heat. We don't appreciate the arguments of those who advocate *thin* packing. We don't believe that the benefit of the heat from the sun, if it *is* of any benefit, can compensate for the lack of protection during the *months* of extreme cold. We do certainly think that much of the so-called packing is not more than half done. We are quite "struck" with the idea advanced by some of our correspondents, that bees *thoroughly* protected in the open air "don't have to" fly during the winter. As we understand it, this whole matter of out-door wintering might be summed up in a few words. Populous colonies; *plenty* of *good* food; and *thorough* protection. Simple, isn't it? Yet there is a world of meaning wrapped up in those few words.

MR. WEED AND HIS ARTIFICIAL COMB.

From the manner in which Mr. Weed of Detroit has treated some of the subscribers of the REVIEW—those who sent for samples of comb—he has forfeited all right of honorable mention in these columns, but we feel that our readers are entitled to the news even though some one receives undeserved mention. Numerous changes have been made in the machines to be used in manufacturing the comb, and it was not until the week of the Detroit Exposition that *perfect* combs, *the size of a pound section*, were completed. Several samples were on exhibition at the Exposition, and thousands of people will now be able to say that they have seen artificial comb that was made by machinery. A stock company, under the name

of the "Eureka Supply Co.," has been formed for the manufacture of this artificial comb. We visited the manufactory, at 57 Grand River Ave., Detroit, and saw the machines and contrivances used, some of which are very ingenious, but we are not at liberty to describe them. Mr. Weed promised faithfully to now send samples, accompanied by letters of explanation and apology, to those who had ordered them.

Even if combs of this character can be furnished at a little more expense than the cost of foundation, we are not certaian that they will prove a blessing. The walls can be made thin enough, but the objection is in the character of the material. If we understand the matter aright, natural honey comb is of a granular structure; that is, composed of numerous small flakes, or grains, patted and pressed together by the bees. It is flaky: it crumbles between the teeth, or even between the tongue and the lips. When melted, it loses its granular, brittle character; it is no longer comb, but *wax*. It is tough and elastic. The use of foundation is objectionable, according to the amount of wax used. Foundation had a hard fight to gain the position it now occupies in comb honey. Where the foundation is light, the objection to its use is also light; it pays to use it, and bee-keepers *will* use it. Where the *whole comb* is of wax, be it ever so thin, we have grave doubts as to its palatability.

WOODEN COMBS.

In one of the earlier issues of *Gleanings* for the present year, Prof. Cook makes mention of a wooden comb invented, patented and manufactured by Mr. L. A. Aspinwall of Three Rivers, Michigan. At our Michigan State Fair, we not only had the pleasure of meeting Mr. Aspinwall, but enjoyed a drive with him out to the Agricultural College, where we examined a colony that had, for two weeks, called a hive with wooden combs its home. A little honey had been stored and sealed over. We were disappointed at finding no brood, but an examination of other colonies, showing no eggs and little unsealed brood, furnished an explanation. The irritability of the bees and their inclination to rob showed clearly that the harvest was over and brood rearing given up for the season. Mr. Aspinwall has used these wooden combs two seasons, and he says that the bees breed in them freely.

To make the comb, pieces of wood of the proper thickness are sawed from the end of a pine block, the sides perforated for the cells by gangs of little bits, the "combs" soaked in a mixture of hot wax and "something else," and then immediately placed in an extractor that runs at a high speed.

The advantages of wooden combs, as set forth by the inventor, are as follows:—

1. The combs are absolutely straight and the cells perfect. 2. They are very durable. 3. They will admit of rough transportation. 4. The bee-moth's larvæ cannot infest them. 5. The honey can be extracted without any possibility of injury to the combs. 6. They admit of permanent queen and winter passages. 7. Drone and worker increase can be controlled, drone-traps being unnecessary. 8. An increased yield of comb honey can be obtained, by reason of a preference for natural comb, queen-excluding honey-boards being necessary. 8. The queen can be found more readily, there being no spaces between the edges of the comb and the frame in which she can hide. 10. The great advantage to be derived from its use, one of more value than all the others combined, is that the hive furnished with this comb may be used as a swarmer or a *non*-swarmer as desired.

The reason given why bees will not swarm when occupying this comb, is that it is *impossible* for them to rear drones, and that they will not swarm unless they can raise them. This seems almost too good to be true: and, although the experiments already made point in this direction, we feel that they have not been sufficiently extensive to warrant us in accepting this conclusion as final. Mr. Aspinwall is now busy perfecting an improved machine for manufacturing the comb; also in writing a book upon bee-culture, the leading feature of which is to be a description of the methods to be employed when the wooden comb is used. He expects to have both comb and book ready for customers early in the ensuing year.

SPECIALTY VERSUS MIXED BEE-KEEPING.

At the Detroit Exposition it was our pleasure to form the acquaintance of a bright young farmer-bee-keeper. While chatting together one afternoon, he said: "I love to handle bees, and would ask for nothing better than to care for them and do nothing else; for all that, I am half inclined to give them up. I can't do justice to them and the

farm too; one or the other must go. I believe that Mr. Heddon is right on this point; that all the advantages are with the specialist." We replied that the highest success in anything could be attained only through specialty, but there were some things to be said on the other side—there were two sides to the question—and that we had often thought of making the subject one of special discussion in the REVIEW. He urged us quite strongly to do so, saying that the subject was interesting, and that there were probably others situated like himself. We believe he is correct. There are farmers who are keeping a few bees, perhaps a good many bees, and apiarists who are managing a small farm, perhaps a large one; there are men engaged in some other vocation who are thinking of taking up bee-keeping, or may have already done so, and bee-keepers who are asking "what will best mix with bee-keeping?" Is this the better way? We have little faith in that old saw about "not having all the eggs in one basket." *We* say yes, have them all in one basket, and then carry it so skillfully that none are broken. We know there are trying seasons for specialists in any branch of business: times when it might be better, *in that particular year*, if there were more than one egg basket; but doesn't the specialist do enough better in the good years to bring specialty out at the head, in the long run? The specialist can have the best tools, appliances and labor saving implements, things that the dabbler cannot afford; he can do and have many things in a wholesale way that would be unprofitable upon a small scale. Many professional men take up bee-keeping as a pastime. With them we can have no more argument than we could with the bee-keeper who studies music or gardening for pleasure. But upon a money basis, it is a far different thing. When a man is engaged in some pursuit that is capable of absorbing all of his energies and capital, we doubt if he can add to his pleasure or his pocket book by adding some other business to his regular occupation. We will admit having heard farmer bee-keepers say that their bees were the most profitable thing on the farm. We have often asked why they didn't drop farming and make a specialty of bee-keeping. The answer usually is that bee-keeping is too risky. This means that it may pay exceedingly well one year, and yield nothing the next. The only true way to compare one occupation with another, is for a series of years. If bee-keeping falls behind in such a comparison, it is not so profitable, even though the yields may be enormous some years. If bee-keeping is such a precarious business that it cannot be depended upon for a living—must be mixed up with something more staple—made a drag upon some other pursuit—let us know about it; if more money and enjoyment can be secured by making it a specialty, let us know that.

Some of the friends have said, both in letters and in conversation, that we are too elaborate in our leaders—that we cover the ground so thoroughly that nothing is left for them to say. We don't think so; but, by way of experiment, we will cut this one short, and close by saying that the subject we have been discussing is to be our special topic for November.

Since the above was in type we have been over to Port Huron and awarded the premiums in the apiarian department of their fair. Here we met another enterprising, young farmer-bee-keeper. While strolling about the grounds he said: "I don't know just how to manage. I have over 200 colonies of bees and a farm on my hands. I have been thinking of writing to Mr. Heddon, to learn upon what terms I could get one of his students to come and run my apiary." There is no doubt but we have now gotten hold of one of those live, practical questions of the day; and we hope it will receive the discussion that it merits.

EXTRACTED.

Do Bees Make, or Gather Honey?

TO SHOW that the idea that honey is "partially digested nectar" is not new, but *is true*, we take pleasure in reproducing the following essay. It was written by Mr. P. L. Viallon, and was published in the A. B. J. exactly thirteen years ago.

In taking up the subject, "Do bees make, or gather honey?" I will not try to prove that bees make honey, but that they gather a sweet matter—nectar—from flowers, and that this matter is transformed into honey; and my only aim in writing this will be to try to raise a serious interest on this too much neglected question. Though this question may not be of interest to a majority of bee-keepers, it is nevertheless of great utility in apiculture, and might have in

practice very important consequences.

Apiculturists and naturalists supposed, and suppose yet, that honey has the same composition as the nectar of the flowers; and in many European bee-books it is stated that the bees merely gather the honey and deposit it, without alteration, in the cells where it only loses water. In presence of the confusion and contradiction existing at present on the matters gathered and produced by bees, it is necessary in order to arrive at a decision, to make a chemical and physiological statement of the production and composition of honey. In nearly all the flowers in which fecundation is accompanied by the intervention of insects, there are organs, named by botanists *nectaries*, secreting a sweet liquid matter, which is generally known as nectar. It is this nectar that bees gather to produce honey. Now we will see that nectar and honey are two distinct things, and of a different composition, and that the bees cause the nectar to undergo a chemical transformation to convert it into honey.

Mr. Braconnot has chemically analyzed the nectar of more than thirty species of plants of twenty-five different families, and he has found them to be of about a constant composition. He says that nectar is always identical with itself. It is a colorless and limpid liquid of a density little superior to that of water. It does not contain, in general, traces of acid, it is a neutral body, and blue and red litmus paper is without action on it. He represents the composition of nectar as follows: cane sugar (or saccharose), 13; uncrystalizable sugar, 10; water, 77—total, 100.

He has found no trace of mannite nor glucose. Now, it will be seen below, that honey contains principally an excess of glucose, some mannite and very little or no cane sugar. Lowitz was the first, in 1792, who found out that the sweet crystalizable matter found in honey was not cane sugar. Proust, in analyzing some candied honey, has shown the identity of this crystalizable sugar with grape sugar, which he had discovered in the fruits—glucose. Guilbert has placed in evidence the presence of a large proportion of uncrystalizable sugar to which he gave the name of "sugar of honey." Later, Guibourt has found some mannite in honey; and more recently Soubeiran has had recourse to optical analysis to separate the different sugars which are found in honey. M. M. Dubrunfaut, Roders and Calloux have completed by their analysis the preceding researches. Mr. Calloux gives the following as the composition of field honey: glucose, 45.10; uncrystalizable sugar (or mellose), 43.95; water, 7.70; waxy matter, 1.15; nitrogenous and acid matters, 2.10—total 100. As honey made on the mountains is a little different, I also give an analysis made of honey taken at 3,600 feet: glucose and cane sugar included, 56; uncrystalizable sugar or mellose, 30.4; water, 8.5; mannite, 1.9; waxy matter, 0.6; nitrogenous and acid matters, 2.6—total 100.

As we see, by the analysis given above, honey is a mixture in variable proportions, of a certain number of definite organic compounds. In its most complete state it contains glucose, uncrystalizable sugar—mellose, some water, mannite, cane sugar, an acid, a greasy coloring matter, and some nitrogenous matter which comes from pollen. I think it would be well to give some of the principal properties of some of the bodies which enter into the composition of honey, and will try to explain as much as possible how the transformations take place. First we have glucose which is a crystalizable sugar: it ordinarily presents itself under the form of small, white, compact, agglomerated crystals. It is found in grapes and in different fruits. The most economical method of obtaining it is by acting on starch or lignin with diluted sulphuric acid. It is three times less soluble in water than cane sugar, and its solution at equal concentration is three times less sweet.

Mellose or uncrystalized sugar is a liquid sugar which does not crystalize. According to Braconnot the uncrystalizable sugar of nectar is, by its properties, distinct from the uncrystalizable sugar of honey. Therefore it must have undergone an *isomeric* transformation to produce either mellose or glucose which are found in honey.

Mannite is a body which is naturally found in manna. As it has been ascertained that mannite is a product of the viscous fermentation of complex saccharine mixtures, we see that it is not necessary the bees have gathered the natural mannite, but that it might have formed itself subsequently in honey. Mr. Linnermann has obtained mannite by combining hydrogen with glucose. I will mention, nevertheless, that mannite is most generally met with in mountain honey. The presence of a free acid has been ascertained in honey. It is by the influence of this acid, supposed to be identical with the acid substance found in the bees that the transformation of cane sugar of nectar into mellose and glucose might have been caused.

It is an established fact that if a diluted acid is made to act upon cane sugar, subsequently grape sugar is formed. It is natural to suppose that an analogous transformation under the influence of the acid principle known to exist in the bees, has changed the cane sugar of the nectar into uncrystalizable sugar. It is natural to come to the conclusion that the bees gather the nectar from flowers and that this nectar in passing in their body, under the influence of agents not well recognized, undergoes a change and comes out in the state of honey.

We are well aware that the bee take the nectar from the flowers with its bill and that it is conducted by this organ into the mouth where the tongue pushes it into the œsophagus, which in its turn makes it pass into the stomach. When its stomach is full of nectar the bee returns to the hive and disgorges it into the cell. It is supposable that it is during this time that the acid of the bee mixes with the nectar and some of the transformation takes place. We have effectively seen above that the composition of honey is essentially different from that of nectar. The nectar contains more than half of its sweet matter in a state of cane sugar, while this sugar, when present in honey, is found but in a very small proportion.

In short glucose doesn't exist in the nectar and it is found in large proportion in honey. I have fed some bees with a thin syrup made of 25 parts of crushed sugar and 75 parts of water, and after it was evaporated and capped by the bees, extracted it, and though it was perfectly neutral when fed, it had then a slight acid reaction, and contained a large proportion of uncrystalizable sugar and could obtain but a very small proportion of crystalized cane sugar. I fed them also with a syrup made of equal parts of sugar and water colored with cochineal, and after it was capped, extracted it and it was very much lighter in color.

After the experiments and the chemical analysis given above, I have no doubt that it will be easily seen that the bees effect a real chemical change to produce honey from nectar; and this process is one which appertains to animal chemistry, a species of assimilation, elaboration and execretion of which we have so many other instances in the cell functions of glands in the animal economy.

This is, indeed, the old views, for Lord Bacon says of the bee: "*Hacc indigesti e floribus mella colligit, deinde in viscerum cellulis concocta maturat, iisdem tamden insudat, donec ad integram perfectionem perduxerit.*"

As a translation of the foregoing quotation from Lord Bacon, Mr. Viallon, by request, furnishes the following:—

"She collects this honey undigested (in a crude state) from the flowers, then she matures it, concocted (cooked), over in the cells of her entrails, (viscera) at length she sweats them in the same until she produces it (or brings it forth) in its entire perfection."

Mr. Viallon writes that he has given as much as possible, a literal translation. The words in the parentheses could be used in place of the original and probably give a better meaning.

One of the practical points in this subject is this: Some (Prof. Cook among the number) favor extracting the honey when first gathered, before it is thoroughly ripened, and completing the process by evaporating the honey to the proper consistency. Now we would like to ask Prof. Cook if the digestion is really complete when the honey is only partially ripened? Are terms ripened and digested synonymous in this connection? We, of course, know that evaporation is not the only change produced by the bees in nectar ere it becomes honey, and the question is this: Is there a point in the ripening process where "digestion" is dropped, and evaporation only is needed? We called Prof. Cook's attention to this point a year ago last March, but he may have overlooked the matter. We should be glad to hear from him on this point.

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Is a Specialty Desirable?

R. L. TAYLOR.

"ONE thing at a time" is an old adage, and as applicable to great things as to small. Men are sometimes said to have been born with silver spoons in their mouths, but no one is ever said to be born with a trade. We have to learn trades or be without them. And such is the constitution of things—mind and matter—that a lifetime is required to accomplish that purpose well; so that we only begin to approach perfection, if ever, when our hand becomes feeble and unsteady and the twilight of life draws on apace, forbidding the further pursuit of our labors. Every added trade clearly impedes one's progress towards perfection and makes a less degree of skill attainable.

What is the significance of skill in this connection? It avoids injurious mistakes; it lightens and lessens labor; it relieves or prevents friction; it attains the best results; it increases pleasure, satisfaction and happiness. A multiplicity of occupations multiplies the burdens of responsibility, induces unrest and embarrassment, and our powers becoming overtaxed, carelessness, slovenliness, unthrift and failure result. A jack at all trades is almost a synonym of a ne'er-do-well. What reason is there for dulling the edge of skill and sacrificing thoroughness by combining another business with that of bee-keeping? Not certainly to till up the time. Bee-keeping as a specialty is no small business. It is capable of great expansion. It can well furnish work for every day of the year, and the larger the business the smaller the proportional expense of the plant and the management, and, consequently, the larger the profits.

If bee-keeping is so unprofitable as a specialty that the operator must pursue another business to eke out a living, then it is too unprofitable to be pursued at all, and should be abandoned altogether. If it cannot be made profitable as a specialty, with all the advantages that specialty brings, then it cannot be made profitable as a subsidiary pursuit. We see this demonstrated in practice. It is not the specialist, but the *non*-specialist, that fails. A poor season serves to tighten the grip of the former, but how it disheartens those who make bee-keeping a by-play for profit may be known by the disgust it causes to emanate from their every countenance. For an avocation or subsidiary business bee-keeping is the least adapted of all as shown by a large percentage of failures among those who pursue it in that way, so much does success in it depend upon the small but critical matters that the non-specialist is sure to neglect.

The Great Apostle tersely approves the principle when he exclaims: "This one thing I do." Steadfastly adhering to the principle he became not only the first of the apostles but the first of Christians and surpassingly successful. No one would fear for the success of the bee-keeper who should declare, with the firmness of purpose of Paul: "This one thing I do."

There is undoubtedly one advantage in combining two or more kinds of business. If one's eggs may be either all in a single basket, or in more than one, and in either case those in one basket are likely to be broken, and it is indispensible that enough be saved for breakfast, it may be better, notwithstanding the additional expense of additional baskets and the difficulty of carrying them all at the same time, to have the eggs in more than one basket, but it *makes costly eggs*. It is paying heavy insurance against the wolf that threatens the door. If it is a necessity it ought to be a temporary one.

But there is what seems at first glance a weightier consideration. Men who devote themselves exclusively to one line of thought or study, or to one branch of business, become of necessity narrow in mind: in short, imperfectly developed men. They make more money and do well for their vocation, but they do not make the best citizens, nor do they make the most of life for themselves. But I think this class cannot be fairly charged to the doctrine of specialty properly understood. A dentist makes the filling of teeth a specialty, but he also practices and is familiar with all the other branches of the calling. A lawyer makes commercial paper his specialty, but on occasion can readily turn his hand to any other of the thousand and one branches of this calling, and at the same time not hesitate to dabble in politics or real estate. Terry makes the production of potatoes a specialty, but he is no weakling at the care of stock and the production of clover and wheat. But these things rather minister to his success in his specialty than interfere with it.

The specialist then is one who devotes himself to one thing as a *paramount* object, putting his hand to other matters only as they lead up to the main matter and impart vigor and growth to it; or, at least, in no important way interfere with it. If this be the correct view of the subject, then it seems to go almost without saying that not to be a specialist is to so divide one's powers and attention as to greatly weaken their proper exercise. If the farmer must leave the harvest field at the call of the horn or the bell to hive swarms, or even if he must give them attention when he is already anxious and tired enough with the labors of the field, his honey crop will be unprofitably costly if indeed he escapes the general rule in such cases and obtains anything but swarms. And, in like manner, if the cobbler must leave his bench to care for an apiary, his customers will forsake him and he is likely to have but a meager return from either trade. Such divided efforts necessarily result in imperfect and unsatisfactory work. There is friction and loss of force in being compelled even to turn one's *thoughts* from one subject to another if both be of serious concern. I speak of the average man; there are exceptions to every rule. One's vocation is ordinarily the business whence one derives one's living, and without question the desired result could most effectually be accomplished by making it a specialty; but I have no word against avocations; every one ought to have one or more. If he delights in fancy poultry or fine grapes or in history or language or science let him not shut up his soul against the topic of his choice. It will be the source of rest, refinement, education, and a more symmetrical growth. Let him fly to it in his moments of leisure for rest and refreshment, but not with the expectation of making it financially profitable, for that would bring additional anxiety and weariness.

LAPEER, Mich., Nov. 1, 1889.

The Highest Success Attained by Specialty.

J. A. GREEN.

IN considering the question whether it is better for a man to confine himself strictly to one business, whether it be that of bee-keeper, farmer, lawyer, doctor, or worker in any other of the branches of human activity, or whether he may unite two or more of these occupations, the first point to be considered is, how is the greatest success to be attained? We will not need to dwell long on this point, for the world's experience has given us ample answer. The successes of life have been more by those who with their minds fixed on the desired end have pursued it through failure and discouragement no matter how great.

It has been truly said that there is such a thing as momentum in mind as well as in physics, and concentration of mind energy is as effective as concentration of physical energy.

If we limit our definition of success to the matter of getting a living, the case remains much the same. The greatest success is never to be attained by a scattering of energies. Suppose two brothers by the name of Smith enter the practice of law and medicine, each being both doctor and lawyer. Two other brothers by the name of Jones enter the same pursuits with this difference, that one practices law and the other medicine. Other things being equal, which pair of brothers is likely to meet with the greatest success? Everybody will say, "the Jones," and would employ them in preference whenever the service of either doctor or lawyer were required.

Now does this not apply just as well to any other occupation and to bee-keeping as well as to any? There is enough in bee-keeping properly carried on to fully require and occupy the energies of any ordinary man. Some will say that it is an extra hazardous occupation and that therefore something should be joined with it to diminish the risks of financial shortcomings. If it is extra hazardous it also offers unusual opportunities of gain when fortune is propitious, and it is the man who has nothing else to do but make ready for it who is best able to take at its flood the tide which leads on to fortune. There are times in bee-keeping when hours, yes minutes, are golden, and the postponing of required labor for a week or less may cause a loss of dollars for every colony of bees possessed.

That the man to whom bee-keeping is a side issue often misses the critical time, we probably have all seen. As a case in point I had thirteen colonies of bees this summer in the yard of a farmer bee-keeper having nearly twice that number of his own. About the middle of August I removed all surplus honey, making ready for the fall yield. His hives were full, but taking off the honey was postponed. By the close of the season my thirteen colonies had stored nearly four hundred pounds of surplus, while most of his had had no chance to store any outside of the brood chamber, and of course not very much there. He got his clover in all right, but he missed some honey.

Some advise that everybody, especially the farmer, should keep a few bees. There is just about as much reason for saying that everybody should keep a few sheep, raise a little wool, spin a little yarn, weave a little cloth and make their own clothing. This state of affairs has gone by in almost everything else, but bee-keeping occupies a position almost unique among the world's occupations, in that the ideas, methods and appliances of a hundred—yes, we might almost say, of a thousand—years ago are to be found side by side with those of the most modern advancement.

It is well enough for a man to have some interests outside of his regular business to which he may turn as a recreation and a relief from daily care. Very often a man is made broader and better by having this outlook from the narrow confines of routine, and his working efficiency may be even increased by these seeming distractions. But

the attempt to carry on two distinct occupations for the money there is in them generally results in one or the other being neglected or half done, and the man who attempts it usually makes less money than he would if he had turned the whole of his energies to one of them.

DAYTON, Ill., Oct. 31, 1889.

Why the "Rambler" is a Specialist.

I WILL try and treat the above subject with due decorum and soberness, for I have found that soberness is rapidly generated at the close of a disastrous honey season. But in the face of now and then a disastrous season, I am ready to advise the person who really loves the pursuit to make a specialty of it.

When I first commenced bee-keeping I owned a farm of one hundred acres. My colonies then numbered from 50 to 100. With 100 colonies I found that nearly all of my time from the first of May until August was spent in the apiary. My place upon the farm had to be supplied with hired help, and I found that every year from April until July the farm was drawing cash from the apiary, and, many times, had it not been for the apiary, many things for the farm would have been purchased on credit. When the produce was harvested, of course the scales were turned the other way, but instead of spending the money upon the apiary, the amount was put into my pocket. The apiary was sustaining itself better than the farm. While the farm was calling all the while for expenses in the shape of repairs, tools, etc., the apiary called for but few dollars in expenses.

Owing to various circumstances I sold the farm and resolved to make bee-keeping and fruit evaporating a specialty. I purchased an apiary of 50 colonies in an adjoining town and resolved to increase it to 100. This, with 100 in the home yard, and the fruit business, would give me plenty to do.

Well, how did it work? I make a wry face every time I think of it. My partner and I ran the evaporator from September until December. It had to be run night and day. As a result the bees were neglected in the out-apiary and nearly every swarm died. Our venture upon evaporated fruit was also a losing one; prices went down and our product was sold for less than cost. Since our Waterloo upon this "mixed business" I have devoted myself strictly to bee-keeping, with the exception, if it may be called an exception, of occasionally peddling honey during the winter months.

In making bee-keeping a specialty I have considered the following points: First, which shall I produce, comb or extracted honey? My experience thus far puts me in the ranks of the extractors. *I think* I can manage more bees in more apiaries and make as good profits as by any other method. Second, how many bees shall I manage and in how many apiaries? During the past summer I have managed two hundred colonies in two apiaries, securing nearly 10,000 lbs. of honey, with not over ten days help. I believe I can manage 400 colonies in four apiaries with but one man a portion of the time from May until August. When the requisite number of colonies are established with complete sets of empty combs for storifying, there is but little winter's work to do; and the bee-keeper can then devote himself to some other business, but he should be careful not to get into anything that will prevent an instant turning to the main pursuit.

Comb honey production, with the above number of colonies, would keep the apiarist busy all winter in preparing for the next season.

With good food, I should say that the business is no more risky than many other pursuits. Too many neglect this very important branch of apiculture at present. Nearly all of the Rambler's colonies are supplied with full cases of clover honey, but thousands of colonies in the eastern states are filled to overflowing with *honey dew*, which in many localities has already commenced to sour. But, even the loss of half of my bees during the winter would have but little terror for me if I could get bees by the pound from the South at a reasonable price, say from 75c. to $1, according to quantity, and delivered by the first of May. In the foregoing I have taken it as a certainty that the apiarist shall make at least part of his supplies. This keeps his hands quite busy and all of it can be done if no more than a Barnes saw is used.

Respectfully submitted by

THE RAMBLER.

More Money and less Risk by Combining Bee-Keeping With Farming and "Supplies." Hire Help if Necessary.

M. H. HUNT.

BEE-KEEPING, with me, has never been a specialty: although it has had, with the manufacture of supplies, the greater share of my attention. The farm has not been so well managed, perhaps, as it would have been with my undivided care. Still, I know I have made more money by combining these industries than I would have done by any one of them alone. Take, for instance, the past three seasons; had I depended upon the honey crop, I am sure I should have lost a good lot of my enthusiasm.

At certain seasons of the year bees require close attention, and some may say how about the farm, etc.? Years ago I came to the conclusion that I could not get ahead very fast with what labor I could do myself. With this idea in view, I have always employed help when it could be used profitably; and that is most of the time, as there is always something to do either in the apiary, on the farm, or in the factory. No loss of time, not even when it rains.

There are some few favored localities where the honey crop has never failed; and up to the last three years I never failed to

get a good crop, and I began to look upon the business as a certainty, and made my plans accordingly. I built a honey house, started out-apiaries, etc.: but had it not been for the factory and farm during those three years, the balance would have been on the wrong side of the ledger.

Judging from my experience, there is no business that will permit of something in connection with it, any better than bee-keeping. In making this statement, I know I am in direct opposition to some of our best writers on this subject, but I cannot help it, as I have my own experience, not theirs, to judge from.

BELL BRANCH, Mich. Oct. 21, 1889.

As a Matter of Dollars and Cents, One Trade is Best.

DR. C. C. MILLER.

AS to mixed vs. exclusive bee-keeping, I am myself somewhat *mixed*. I formerly held the view that no one should give up all other business and depend on bee-keeping alone until he had enough ahead to keep him at least one year without any income from his bees. An experience of three successive years of failure makes me think it might be best he should be prepared at all times for three such years—possibly more. Of course that strikes a pretty hard blow against exclusive bee-keeping, but it might not apply in general, for I have by no means the best location for bee-keeping, depending almost solely on white clover.

I have not the statements before me, but I have a general impression that I have a number of times heard or read something like this: "I got more money from my bees than from my whole farm." Now I want to put a problem in arithmetic. If Mr. Jones makes more money from his bees than from his farm, would he not gain by getting rid of his farm and keeping double the number of bees? To put the matter in a more concrete form, suppose his farm nets him $500 and his bees $600, his total income is $1,100. Now give up the farm, double the bees, and would not the income be $1,200? Hardly, for it does not follow that if he makes $600 from 100 colonies of bees he can make double the amount from 200. But he might keep more than double the number, for coupled with the statement given above, very often, comes the statement that the bees took very much less time than the farm. But the risk. If bee-keeping is more risky than farming, then it may be better to hold on to the farm.

If some business is connected with bee-keeping which can be prosecuted during a time when bee-work is not pressing, then it is possible that the combination might be advisable. But those who engage largely in bee-keeping are apt to say that they find plenty to do at all seasons of the year. Still, a business might be found which could occupy part of the time when bee-work crowds least. I think small fruit raising has been recommended more than any other as combining nicely with bee-keeping. I have had a little experience with small fruits, having had at one time some two acres in strawberries, two more in raspberries, and 125 cherry trees. The busy time comes at picking and marketing, and that comes when bee-work crowds harder than any other time in the whole year. So if the bee-keeper can make more to give half his time to small fruits, I think he might make more to give up bees entirely and give all his time to small fruits. The truth probably is that one man can make more on small fruits and another on bees, but I doubt if anything is gained by mixing.

A man doing a large business as merchant, lawyer, or what not, might profitably mix in a *little* bee-keeping by way of recreation, but as a matter of dollars and cents he'd better stick to his trade. If a man, on the average, can make more at bee-keeping than at any other business, then I can hardly see how he can gain by mixing in other business. But he may prefer bee-keeping to any other business in spite of its being less profitable, on account of its health giving and home keeping qualities, in which case it may be proper for him to combine some other business to which he is well adapted and to which he can attend when his bees need least care, provided he can find such a business.

So you see, Mr. Editor, that whether a man should "mix" or not depends upon a good many things. In general, however, I suppose that bee-keeping follows the general rule. We get shoes cheaper because there are large establishments that have no other business than making shoes; so of clothing and other things, and it is probable that the general public will get its honey cheaper and of better quality the more nearly honey raising is carried on extensively as an exclusive business.

MARENGO, Ill., Nov. 2, 1889.

Specialty Better for one Man, "Mixture" for Another; Room for Both—A Well-Considered Article.

J. HASBROUCK.

YOU ask me to say something on "Specialty vs. Mixed Bee-keeping." If I do so, I will, like "Brudder Gardner," "talk on bof sides ob de question," because I believe both in specialty and in mixed bee-keeping. A number of years ago when I wrote a good deal for the bee-keeping public, I was constantly receiving letters, asking for advice, from people who wanted to give up all other business and place their dependance for a living for themselves and families upon from 20 to 100 stocks of bees, to buy which they generally proposed to borrow the money. They were led into their ridiculous plans by extravagant representations in some of the older bee-books and advertisements—generally in religious papers. With specialty on such a foundation, I have no patience, and always tried to

discourage it. Nevertheless, conducted on business principles, I believe that bee-keeping as an exclusive business, offers a fair investment for capital; and I say this notwithstanding my very unfortunate venture in this line the past season. Last spring, expecting, as most of us did, because we had had two unfavorable seasons in succession, that this would be a bonanza, I made a contract with a gentleman owning about 250 stocks of bees in Ohio, to manage them without increase for half of the honey, he furnishing all supplies. The result was that I worked six months, doing three times as much as would have been necessary with first class arrangements, *for almost nothing.* I simply took my chances in a lottery and drew a blank. That isn't business. To make an exclusive business of bees, my experience leads me to believe that a man should have a capital sufficient to begin with at least 300 stocks, all in good hives, with all the necessary supplies, and then in addition a reserve sufficient to support himself for at least two years, and to feed the bees $1 per stock per season for the same time, *without any return.* I pre-suppose, of course, that the man understands the business practically before he begins as a specialist.

What income ought one reasonably to expect from this outlay? According to my experience, one year with another, 300 stocks of bees well managed in any ordinary locality would average a net income of $900 per year in honey, and an increase of 100 stocks. This is as good as one could expect from a farm costing three times as much and run for general farming. It would be better than the same amount invested in almost any kind of merchandising or any ordinary manufacturing. It is a business which a man can increase up to 5,000 or 6,000 stocks as fast as he can find efficient and faithful help, and still be able to give sufficiently close personal supervision to secure as large returns per colony as with the 300 with which he started. Of course there will be years when the returns will be 0, or worse, instead of the above average; but there will be as many other years in the long run, when he will get $9 or $10 per stock.

Until very recently, I doubt if there was anyone in the country who understood the wintering problem sufficiently to warrant him in making bees a specialty, as it would be simply foolhardiness to invest money in bees when the risk of losing the whole capital by their dying in winter, was added to the risk of poor honey harvests; but at present I believe the principles of successful wintering are as well understood as of wintering any other stock. Thick packing on summer stands, or massed together so as to keep each other warm; or a cellar or other repository where the temperature *will never go below 40°* and not unreasonably high, will always bring them through, if they have honey enough to live on, and this I say although believing fully in the "pollen theory."

While I believe in these possibilities for the specialist, I take particular delight in seeing a few colonies standing in the yard of an intelligent farmer, mechanic or professional man. Such a man, or his wife, if posted, can do all that is necessary with all the bees that should be kept in one locality, to get all the honey possible without interfering with their other business. But some of the specialists will say, "yes, but none but specialists will ever get sufficiently posted to do much with bees." I have thought so too, but, if I didn't make anything by my sojourn in Ohio this season, I learned a lesson or two. While our 250 stocks of bees, standing in one yard, an arrangement, which, by the way, I didn't approve, but which I couldn't change, were doing very little, some farmers' wives five or six miles distant, keeping ten or twelve stocks apiece, were selling more honey than we did from our 250. I met some of them and found them as well posted in the essentials of management as any one I know. They pick up what they know by taking some one of the excellent bee journals now published. But a specialist says that such people are always a damage to the bee business because they are not sufficiently interested to keep track of the markets, and they break down the markets by selling for the first thing offered them. To such I answer that I have seen a honey market this season worked up by such mixed bee-keepers, which to me was *perfectly wonderful.* In the East, in and around New York, there is no demand for honey before cold weather; but at Lima, Ohio, there is a great strife among the local bee-keepers to see who first can get new honey into market; as the one who first supplies a grocer can probably hold his trade till all his honey is sold. About the first of June the grocers began to "hunt" us for honey, and they kept it up till we had to "dodge" them as badly as if we owed them a bill, and when they found they really couldn't get anything from us, they began to import honey from New York, paying 16c. when they paid but 8c. for good butter. Such a market the smaller producers can work up anywhere, and then let the specialists send their crops to the large cities, after seeing that the local markets are fully supplied, and the two classes will never come into collision. There is room and a place for both.

SHELBY, Ohio, Oct. 29, 1889.

Conventions Strengthen, Brighten and Rest Us, and Improve Our Literature.—Advantages of "Mixed" Bee-Keeping.

PROF. A. J. COOK.

DEAR MR. EDITOR:—I have no question but that our conventions serve an admirable purpose. I should be inclined to this opinion, even could I see no explanation. The men of all crafts and professions, especially those of highest intelligence and enterprise, have their associations. Such men act not from impulse; nor do they give their time and money for the fun of the thing. It pays and they know it.

I think, however, that I can see how it pays. To be sure, we have our papers and books, which are the very back-bone of any industry or profession. But how flat, stale and unprofitable would our books and papers be were it not for the vivifying effect of our associations. Who does not feel that *Gleanings* has greatly improved since its editor reformed in this matter of conventions? We doubt not that much of the admirable conduct of the REVIEW comes from inspiration received by its editor in his frequent attendance upon such gatherings. I say then that conventions raise the character of our literature and so advance the condition of all, whether they actually attend the meetings or not.

There is a warmth and sympathy engendered by personal contact with our fellows that always calls out the best that is in a person. These conventions liberate much valuable information that else would never come to light. More, many persons never write, and were it not for these gatherings, valuable facts would never go beyond their discoverers. It is often true that some important observation or discovery fails to impress the one who made it. Even though it may interest him, he may lack that peculiar ability to turn it to account. Thus meeting in conventions not only scatters facts, but also gives to them a practical trend which else they might never have possessed.

Perhaps the best use of conventions comes from the valuable influence which they exert socially. To meet and talk with those of like views, desires and thought, softens, elevates, and ennobles. We go home with more charity in our hearts, more love in our souls. We are better men. If associations then make us both wiser and better, we may well hurrah for conventions.

All experience, everywhere, so far as I know, urges that in conventions we have essays from those best able to give them: which essays are to be discussed. Such essays furnish a theme. They are carefully thought out. They secure the best, and prevent rambling and a waste of time. I have no sympathy with the plan of rejecting all essays. Our country is very large—too large to make the attendance at conventions easy. Yet by having short, incisive essays from those best fitted to give them, we can have large conventions in the best sense, though the actual attendance is not large. Next to our bee literature, conventions have done the best work for apiculture of all the agencies that are helping it out. And, as we have seen, our literature owes much of its excellence to these important gatherings.

I am decidedly of the opinion that bee-keeping should not be confined to specialists. I think no one should be prevented or even discouraged from becoming a specialist; yet I think that apiculture is pre-eminently the business for the amateur, pre-eminently desirable as an avocation. Even those who argue otherwise think so; else why do Mr. Heddon and the editor of the REVIEW stick to the bees; though one is an editor and the honored Mayor of a flourishing young city, and the other an able bee-keeping editor? Bee-keeping often fails to give success, then some other business keeps want, hunger and discouragement from the door. Bee-keeping only occupies one a portion of the year; thus some supplementary pursuit fills up the time and adds to one's usefulness.

In every business one can do better work if some variety comes into the life. This rests the mind, brightens the hopes and makes the success better in both lines. Thus the minister, the lawyer and the teacher think and speak to better purpose from their work and experience in the apiary. The bee-keeper has clearer thought and better success from his rest periods, when he wrestles with the problems of how he may save souls, save property, or educate his fellows. Experience shows that such combination is helpful. The logic of experience also shows that men live more and happier when they have two strings to their industrial bow.

I know of many of our best and brightest bee-keepers who are at the same time most successful in other lines of work. If such a course adds to the pocket-book, the brain, the health and the happiness, then certainly it is to be advocated. I have not a doubt but that it does.

WHEN TO EXTRACT.

I say just before or just as the bees commence to cap the honey. Do you say the honey is not so good? Then by all means wait till it is all capped. I can ripen the honey just as well outside the combs and so save much time. I always extract the early honey before it is capped. This is more easily done, and saves uncapping. I keep this in open vessels covered with cheese cloth in a warm room all through July and August. I have yet to see the man who can tell this honey from other that has been capped for months before it is extracted. This is my reason for the faith that is in me.

AGR'L COLLEGE, Mich., Oct. 31, 1889.

Bee-Keeping More Like Manufacturing than Farming.—The Advantages of Specialty.

JAMES HEDDON.

AS to whether any kind of business is better to be managed specially and alone, or mixed up with some other kind of business in the hands and brain of the manager and owner, depends entirely upon what the business is. If I were going to buy, to breed up and fatten, a drove of hogs, I would post myself in regard to what kind of hogs are best. I would not, however, add the hog business to the bee business, but I would add it to raising corn and wheat, or running a grist mill or slaughter house. So you see it all depends.

There is no doubt but what it pays to raise at least a small variety of crops upon a farm, but you may call it all one business, that of farming. Bee keeping is called, and perhaps correctly so, producing, but so far as producing relates to the advantages and

disadvantages of specialty, it is much more like manufacturing. The bee-keeper need not be a producer. He may be eminently successful and know nothing about botany, not even the physiology of the honey bees he keeps. He may be an expert in botany and bee-physiology and still be an ignominious failure as a honey producer. We know this is true from observation. We have seen it. A bee-keeper must be or become somewhat of a mechanic. His work is not at all like farming or fruit raising; it is not in the ground at all. To be sure the honey secretes in plants growing out of the ground, but that makes no difference. He could be a successful bee-keeper if he had been confined between prison walls and had never seen the ground. He would soon find out that the bees went out somewhere and brought back honey. The thing for him to learn is proper mechanical arrangement inside the apiary. So we see that honey raising is almost exactly parallel to and like manufacturing, and so far as this discussion is concerned, it would be much more appropriate to call the apiarist a manufacturer than to call him a producer.

Perhaps it is necessary in order that we may get a clear idea of bee-keeping to go back to an old hobby of mine, or in other words, to a new presentation of an old fact as I gave it to the Michigan State Bee-keepers' Association, in Kalamazoo, about fifteen years ago. I remember well how curious the members looked, and yet how unable they all were to make any answer to the new presentation as I gave it at that time. I had been in the bee business some six years, and at that session some one spoke of a report of a large yield of honey from one hive, that Brother Doolittle or some other bee-keeper had sent to the papers. I rose and said that such reports might be true, and still the reporter make a dismal failure of the business. I said, "Let us right about face and look at the business endwise. It is not a question at all of how much honey one colony of bees can gather, nor any great matter how many ten or a hundred can gather. In good seasons they will gather a good deal; in poor seasons they will give us a bad deal. They cannot help it and we cannot help it. Let us reason this way: About how much honey is there secreted per year, one year with another, in an area or field of a radius of three miles, say, or a diameter of six miles, as that represents about the profitable flight of bees. Well, in a good locality there is a good deal of honey. Enough so that, at the present prices, one year with another, at least $1,000 worth of surplus honey could be taken and sold, besides what would be needed to feed the stock. Now how much capital and labor is needed to harvest that crop?" Now that is where bee-keeping is, all in a nut shell, is it not, Mr. Editor? And that is just what I presented at that state convention about fifteen years ago, and that was before you ever kept bees, I guess. At least it was before I ever met you.

Well now you see it requires a great deal of planning to know how to build the cheapest buildings, get the cheapest hives and implements and the cheapest everything else, and to do all the work with the least labor required to gather this honey. When I say "cheap," for heaven's sake don't understand me as meaning poor goods. The best thing is the cheapest, if the price is not too great. I mean the cheapest in the end. First get your locality. Be sure and get one that some one else has not got, nor even got a piece of, and the more bees you keep the less likelihood will there be of some other fellow entering your field, or of succeeding if he does. Then get your buildings. Don't put too much money into them, but put in *enough* to have them good, roomy and convenient. Next get your hives and implements. And right here comes the vital point. You will find yourself compelled, in order to compete, to use such hives and minor implements as will do the necessary work speedily. The puttering bee-keeper has had his day. You must have things arranged so that you can work two hundred colonies, spring count, all alone, whether you are raising comb or extracted honey, and you can do it and do it easy, provided you have the right implements, fixtures and methods.

The same physical and mental tact will be needed to succeed in this, as in other kinds of business. You need not be alarmed about the price of honey. It will always bring a price between what you can do well at, and the other fellow will fail at. When he can exist, you are getting rich. When he is failing you are doing fairly well. Now how does the specialty question look? Do you think that some farmer or professional man is going to be able to compete with you? Not a bit of it. No man who runs any other business which demands any considerable part of his attention will compete with you long. You will cut his corners at every turn.

As usual, Mr. Editor, you have touched most of the other points. Saving in tools by running one business instead of two or three, and clearness of thought upon the subject when you are a specialist. I have tried to present only a few *different* ideas from those presented in your leader, and those which I thought might be presented by some of your other contribntors.

DOWAGIAC, Mich., Oct. 25, 1889.

Let the Secretary of Associations Get His Pay in "Honor."—The Relation that the "Union" Bears to Bee-Keeping.

DR. A. B. MASON.

"JUST a word more," Mr. Editor, is what speakers say when they wish to say a good deal, but I see I have said nothing about paying the Secretary a "good salary," etc. I know the Secretary "is the soul of an association," and I don't object to having the members pay an additional fifty cents as membership

fee, but if we load our treasury down with "funds," won't there be danger of our being out-voted in the choice of a good man, by a gang that is after the "boodle?" Look out now, don't get us to going too fast in this direction or the brakes might give out, and then what would become of us? Pay! Well! How much does a man want for being Secretary? Why, every time I think of Mr. Holtermann, I think of him as Secretary of the Great American International Bee Association. (My, what a name). Isn't the honor remuneration enough? Ought he not to be satisfied if he gets back the money he has paid out for us during the year? Perhaps *you* had some reason for "growling," for you held the position long enough to rather take off the glamour that naturally comes to most mortals when first filling an official position, and the pay didn't perhaps seem large enough to balance the amount of time necessarily spent in performing the duties of the office. I have done lots of hard work as Secretary that did not pay a cent in cash and still paid well.

After one has shown himself faithful and efficient during one term it might possibly do to *think* of giving added remuneration if his services should be again required.

At first thought, to some, the Bee-Keepers' Union is an unnecessary organization. I have heard it said by bee-keepers that they didn't propose to give their money to help pay the expenses of some one else's lawsuits. Such certainly do not understand the object of the Union, or else are exceedingly selfish. Its object is not to defend *persons* but *principles*, in which what affects one bee-keeper affects all others, and I believe as at present conducted, the Union ought to have the unanimous support of all bee-keepers.

If I should be so foolish as to get *myself* into a fuss with my neighbors about my bees, I believe I should be allowed to take the consequences of my folly and pay for the results of the same; and I came pretty near just that thing last summer. A neighbor's hens were the source of some annoyance and I came *very* near telling them (*briefly*) that if he, (no, it was she) didn't take care of them I *should*, but very fortunately I remembered that her children had been stung semi-occasionally when killing bees on the flowers, and I "just didn't" say a word, but *bought* the obnoxious "roosters" and Mrs. M. will make a pot-pie and prevent a lawsuit and lots of "bad blood" being shown, for *she*, (not Mrs. M.) has an "*awful*" red head and *he* an "awful" temper, but neither the head nor the temper has ever disturbed us, but O, my! it makes "the cold chills run over me" to think how *near* I came to stepping on a "whopping" hornets' nest.

I am not sure but it would be a good thing to combine the Union, the International and the Exchange and pay the manager a fair compensation. Mr. Newman certainly deserves a larger reward than he has been getting for the efficient services he has rendered the bee-keeping world in the law cases he has been conducting for our benefit.

AUBURNDALE, Ohio, Oct. 3, 1889.

Discussions at Conventions Preferable to Essays.—The Secretary Ought to Have Pay, and Everybody Ought to Pay.

DR. C. C. MILLER.

IN THE MAIN, the editorial, in the REVIEW, about "Conventions and Associations," is all right. I am not so sure, however, that the social feature is the most valuable feature in a convention. I think a great deal of the little hints brought out here and there, perhaps brought out by discussion. Sometimes something of real value may be incidentally mentioned that would never have found its way into the columns of the bee journals.

Largely on this account I value above all other things the discussions. Say what you will about well-matured thought in carefully prepared essays, I would give more for one hour of good lively discussion than for two, if not five, of essay reading. But you say the essays ought to be short and to the point, and used merely to introduce discussions. Well, now, are they? Not usually. Indeed very seldom. I have heard long, tiresome essays read without a word of discussion following. One or more pointed questions will open up a subject for discussion more promptly and in a more satisfactory manner than nine out of ten of the essays read.

As to the membership fee, for the most of those in attendance, particularly at state and district conventions, it is a small matter compared with the remainder of their expenses; and when a man spends $5 or $10 for traveling expenses, he will not care very much whether the membership fee be small or large. At the larger conventions the duties of the secretary are confining and onerous, and the labors by no means light before and after the meeting. It is entirely proper, therefore, that he be fairly compensated; and to meet this and other expenses the annual membership fee should not be stinted.

And while upon this point I cannot forbear speaking of something closely allied, that ought not to be tolerated. I mean the common practice of attendance without becoming members. I know it is looked upon as heresy by many to even whisper a word against such a practice, for bee-keepers are such a large-minded, liberal set, that they would hang out the latch string for every one, but I can see neither justice nor propriety in the way things are done at most of the conventions. Here is one man coming hundreds of miles at an expense of $50 or $100, who promptly pays his membership fee with no feeling that there is any hardship about it, and right by his side sits a man who lives hard by; sits through a part or all of the sessions, imbibing all he can that is to be learned, but is suddenly struck with paralysis when those present are asked to walk up and pay their dollar. If anything is said to him he may reply: "I just dropped in awhile to see what is going on, I don't know that I can be here after this session, so it's hardly worth while to become

a member." Possibly it would not be out of the way to reply to him that "The society may get along without you as a member, and there are men here who are paying considerable for the privelege of coming here to instruct you, and it is only fair that you should be willing to pay the pittance requested to help bear expenses." I don't know that it would be advisable to rigidly exclude all except members, but I do think it would be well to let every man present understand that he is *expected* to pay his fees.

MARENGO, Ill. Oct. 5, 1889.

The Bee-Keepers' Review,

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor & Proprietor.

TERMS:—50 cents a year in advance, two copies for 95 cents; three for $1.35; five for $2.00; ten or more, 35 cents each; all to be sent to ONE POST OFFICE. In clubs to different post offices, NOT LESS than 45 cents each.

FLINT, MICHIGAN, NOVEMBER 10, 1889.

BEES IN THE MAILS—THE NATIONAL FLOWER—JUDGING AT FAIRS.

Don't send "bees by the pound" through the mail. The danger from smashed packages is too great.—The selection or rejection of goldenrod as the National flower will have no bearing upon bee-culture.—*All* the advantages are not with the single-judge system at fairs, but most of them are.

HONEY ALMANAC.

Of the many interesting and valuable books and pamphlets gotten out by that indefatigable worker, Thos. G. Newman, the latest is a "Honey Almanac." Recognizing that honey is a luxury, the sale of which must be *pushed*, Bro. Newman has given bee-keepers this lever with which to do the "pushing." Each alternate page is an illustrated calendar, while the remaining pages are filled with interesting facts, figures and suggestions concerning the uses of Honey for food, Beverages, Cooking, Medicines, Vinegar, Cosmetics, etc., etc. Send five cents for a sample to *The American Bee-Journal*, Chicago, Ill.

THE INTERNATIONAL CONVENTION.

The programme for the American International Bee-Keepers' Association which is to meet at Brantford, Ontario, Canada, December 4th-6th next, is not yet complete. However, from the following it will be seen that the subjects are interesting and the members taking part such as will attract many to the meetings. The first session will be 2 p. m. on the 4th.

Bee-Keeping an Occupation for Women—Miss H. F. Buller, Campbellford, Ont.

Cellar vs. Outdoor Wintering — R. McKnight, Owen Sound, Ont.

Shipping Queens—F. H. McPherson, Beeton, Ont.

Disposal of the Honey Crop—Thos. G. Newman, Chicago, Ills.

Cellar Wintering—S. T. Pettit, Belmont, Ont.

Riding Hobby Horses; Bee-Keeping a Recreation from Other Pursuits and an Antedote for Disease—E. R. Root, Medina, Ohio.

Alimentary System or Apparatus of the Honey Bee—Prof. A. J. Cook, Agricultural College, Michigan.

Mrs. Chaddock, of Vermont, Ill., also S. Corneil, of Lindsay, Ont., have promised papers. These papers, with the President's address, and the question drawer for discussion, will occupy the greater part of the time.

Reduced rates, at least one and one-third fare return trip, may be secured on Grand Trunk and Canadian Pacific railway. For particulars apply to the Secretary. Remember you must have a certificate to be filled out when purchasing your tickets for Brantford. Reduced hotel rates may be secured close to the place of meeting.

R. F. HOLTERMAN, Sec'y,
Romney, Ont.

The editor of the REVIEW will be at Brantford and will be glad to meet as many of the friends as possible.

WE DO NEED CONVENTIONS.

It is true that many little things come to light at conventions that would never have been written. Under the stimulus of a face to face debate, when the eyes flash and the cheeks kindle, thoughts come thick and fast; and in this friction of mind against mind, many a spark of wisdom flashes into view. Conventions bring out and diffuse knowledge that would otherwise lie hidden, as it often happens that the possessor of an active brain and a nimble tongue may have fingers to which the pen is a stranger. We *do* think short, crisp, aggressive essays, as "discussion provokers," are needed at conventions. There should be no attempt to treat the subject exhaustively, but rather to say some-

thing that will make men feel like getting up and talking. The Secretary ought to see to it that such essays, and *none* others, are secured. He should so inform the ones who are asked to write essays. A well-considered programme, with the best men available to lead in the discussions, either by essay or address, is a great step towards success; besides, a published programme is one of the best advertisements that a convention can have. But we cannot for one moment believe that an essay from a man is to be compared to having the man himself present at the meeting—the one is a love letter, the other the lover himself. We believe it is also true that apicultural literature is largely dependent upon conventions for its brightness, its "newsiness." In the October REVIEW for 1888 we said: "We have always noticed that when the editor of a journal attended a convention the next number of his paper was greatly improved. There would be a freshness and sparkle, indescribable, but nevertheless very apparent." If conventions have such a beneficial effect upon editors, why shouldn't they be a benefit to subscribers? But, after all is said and done, we feel that it is the social feature that brings us together; it is the enjoyment of this personal magnetism between choice spirits that attracts us. At the last meeting of the Northwestern, the editors of the A. B. J., *Gleanings*, and the REVIEW, together with Dr. Miller and Mr. Heddon, attracted by a sort of affinity, clustered together in a cozy corner one evening as the crowd was dispersing, and talked, and talked, and *talked;* started once or twice to go to their rooms only to come back again; and it was only as the small hours approached that Bro. Newman went home and the others "paired off" and went to bed to "talk some more." Such hours are golden, and will ever linger as bright spots in the memory. As E. D. Keeney, of Arcade, N. Y., says in a private letter, "We need more play days and rest days, and at the conventions we can drop our business and cares, and can rest and learn, and feel better for it. We can go back to our work with renewed vigor and life." While it is true that the abundance of cheap and excellent literature has greatly lessened the necessity for conventions — has completely overshadowed them as a disseminator of knowledge—it is equally true that conventions yet have, and always will have, a vast influence. We cannot spare them. To have a personal acquaintance with the best men engaged in the same occupation as ourselves is no small advantage: it gives us broader views; by them we can measure ourselves and see where we are lacking: it adds to our enjoyment and to our knowledge. Without conventions such acquaintanceships would be few and far between. Joined with the press, the convention becomes all-powerful —the words of wit and wisdom fall not only upon the ears of the assembled hundreds, but are seen by thousands of readers scattered all over this fair land. The convention and the press—we need them both.

APIARIAN PREMIUM LISTS AT FAIRS.

The REVIEW for August, 1888, was a "Fair Number." The special topic which it discussed was "The Exhibition of Bees and Honey at Fairs." One very appropriate item that it might have contained, but did not, is a model premium list. Agricultural societies usually make up their premium lists early in the year, sometimes as early as January, and we wish to begin a discussion of the matter *now*, in order that we may have a model list all ready to present to these societies when they hold their winter meetings. A few years ago, H. D. Cutting and the editor of the REVIEW spent quite a little time in getting up a list. We corresponded with bee-keepers who had been exhibitors, examined different premium lists, secured all the information we could, and then sat down and made up the list. We spent several days in Detroit attending the winter meeting of the Michigan State Agricultural Society, and finally secured the adoption of our list. We were rewarded by seeing it almost universally copied by other societies. It was a good list for the times, but the world moves, we have had some experience since, and can see where it may be improved. We now offer the following for consideration, and ask all who desire to do so to send in their criticisms, in order that we have a list as nearly perfect as possible to offer early in 1890. We have, perhaps, placed the premiums at a higher figure than most societies would care to use, but they can be easily reduced, keeping the proportions as they are. The amounts foot up $450.

PREMIUM LIST.

Exhibitors will not be allowed to remove honey from the exhibit during the fair, but may sell from a reserved supply.

Bees must be exhibited in such shape that each comb may be seen on both sides.

	1st	2d	3d
Most attractive display of comb honey	$35	20	10
Specimen of comb honey, not less than twenty pounds, quality and manner of putting up for market to be considered	10	5	
Most attractive display of extracted honey	35	20	10
Specimen of extracted honey, not less than twenty pounds, quality and manner of putting up for market to be considered	10	5	
Most attractive display of beeswax	20	10	
Specimen of beeswax, not less than ten pounds, soft, bright yellow wax to be given the preference	6	3	
Single-comb nucleus Italian bees	10	5	
Single-comb nucleus black bees	10	5	
Single-comb nucleus Syrian bees	10	5	
Single-comb nucleus Carniolan bees	10	5	
SWEEPSTAKES ON BEES.			
Display, in single-comb nuclei, of the greatest variety of the different races of bees	10	5	
Collection of queen bees, of different varieties	16	8	
Honey vinegar, not less than one gallon, shown in glass	6	3	
Specimen of comb foundation for use in the brood-chamber	6	3	
Specimen of comb foundation for use in section boxes	6	3	
Comb foundation, for use in the brood-chamber, made on the grounds	20	10	
Comb foundation, for use in section boxes, made on the grounds	20	10	
SWEEPSTAKES.			
The largest, best, most interesting, attractive and instructive exhibition in this department, all things considered	35	20	10

In the first place, let's don't offer any premium on lying. Never compel the judge to take an exhibitor's word for anything. Let the article exhibited show for itself. Don't offer premiums on samples of different kinds of honey, when they can be so easily gotten up for the occasion by mixing. Don't put at the head of the list such requirements as: "Honey must be this season's crop." or "Must be the product of the exhibitor." when there is no way of knowing whether they are lived up to. For this same reason, we would offer no premiums on "honey candies," "pastry made with honey," or on "fruits preserved in honey." Deception in these matters is so easy and detection so difficult. In offering premiums on displays of honey and wax, we would omit the word "largest," using simply the word "attractive." We think this expresses all that is needed. Size would, of course, be *one factor* in making a display attractive, but a small display might be so skillfully arranged as to be more attractive than a larger one. The larger of two displays, equally attractive in other respects, would, of course, bear off the palm. We think bee-keepers would prefer to have "supplies" included in the premium list, but the managers of fairs have decided against offering premiums on implements, on account of the difficulty of securing satisfactory decisions, and will not allow hives, extractors, and the like, to be placed upon the list. The best we can do is to have a "sweepstakes" premium offered upon the largest and best exhibition: *then* supplies will count.

Mr. Cutting suggests that the foregoing list be brought before the Michigan State Bee-Keepers' Association when it meets at Lansing next December; that it be discussed at length and finally sent out, as approved by that body, to all societies offering premiums on bees and honey.

BEES ALONE, OR "MIXED;" IF THE LATTER, WHAT WITH?

Time was when many of the industries were represented in one family. Flax and wool were grown, spun and worked up into cloth, and made into clothing. Cows were kept and cheese as well as butter made for home-use. Poultry and a few stocks of bees added to the comforts of the household. But there is no need of going into detail: every one knows how people lived 100 years ago. Cheap and rapid transporation has encouraged the invention of machinery, the building of factories and the classification of labor. This has brought about *specialty*. No one disputes that this condition of things is better; by it our comforts are more than trebled. Some industries branched out as specialties much sooner than others. Bee-keeping was among the later ones. At last, however, it is becoming recognized as an in-

dustry of itself. The specialist with his hundreds of colonies, his improved hives, appliances and methods, can and *does* raise honey cheaper than the man with a few colonies. Is there a reader of the REVIEW who doubts this? If the specialist, with all the advantages that specialty gives, cannot raise honey at a profit, no one can. By specialty is not meant that a man does *nothing* else, but that it is his *main* business. Bee-keeping was once *our* specialty. We owned a small farm, but hired nearly all of the work done: and may say right here that the farm was always an "aggravation" to us: we disliked to be "bothered" with it—preferred to be at work with the bees. We kept some sheep and hogs, and the land in grass as much as possible, in order to lessen the farm work. We also wrote quite a little upon apicultural topics; *but bee-keeping was our business*, and with it we allowed nothing to interfere. Now our business is publishing the REVIEW. True, we yet own the bees, but the greater portion of them are managed on shares by a brother who has worked for us and been with us as a partner several years. After we have worked hard in the office two or three weeks, and the REVIEW is finally "out" and mailed, what a relief, what a pleasure, to take one or two of the little girls and hie us away for a ten-mile ride on the cars out to the old home at Rogersville, and work with "Elmer" among the bees a day or two. We have met with reverses in bee-keeping. There have been poor seasons, and twice we have seen an apiary of nearly 100 colonies reduced to less than twenty "weaklings." *Such* experience usually "cooks" the non-specialist: but *we* bought more bees, and with our location, our hives, fixtures and combs, and our knowledge of the business, all losses were soon made good. We hope no one thinks we would advise bee-keeping as a specialty, without previous experience. How this shall be acquired, although an interesting topic, is not *exactly* the one under discussion. We might say, however, that nearly all of our specialists acquired their knowledge by beginning in a small way in *connection with some other pursuit*. They were better fitted for bee-keeping, and, at last, the old business was dropped for the new. There are hundreds of men now, with an apiary and a farm on their hands, who are asking themselves "Which shall we give up, the bees or the farm, or what *shall* we do?" It was to assist such men in making a decision that the special topic of this month was introduced; and we doubt if better advice could be found than that which appears in this number. It is true that there are industries in which there is a mutual advantage in their combination. Mr. Heddon mentions the combination of fattening hogs and running a grist-mill, or a slaughter-house. The keeping of hogs and the raising of apples also brings about a mutual benefit. The swine enrich and "cultivate" the soil and eat the wormy apples that fall. This is good for the trees, and the apples are good for the hogs. Now, is there any business that can be combined with bee-keeping to their mutual advantage? There is a *slight* mutual advantage in the keeping of bees and the raising of fruit, alsike clover or buckwheat; but not sufficient to induce a bee-keeper to buy a farm or a farmer or fruit-grower to run an apiary. Now that we have this topic so well in hand, let us continue its discussion in the December number, but with a little variation. We will suppose it is admitted that the highest success can be secured only by specialty. Having done this, we must not forget that there are "many men of many minds;" that "circumstances alter cases;" that all men and all circumstances are not fitted for specialty. The reasons *why* a man may sometimes be compelled, or desire, to mix bees with something else are too varied for mention here, but it is a *fact*. Now, for our December topic, let's take the following: "What business will best combine with bee-keeping, and what shall bee-keepers do winters?" During the winter there is practically but little to be done in the apiary. Unless a man has nothing else to do, he can scarcely afford to pass the winter making his "supplies." *Specialty* can furnish them "*too* cheap." But it does seem to us that, in many instances, *something* might be profitaly combined with bee-keeping at this season of the year. For instance, one man might "canvass;" another teach "singing schools:" another writing schools: another a district school. A farmer-bee-keeper might make a specialty of sheep-husbandry which calls for but little attention during the busy time with bees. Of course, personal taste and adaptability and existing circumstances, must largely influence one in a choice, but it must be a "winter pursuit," or else one that may be instantly dropped, or else—well, we shall be very glad to have our "mixed" readers tell us *what* else.

ADVERTISING RATES

are fifteen cents per line, (Nonpareil space) each insertion, with discounts 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.

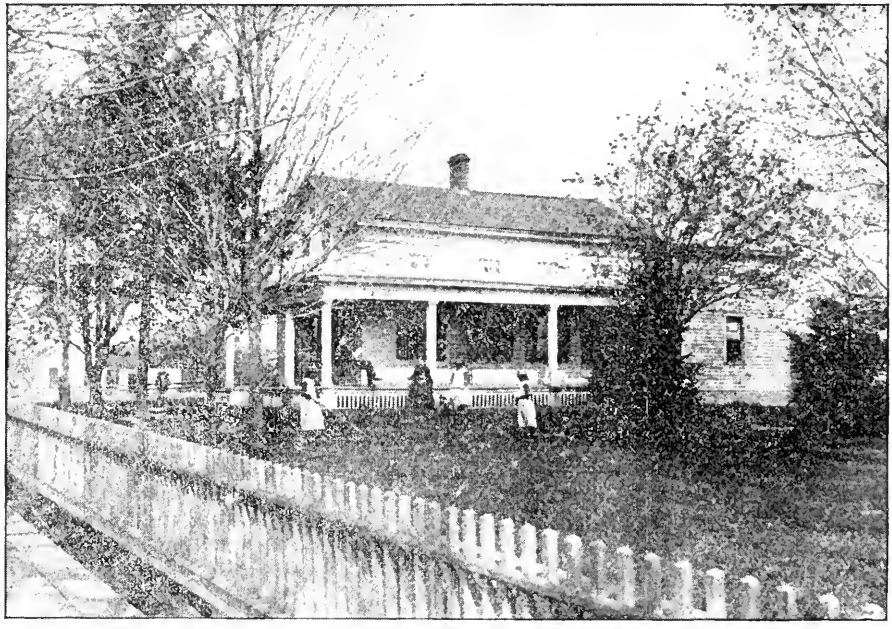
THE BEE-KEEPERS' REVIEW

VOL. II. FLINT, MICHIGAN, DECEMBER 10, 1889. NO. 12.

The Review, Its Home, Its Editor and His Family.

AS AN introduction to what we have to say upon this subject, we will give an extract from a letter received last July, from Mr. Geo. F. Robbins of Mechanicsburg, Ill. It is as follows: "I have sometimes felt inclined to criticise, somewhat, the conduct of the REVIEW. After all, I suppose it is about right. It all depends upon how we look at it. If it is intended for a a journal of general apicultural knowledge, fitted alike for all classes and all parts of the country, it is deserving of pretty sharp criticism. But if intended as a sort of specialty in bee-journalism, and an exponent of a system or school of apiculture, its excellence puts it above criticism. The best style of journalism is that which reflects the individuality of the journalist—that has a man at its head who puts himself into it, and makes it *his* journal; and you certainly put Hutchinson into the REVIEW pretty big. The REVIEW may be narrow in scope, and its corp of correspondents rather exclusive, yet, in *its* way, it is certainly about the creamiest journal in the country; and ought to be a great favorite with Northern bee-keepers who are a little out of their primers." The proposed character of the REVIEW was briefly outlined in its first issue. We presume Mr. Robbins has not seen that number, yet so perfectly have we fulfilled our promises, that a perusal of the later issues leads him to unwittingly give the gist of our "Introductory." Yes, we believe in specialty, even in bee-journals. The REVIEW is a special paper for apicultural specialists; for advanced bee-keepers. In preparing copy, or in writing editorials, it is taken for granted that its readers are conversant with modern bee-culture. We would have no one infer that there is no place for the REVIEW upon the table of the novice or the amateur, but rather that it is more *particularly* adapted to the needs of advanced, *financial* bee-keeping. To the man who is keeping stockings and shoes on the feet of wife and little ones by raising honey, or to the one who aspires to the possession of a bank account through the same means, the REVIEW will ever come as a best friend and trustworthy adviser. Most earnestly does it strive to be practical; to discuss those subjects that are of real interest to honey producers; and if there is any appearance of exclusiveness in its selection of correspondents, it comes as the result of an attempt to secure the services of those men who, from long experience in large apiaries, are best fitted to furnish the information most valuable to the class of readers that we are striving to serve.—Most of our readers need not be told that, with each issue, the REVIEW makes some topic the subject of special discussion; a "leader," or introductory editorial appearing in the preceding number. When a number is out, we do not sit down and wait for articles to be sent in, but we write to this one and to that one, asking for views and experiences upon the subject to be discussed; and our extensive acquaintance with bee-keepers enables us to be very successful in securing exactly the information needed upon each topic. We know who rides this "hobby," who that.—When a number has been printed and folded, stitched, trimmed and mailed, and we are busy "throwing in" the type, or "setting up" an article that some correspondent, more prompt than his fellows, has sent in, there sometimes comes over us a feeling that the next REVIEW may be a poor one, that it will be impossible to secure anything particularly valuable upon the subject chosen. As the days go by, more articles come to hand. Our spirits revive. The month draws to a close. More articles

come in. As we read view after view—sharp, clear-cut, well considered—we become actually buoyant. The next REVIEW will be *splendid!* Then we begin to have trouble from lack of space. Something *must* be left out, and what shall it be? Some of the articles already in type may not be so good as others that have come in later. The latter are "set up," and the former "thrown in." crept into the "make up," when we have worked in this manner for a month upon the REVIEW, we almost have its contents by heart. Its fresh, clean pages are more than "twice told tales" to us. We have often wished that we might see a copy of the REVIEW that we didn't make, but made as we *would* have made it. We would like to see the REVIEW *exactly* as others see it. This, of



THE HOME OF THE REVIEW.

And so the work goes on: and, at the last moment, there sometimes comes in so much good matter that *must* go in, to do the subject justice, that we are compelled to add extra pages.—We read all the bee-journals and the new bee-books, and give our readers the cream. This work is not done in the usual, stereotyped, conventional, platitudinal manner, but when a valuable idea is found it is seized upon and made the subject of a short, crisp, terse editoral. In short, the character of the REVIEW is most clearly indicated by its name—it could be no other than "REVIEW."—When we have prepared the copy, written the editorials, put the matter in type, read and re-read the proof, corrected the errors, "made up" the "forms," then taken and read another proof to be *sure* that no errors have been overlooked or have course, can never be. We must be content with the expressed opinions of others. Of the hundreds of "testimonials" received, none touched our pride more than the following from a well-known bee-keeper in the East—well, it was P. H. Elwood. He said: "By no means do I agree with all I find in the REVIEW, but I always open it expecting to find it *crowded with ideas*, and it has never disappointed me."—In writing to a friend, when the REVIEW was only a few months old, we mentioned that it had 400 subscribers. In reply he said: "Only 400! And yet you say it hopefully. Why, it ought to have 1,000 by this time. Bee-keepers are not supporting it as they ought." Now *we* have never had any such feelings. In the first place, when the REVIEW came upon the stage, bee-keeping was never more poverty

stricken—it was at its ebb—, and many bee-keepers were *compelled* to consider well before spending so small a sum as fifty cents; besides this, they are not inclined to "bite" at every *new* thing. Very wisely, they prefer to wait and "see how it turns out." There is just this much about it, if a journal merits support, it *eventually* receives it; otherwise not. As to whether the REVIEW will be "supported" is no longer a question, as it is already self-supporting, besides very nearly supporting our little family, while subscribers are constantly being added.—There is one thing that has contributed largely to the success of the REVIEW, in fact, it could not have lived at first without it, and that is the liberal advertising patronage bestowed upon it from the very start. To our advertisers we extend our most heartfelt thanks. In this connection there is one little incident we feel like mentioning. We offered some bees for sale last spring, expecting to use the proceeds in making a payment of $150 due on our home in July. Almost everybody preferred to sell bees rather than to buy, and we were at a loss to know how the payment should be met. We finally stated the facts to our advertisers, and offered to make a discount of ten per cent if they would pay their bills in advance to the end of the year. Ten days later our heart was swelling with gratitude, and the sides of the big, leather, pocket-book were also "swelling"—with the postal notes, money orders and drafts inside, that called for $180. And don't think us less manly because our eyes became moist upon reading letters that said the writers: "Didn't want any ten per cent discount. They were glad to be able to help a brother in need." Surely, the world is not without human sympathy and generosity.—Once or twice we have mentioned that the REVIEW is "home made;" that the "best room in the house" is given up for an office: that we set the type and "make up" the "forms;" while the wife and little girls address the wrappers, fold and stitch the papers and wrap them up for the mail. Sickness and its consequences compelled us to adopt this plan, or see the most cherished project of our life come to naught. What *seemed* a misfortune, *now* enables us to publish the REVIEW at a profit. When we began printing it, $25 worth of display type was all we could buy. To make the advertisements look neat and presentable with no more than this, required much study and care. Often, we have been obliged to change the "make up" of an advertisement already in type, in order to get enough of the kind of type that *must* be had to set up some other advertisement. As a rule, we don't think such work profitable, but it is an excellent school for a beginner with limited capital. To us there was a sort of triumphant pride in seeing how well we could do with but little material. As fast as we could afford it, a few fonts of type have from time to time been added to our stock, until we now have about $50 worth of job type. It is a genuine pleasure to take down the catalogue and decide which style of type we will buy next—when we can spare the money. The initial letter, with which the beginning of each article is ornamented, was selected long before the four dollars could be spared to buy it. And whenever a new font of type is bought, another pleasure awaits us, that of laying it out in the case. We can almost imagine that the bright, new "faces" are actually smiling up into ours as we bend over them.—If the glimpse of our home, as shown by the cut upon the opposite page, affords our readers as much enjoyment as the placing of the picture before them does us, surely the pleasure is a rare one. The photograph was taken one day in late spring when the air was soft and balmy, and the trees were busy with their summer toilets. "We" occupy the big chair and are busy reading "proof;" Mrs. "we" sits upon the edge of the "stoop," by her side a pile of "REVIEWS" that she has been stitching; one of the twins has the lawn mower, the other the rake, while the youngest—little Ivy—has brought out her dolly and its cab that they may have their "pictures taken" too. Had it not been for the trees standing in the way, we should have given more of a front view which would have shown a "wing" at the left of the house, also a red barn at the left and rear. The barn is now used for shop and honey house. The bees are behind the house. The street in front is Wood. There is a long row of maples just outside the walk. Ours is a "corner lot," and the tripod of the camera with which the view was taken stood upon the sidewalk of Saginaw street where it crosses Wood. Saginaw street is the main street of Flint; and, from the second window from the front, where we pass hours at the "case," we can look out in the forenoon upon the string of farmers' teams going

into town with loads of produce, and in the afternoon see them going home with the "things" their owners have bought. Our home is in the "golden mean" between city and country. It stands in the suburbs. It is the first house upon the right of Saginaw street as we drive in from the country. Upon one side we can look out on cultivated field, on forest and farm house; upon the other side the eye falls on the spires and tall chimneys of a bright, beautiful, bustling city of 12,000 inhabitants. When we awake in the night and look out through the open bedroom door, we can see the electric light glisten and glimmer as it comes in the front windows and dances about upon upon the nickle trimmings of the coal stove; in the daytime we are often amused by the queer antics of a little striped "chipmuck" that has ventured to dig himself a home in the terrace just under where Ivy stands with her dolly and cab. He has become so tame that—well, he will let the little girls chase him into his hole.—Just a few words more about those little girls. How well we remember the morning the twins came to brighten our lives. Side by side they were laid in the big rocking chair out in the kitchen, and covered with a soft blanket. Just as morning's rosy light was chasing away the darkness, we slipped out unnoticed to where they lay, and softly turned down the blanket to "see how they looked." We don't know how newborn babies usually behave, but these two opened their little brown eyes and, for a moment, looked up at us. That moment will never be forgotten. A feeling went through us that thrilled like an electric shock. We felt twice a man. Let come what would, we would stand between those little brown eyes and hunger, cold and hardships. One year and a half later, another little girl joined the circle. *Three* babies! The house was small, and the sitting room and office were one. Many an article have we written with baby fingers clinging to our knees. Often have we thought how pleasant it would be to have an office all to ourselves, where we could get away from the noise and chatter. When we bought the house that is now our home, we expected such would be the case, but it isn't. The girls will bring their playthings clear through the kitchen, dining room, hall and sitting room, into the office, in order that they may "be where papa is." Their doll's cab stands under the imposing stone and their house plants have crept in upon the windows, but we have not the heart to drive them out. We little know what the future has in store, and the time may come when we will look back longingly to the days in which our little daughters made a play room of our office. By the way, Ivy takes quite a little delight in watching for the gray coat and bright buttons of Uncle Sam's postman who, at half past eight, comes in with a nod and a smile, and lays the bundle of mail on the desk. She likes to stand by and see the letters opened. Her opinion of a letter is based entirely upon the amount of money it contains. A letter that contains no money, is of little value in her estimation.

Friends, little did we think, when we began, that this article would be so long; but thought after thought came crowding on, impatient for expression, and the pen glided on and on as though bewitched, but it *must* be stopped. Why have we written as we have? Because we never meet a subscriber who does not ask: "How are you succeeding with the REVIEW?" and we thought nothing would be more appreciated at the end of this second volume, than to allow all a little peep behind the curtain—to let them catch a glimpse of the home life of the REVIEW, its editor and his family. If our pride in the REVIEW has at times seemed extravagant, please remember "it's our baby."

CORRESPONDENCE.

Chopping Cord Wood, Winter Dairying or Winter Poultry Keeeping Combine With Bee-Keeping Better Than Small Fruits.

C. C. MILLER.

SOMEWHAT the same reasons that would decide a man in selecting a vocation independent of bee-keeping, would also decide in selecting a business to combine with bee-keeping. If a man were to ask me about it, one of my first questions would be: "What can you do, and what do you like to do?" Otherwise I might advise him to teach singing classes, only to be told that he couldn't tell one tune from another. Still, there is no question but one business may combine better than another with bee-keeping, allowing that a man's ability in each is equal. A business to combine well with bee-keeping must be one that allows comparative leisure at the time when bee-work presses. Chopping cord wood would, in some instances, be the proper thing; teaching singing school in

another. A carpenter might combine bee-keeping with his business better than a blacksmith or shoemaker could.

I think small fruit raising has been recommended to be run in connection with bee-keeping more than has any other business, yet it is the poorest so far as busy times are concerned: and I know of only this much to commend it. The man with the proper tastes and qualifications to succeed at one, is likely to succeed at the other.

Winter dairying (and nearly all the dairying in this region *is* winter) might combine pretty well with bee-keeping; but, if I were to single out any one business that I think might do for the largest number of bee-keepers, as a "combine," it would be the poultry business. I don't mean having a lot of hens running the business themselves; fighting over their nests and dragging a lot of little chickens around through the wet grass just when the bee-keeper is busiest. A business can be made of raising eggs and poultry and yet have the laying mostly if not entirely finished before bee-work presses in the spring. A better price can be secured for winter eggs, and the labor comes when the bee-work is slack. The old hens can be all sold off before busy times, and the chickens raised so early as to need little summer care. A brooder can be made to take the place of mother-hens; indeed, by using an incubator, hens may be dispensed with entirely as soon as the laying is over.

Instead of saying all this can be done, I ought to say I have read that it can, because I have never run an incubator, and a brooder but little. Possibly, some one with full experience may show up objections, of which I know nothing, to this poultry scheme.

This is a good subject to talk up, and I am interested in it, for a few such seasons as those of 1887 and 1888 may make me anxious to find a "combine." I think it would be more likely to be chickens than strawberries.

AWAY WITH ESSAYS AT CONVENTIONS.

I feel like saying just a few more words about essays at conventions. You say essays should be "short, crisp, aggressive," "that will make men feel like getting up and talking," and the "secretary ought to see to it that such essays, and *none* others, are secured." Now, if "such essays, and *none* others" are secured, then I give up the fight against essays. But can that be done? *You* can't do it. You never did, and you're the best secretary I ever knew. Somebody brings in, or sends in, a long-winded essay that is a bore; and a secretary can't well keep it out. You did'nt succeed at it the last time I knew you to try. Then it isn't easy to write such an essay as you describe.

Once I was asked to write an essay for a national convention, and I had a subject in which I was interested, and wished to hear discussed, or rather read the discussion, for I was not expected to be present, so I wrote as nearly as possible just such an essay as you describe, and was disappointed to find not a word of discussion. I think if I had been present, and had been allowed to spend half the time in asking questions that I really wished to have answered, I could have gotten up a lively discussion. As you say, an essay from a man is not to be compared to having the man himself present, and not one man in one hundred can read as well as he can talk.

MARENGO, Ill. Nov. 16, 1889.

It will not answer to allow the Doctor to get the start of us in this manner. *He* is the best presiding officer *we* ever knew; and, if we could always have him in the chair, we would be pretty certain of a good convention without essays. Sometimes, however, the members are so unfortunate as to put into the chair some such a man as the editor of the REVIEW, *then* essays are a big help. But they must be of the right sort, and we don't remember to have ever admitted one, when secretary, that was *very* much, if any, too long, or that was a bore; but we *do* have some quite distinct recollections of having made enemies by rejecting essays that did not meet our approval. (Guess the Doctor must have been thinking of some convention where we were present but *not* secretary.) We have attended scientific, agricultural conventions (been sent to report them for the *Country Gentleman*) which were essay reading from *near* the beginning to the end. The secretary, in his zeal, had gotten up a lengthy programme (a common error), and the president would soon discover that they "couldn't get through the programme unless discussion was dispensed with." "Getting through the programme" seemed to be what they came for, so the learned and scientific men and "Professors," among whom a most interesting and valuable discussion might have been carried on, sat for hours and listened to essay reading. (The views of our friend Miller upon this subject often danced through *our* mind.) The essays were good enough, except that they were too long and exhaustive to be read at a convention. Why travel hundreds of miles to hear essays read that might just as well have been published and read in a periodical? We will go as far as any one in condemning *such* essay reading; and we most fully agree with our friend that, as a rule, discussion at conventions is of more value than the essays; but, with the general run of presiding officers and conventions, the *discussion* is better if there are a few essays of the right kind. Let's don't say such essays can't be secured. As yet, the efforts in this direction have not been very extensive. The Doctor truly says that few men can read as well as they can talk; upon the other hand, there are many

men who can *write* better than they can talk —in a convention. We are glad, however, that the Doctor does not like essays at conventions, as it has led to this discussion, and good may result.

Some Things That May be Mixed With Bee-Keeping; but Each Man Must Choose for Himself.

R. L. TAYLOR.

ABOVE MOST other rural pursuits, bee-keeping requires promptness in attention, therefore, any other kind of business to be associated with it to advantage, must be flexible in its requirements, or, at least, if promptness in giving it attention is at any time very important, it should be at a time when the bees require no special care. For example, the raising of small fruits, which is often recommended as a desirable business to combine with bee-keeping, is, to my mind, if it is to be carried on at all extensively, ill adapted to that purpose; for the obvious reason that the picking of the fruit, which cannot be delayed, comes on just when the demands of the bees are the most exacting.

First, then, let this point of interference be studiously considered: and let every occupation where the objection holds be rigorously rejected. Any neglect here will inevitably induce over-work, ill temper, loss and disappointment.

Next, a very desirable thing in the business to be united with bee-keeping, if it requires attention at all at the same time as the bees, is that it be capable of being carried on hard by the apiary; so that while one is receiving attention the operator may at the same time survey the other also.

And, after all this, the proper choice will depend largely upon ones' tastes and circumstances. Everyone must ask himself what he would like best and in his situation what do convenient markets demand.

For myself I know of nothing I should be more inclined to take up than the cultivation of grapes. There is always a demand for well grown grapes, and with a judicious choice of varieties, and proper cultivation and dressing they are generally a reliable crop. The attention the vines require need not be very exact as regards time except perhaps the gathering of the fruit when there is apprehension of frost, and *that* would almost always be when the bees would require little or no attention if previous to that time the bees had been properly handled. To one favorably located either the growing of plums, pears or quinces would be a pleasant and might be made a profitable employment, and neither would materially conflict with any attention required by the apiary, provided that neither occupation be allowed to become too extensive.

An apple orchard also would stand in much the same relation to bee-keeping as the vineyard, and with wise selections and proper care should yield a substantial and pretty reliable income. As an adjunct to the orchard a few hogs could be kept and the two would be of great mutual advantage.

Poultry would no doubt answer for some, but when one increases the number of such stock beyond forty or fifty he must be exceptionally well situated, or of decided ability in some respect, or failure will be probable. A cautious advance in the poultry business may prevent much disappointment.

Farming and bee-keeping are loudly recommended by some as well adapted to be prosecuted in conjunction, but I think them very poorly adapted for that purpose. There is constant interference. The incompatability is so great that they cannot properly be said to be capable of union. In practice each must remain a separate business. Nevertheless there are branches of farming that may well be selected, the one to be chosen depending upon one's situation and circumstances. If the apiary were not very large a small dairy would answer for some. The production of vegetables or flowers would be suitable for others.

But it is of little use to enumerate, for after all every one must make his own choice: little more than general principles can be laid down in an article on this subject.

Thus much touching the months during which the bees must receive more or less attention, after which there remain five or six months which anyone not largely engaged in bee-keeping may devote to any work appropriate to the season which he may choose. It may be anything from school teaching to wood chopping; little can be done, however, by a stranger in the way of giving valuable advice.

I think I may safely say in concluding that the great majority of those who undertake to associate any other business with bee-keeping will soon find a growing desire for an increase of the one and a decrease of the other, and after a little there will either be a demand for more hives and foundation or an offer to sell a lot of empty hives and moth eaten combs.

LAPEER, Mich., Nov. 20, 1889.

Winter Dairying is the Thing to Combine with Bee-Keeping.

GEO. F. ROBBINS.

FOR what should we combine any other business with bee-keeping? There are two reasons, viz.: To enable us to keep the wolf from the door in case of a failure of the honey crop, and to furnish profitable employment during periods when the apiary does not demand our attention.

Now I write from the standpoint of one who believes in marketing his own honey crop. I give it my personal effort, and take from July until the following May to sell it. I might combine with bee-keeping some other occupation that would necessitate lumping my crop off to one or more dealers and make as much money in the end. But for reasons out of place here to detail, that

is not my plan. And if I take up anything else in connection with my specialty, the best plan is to raise something that I can market to advantage during the period I am marketing my honey. To a man not situated as I am this rule, perhaps, would not hold good. I have in charge a little spot of twenty-five acres which I must utilize to the best advantage, all things considered. We have a small apple orchard, the fruit of which I sell chiefly to consumers. I have tried raising potatoes. This works fairly well, since I must hire my little farm tilled any way. Before I became a farmer I taught two short winter terms of school. For several reasons I do not advise any bee-keeper to take up that. If for no other reason, teaching school is a calling of too profound, almost sacred, importance and responsibility to make it subsidiary to anything else.

One might canvass for a good book or something similar during the "off months." Raising fancy poultry and eggs where one wants a more permanent business and has no land to till, I should think might do pretty well. But I do not want to discuss matters that I know too little about.

I am here to recommend just one little business, the one which I have tried most successfully in a small way as an adjunct to my special calling. That is nothing more nor less than dairying. I believe there are few persons, even among farmers, who realize the possibilities of half a dozen cows on twenty-five acres, or even less, of land. But the business *must* be properly attended to. If it is to be conducted in the loose, haphazard way of old log gum bee-culture, it should be let alone. To go into the details of the business, you, Mr. Editor, would, doubtless, consider out of place, and would not allow; but I deem it necessary to give the gist of my plan, which is about as follows: Get good butter cows. If they can be of good breeding stock at the same time so much the better. Hunt up good customers and engage to furnish them with *good* butter at stated prices the year round. Work it so as to have the cows come in fresh at intervals, but more especially in fall and winter, so as to keep up the supply of milk. Take the calves from the cows at the start and raise them by hand. Be sure to shed the cows and calves well. Feed a variety of food. Corn, bran, ship stuff, scalded with hot dish water, refuse fruits and vegetables with their parings, fodder, clover hay, straw, chaff—work them all into their bill of fare if convenient. What food can not be raised can be purchased, and the business still be made to pay. Sell the calves as soon as stock raisers will buy them. Keep a few pigs to utilize the surplus milk, and perhaps a few chickens to help consume the waste. The calves, hogs, etc., will pay their way and nearly feed the cows—the butter will be profit. I am sorry matters have compelled me to abandon dairying, for it has been the most profitable pursuit I have tried in connection with bee-keeping and has collided with it least. Nothing permanent can be combined with bee-keeping, perhaps, that will not make the apiarist "hop" during the honey season.

What shall the apiarist do winters? For myself the above has pretty nearly answered that question. The production of any given quantity of butter and the care of the stock requires five times the work in winter that they do in summer. Either business or both may be enlarged to the capacity of the man. But even when the work is all done—why bless you, I never am one of the happy (?) number who ever reach a place where they have nothing to do. From March until the holidays I look forward with keenest desire to the time when I can indulge a little in general reading. How many volumes there are now upon their shelves that I so much want to take down—not to kill time, but because I want to *read* them. Then there are matters I want to look up in my text books, and old files of journals bearing upon my chosen pursuit. There is excellence to be obtained in study, and there is often money in excellence if there were nothing else commendable in it. Some folks do not care for books or mental improvement. To such I hardly know what to offer. If a man has no work to do—no gates to fix up, no fuel to provide, no household cares and no desire to excel, I do not know what better he can do than to hunt up about three men like himself with nothing to do and go to pitching quoits.

MECHANICSBURG, Ill., Nov. 16, 1889.

"Bees Alone" Good Enough.—We Better Discuss "How to Get Rid of the Surplus."

EUGENE SECOR.

SAY, Mr. Editor, aren't you a little "off" when you enquire what business a bee-keeper can best follow in winter? And that, too, in the face of the fact that such specialists as Mr. Heddon and yourself amassed wealth enough in a few short years to enable you to embark in the printing and publishing business? Did you forget that bee-keeping alone is one of the roads to wealth, and that it isn't necessary to fool away one's time in raising early spring chickens, or in sitting up nights catching cold looking after lambs born in April? Do you suppose that millionaires are going to fritter away the winter vacation warming their shins by their neighbors' kitchen stove vainly growing eloquent over Russian everbearing strawberries, or in trying to sell the latest subscription book, "The Road to Heaven," for the meager commission of 33 and ⅓ per cent? Do you imagine that we are going to resolve our fraternity into a band of missionaries to enlighten the rising generation in log school-houses on the bleak prairies? You are getting too worldly, entirely.

If the bee business is big enough to employ the greatest minds (and of course it is, or we shouldn't be in it) and remunerative enough to pile up the ducats for our lucky posterity, by working only six months in the year, surely you do not expect that we are going to keep our noses down to the grindstone of *continual* toil? Nay, verily. Give us a rest.

After having filled our coffers with filthy lucre through the industry of the busy bees, let us turn our attention to ways and means to *spend* some of it,—lest the burden of wealth become so oppressive that we can't sleep nights for thinking that some dynamiter may be tunneling under our plethoric vaults.

As one way to accomplish the desired result I would suggest that we spend the winter in California. A little recreation in that sunny clime shooting jack-rabbits, hunting bears and bathing in the surf of the placid Pacific—meanwhile boarding at the best hotels, we might forget our cares and distribute our surplus at the same time. And for a change we might rusticate in Florida, catching alligators, eating oranges and sympathizing with the poor bankers of the North who cannot afford these luxuries. Some who have no taste for travel might get elected to Congress, take rooms in the fashionable quarter of the city and entertain the representatives of European courts. As there are too many of us for *all* to go to Congress, a few could be spared to run the State Legislatures. These hardly ever hold after the first of April, so we could get home in time to get the bees out for peach bloom.

This idea of running a "sugar bush" in spring, or a sorghum evaporator in the fall may do for persons less favorably employed than bee-keepers; but all of these humble avocations, while they are good enough for people who have not the capacity for higher things, are too prosy for our brotherhood. So you need not waste any ink discussing what bee-keepers shall do *with* bee-keeping, but rather open for discussion the topic: "How shall we get rid of our surplus?"

FOREST CITY, Iowa, Nov. 21, 1889.

Make Bee-Keeping Less Risky by Selling Bees and Queens as well as Honey.—Selling Diaries and Sharpening Shears.

G. M. DOOLITTLE.

I READ the November number of the REVIEW with great interest, and fully agree with the conclusion arrived at, that there is more money in bee-keeping for the specialist than there is for the man who conducts some other business with bee-keeping. But there is one thing which I see has taken firm hold of most of those writing, and that is, that in order to be a specialist in anything, the person so working must work only along one certain portion of that pursuit. For instance: the person who is to be a specialist at farming must make the raising of hay, or the raising of corn, or the raising of wheat a specialty, if he would be successful, according to the teaching of the last REVIEW, while I believe that nearly all of our farmers practice what is termed "mixed farming," and succeed fairly well at the business. Thus we find our farmers here in "York State," no matter whether the farm contains 20 acres or 200 acres of and, raising wheat, oats, barley, flax, beans and corn in the shape of grains: keeping sheep, cows, horses, hogs, chickens and turkeys in the shape of stock; raising apples, pears, small fruits and potatoes on the same place, besides all the garden stuff required by the family. Talk to them about raising potatoes as a specialty, as does Terry of Ohio, and they will point to such and such ones who tried it and sunk their farms and all they had, and tell you that they "want none of that on their plates," preferring to have something to fall back on should one special crop fail.

Now I am one of those who look at bee-keeping in the same light that our farmers look at farming. I believe in making bee-keeping a specialty in just the same way our farmers make farming a specialty. I believe the wise apiarist will work his apiary to a profit by selling bees, queens, comb honey, extracted honey and beeswax from it. Now, I know whereof I speak, for I have sold as high as $200 worth of bees out of my apiary certain springs, and, not being able to fill all orders from my own yard, bought all one or two of my neighbors could spare beside. Taking six years on an average, I have sold $500 worth of queens each year from the same apiary after selling bees as above. Then I have sold as high as $2,000 worth of comb honey from the apiary in a single year, but not in the years that the bees and queens were sold, although in some of the years I sold several hundred dollars worth of comb honey. Then I have sold considerable extracted honey from my apiary, and should have raised more had I not found that it did not sell as readily as comb honey in the cities where I sent the comb honey. As to the wax, there is always a good demand for all any one can save, and were I to go into another experiment (I may do this some time) it would be to see whether an apiary could be made to pay run wholly for wax production.

Now, Mr. Editor, in answering your question, "What business will best combine with bee-keeping, and what shall bee-keepers do winters?" I should say follow mixed bee-keeping as I have given above, and the person who does it will find nearly all of his time occupied with profit except, perhaps, the month of December, the last half of November, and the first half of January, for, as the "Rambler" says "this would keep the apiarist busy all winter in preparing for the next season," by way of making shipping boxes, queen cages, sections, etc., etc.; especially if he peddles his honey as the "Rambler" does, which peddling is as profitable to the bee-keeper as any work he can do, providing he has any gift along this line.

If you had only asked what *any person* could "do winters" to make it profitable, I should have waited in eagerness to see the answers to that question, for what you say, "During the winter there is practically but little to be done in the apiary," applies with equal force to all places in the country. For this reason we find the country stores and taverns filled with idlers nearly all winter, who have nothing to do but to sit around and tell and listen to idle gossip and stories. Is not "making supplies" at the

present cheap prices preferable to this? And is our apiarist to find employment where scores of laborers are anxious to find something to do, but fail?

But what would I have our bee-keeper do during the months of Nov., Dec. and Jan.? Well, to illustrate: Some years ago I found out, through a mistake in opening a letter not directed to me, that there was an enormous profit made on the sale of diaries, and, as nearly every family must have its diary, why could not our bee-keeper take a lot and go around selling them, reaping some of this profit at just the time when diaries are wanted, and at just a time he had nothing to do?

Again; while in our store the other day I heard a woman speaking in no pleasant terms about her shears, which she declared would not cut, and as none of her folks could make them cut she must buy another pair. I asked her to see them, and by means of a borrowed file and whetstone soon had them cutting better than any pair she could find at the store. Now this woman is only a sample of nearly every woman in the land, while it is one of the easiest things imaginable to keep shears in good order, for they are so simple in their action that all that is necessary to know, is the principle they work on, and then what will make one pair work, will make one thousand pairs work equally well also. Then let our bee-keeper start out with a stock of diaries, a file, a whetstone, a small vice and a small hammer, and call at every house, selling diaries and sharpening shears and scissors, all about his home in every direction, and he will not only make it profitable, but be a blessing to the community as well. If he wishes he can let it be known that he will come each year in this way, and thus secure to himself the territory over which he travels, having a permanent thing for these unoccupied months.

BORODINO, N. Y., Nov. 28, 1889.

By Hiring Help, General Farming may be Combined with Bee-Keeping.

E. J. COOK.

YOU ask for my experience in combining general farming and bee-keeping and how I find employment winters. I have been combining these two branches of industry for several years, and have ever been highly pleased with the result, and find plenty of occupation for the whole of the year. To be sure, some times work is more pressing than others, but I endeavor to have help sufficient for the emergency. I still hold to the "old saw" that there is safety in a multitude of resources, as my experience has been that while some crop may fail to pay cost because of unfavorable season, insect pest, or perhaps low prices, others have made up the deficiency, and I think the honey crop has been as ready to help out as any other product of the farm, and I do not see that it conflicts any more with the other specialties in proportion to the returns than the garden, the orchard, cows, horses or wheat. The general farmer and bee-keeper should make a specialty of everything when it needs attention, and do it just as well as he is capable; and he must employ help sufficient to do this. During haying and harvesting the bees require attention more perhaps than any other time. Also a portion of the day and sometimes a day or two in succession when these crops are ready to go to the barn it is imperative we drive this work. Having the extra work of the bees we of course have extra help at our command and we now put it all to securing the hay or grain. The queens wings are clipped, the bees have plenty of room, and if they swarm they are allowed to return to their hive and can be attended to a few hours later with but very little if any loss. I can often work one or two men in the apiary to better advantage than I can work alone, and I find that most men like the change and are happier, and more interested in the general work with this variety of labor.

The general farmer and bee-keeper has the specialist to compete with, and many of them are live business men thoroughly posted in their work, and he must be equally so and adopt all the approved methods and get the best returns from the least labor and expense possible.

OWOSSO, Mich., Nov. 28, 1889.

The Raising of Winter Fruits Combines well with Bee-Keeping.

L. C. WHITING.

YOUR special topic for December is an important one, as all who depend on their bees well recognize when poor seasons follow each other. The answer for each man will depend on his qualifications and tastes. Mine, induce me to join raising fruit with bee-keeping. The objection to this is that most kinds of small fruit need much attention just when bees demand undivided care. Therefore, my plan is to raise winter apples and pears.

To succeed in this, enough attention must be given to the trees to induce them to bear the off years. No one would be more likely to succeed in this than a good bee-keeper. Much will depend on the location selected; both for the orchard and apiary. Nearness to market must be thought of, not only on account of shipping the fruit, but for obtaining manure for the trees. Many good orchards are of little value because the trees have exhausted the soil, and cannot get the amount and kind of nutriment demanded by the bearing trees. The soil for the orchard needs careful preparation. If heavy clay soil is selected, it should be well and deeply broken up, but never turn the top soil under the clay. All surplus water must be drained off. When the ground is in good condition set out the trees, but not before. A year spent, if necessary, in preparing the ground would be more than made up at the end of five years. Plant but one or two kinds of apples or pears, and before planting learn what kinds thrive best in the immediate vicinity. If you raise good, sound fruit, and are honest in assorting and pack-

ing, you will have a remunerative market for all you can raise; and, having established a reputation for your fruit, as being in every respect equal to sample, can then make money by buying of your less careful neighbors. If you are too busy with your honey to pick and assort your fruit, if it is good it will sell on the trees, and the buyer will pick, assort and pack it for you.

If you want work in the spring months an acre or two of asparagus will help you, and be out of the way before the bees want much care. Fay's prolific currant does not require picking the day it is ripe, but the currant worm will demand prompt attention as soon as the leaves are out, but this work has to be done before the bees require very exacting attention, and none of it will of necessity interfere with the care of the bees.

EAST SAGINAW, Mich., Nov. 18, 1889.

School Teaching, Broom Making and Peddling Honey, Mix Well with Bee-Keeping.

H. D. BURRELL.

WHAT business to combine with bee-keeping, is an important question with most bee-keepers, and if the poor seasons which have prevailed for so long, continue much longer, it will be a vital question with many. A few items from my own experience may help some brother to solve the problem.

I have been a specialist for ten years, and during that time have kept from 100 to 200 colonies of bees. I do most of the required work myself, yet have considerable unoccupied time. Formerly, I taught school winters, but a nervous trouble, which is greatly aggravated by the confinement and worry of the school-room, compelled me to abandon that work.

Then I tried broom-making. Competition is so close in this line there is not "big money" in it, still, one who is quick, handy and industrious can make fair wages. I have no patience with people who won't work unless they can get high wages. Get the high wages if possible, but work for less rather than do nothing. Broom-making can be taken up and dropped at any time, and the product is used everywhere, whether times are good or bad. A week spent with a practical workman will fit any ordinarily handy person to do the work, then expertness comes with practice. Most bee-keepers are handy with tools, and such can make nearly all necessary machinery, at a cost, money out, of a few dollars for lumber, etc. Then $25 to $40 invested in broom materials, which can be bought, by a mail order, of city dealers, will give one a start; or, those who can plant a few acres of land can grow their own broom-corn, and buy the other supplies.

I have heretofore been a producer of comb honey, but a year ago I unexpectedly had about a ton of dark extracted honey to dispose of. I didn't want to send it to a city commission house and *sometime* realize five or six cents per pound for it. Years ago I tried "canvassing" for books, and had ever after been so disgusted with all peddling that I had never tried to peddle honey. But I loaded up a few hundred weight of the honey and started, though with much trepidation. Well, I sold honey at nearly every house, and in about six hours sold over 300 pounds, at eight to eleven cents, according to quantity. I didn't "trepidate" any more, and though I didn't do so well every day, I soon sold all I had, then bought more and sold that. Many people who had frequently for years passed by and seen my "Honey for Sale" sign and never bought a pound of honey, bought readily when it was *carried to them*. At first I avoided towns, thinking people there were worried more by peddlers, and would have less patience with me; but I did not find it so. I could there reach more people in less time and do better.

I haven't tried peddling comb honey, but think I can do better with extracted. Comb honey is usually on sale at the groceries, and usually of poor quality and cheap. Then, too, most customers would not want more than a card or two at a time, while extracted honey can be so put up that you cannot readily sell less than five or ten pounds. And one can afford to sell extracted honey cheaper, which is an item with most customers. That we may as well have twenty-five cents for honey as half that is all nonsense with Michigan people, at least, as a low price *does* increase consumption.

Try it, brother bee-keepers. You will find selling your own product different from peddling books and jim-cracks. Be gentlemanly and you will be treated well. You won't lose any of your dignity (?) nor the good will of any one whose opinion is worth minding. Carry a good article of honey, get people to taste it, and, if they want it, sell them some, but don't urge and annoy them if they don't. That is what makes peddlers a nuisance. I practice what I preach, and know whereof I speak.

BANGOR, Mich., Nov. 25, 1889.

Don't "Mix" Bee-Keeping; but, if you Must Mix it, let it be in the Right Proportion and with the Right Thing.

JAMES HEDDON.

"JOHN, don't go fishing Sunday, but if you do, bring home your fish." Well, that is about the fix you have got us into now, Mr. Editor, and after reading my own article in last issue as well as those of many others and your leader to this article, I see nothing more to say.

I should advise not to go into bee-keeping at all, unless one means to work into it large enough so that all his time the year round, except what he wisely saves out for recreation, rest and visiting, will be wholly employed in the business.

I tell you, when one gets two or three hundred colonies of bees, as he ought to have even if he keeps them all in one apiary, he will have all he wants to do in selling his crop of honey, if he does not sell it in a lump; and, if he does, in getting everything ready for the next season's work. "Spe-

cialty in manufacture" does not put sections together, nor put in the foundation, where one is raising comb honey. Where extracted honey is being raised, for the first few years he will find plenty to do in preparing his additional surplus receptacles, and in getting the hives ready for increase, and, after a few years, when he has so many colonies and so many surplus receptacles ready, that he need not work in that line, he will have such a good business that he can rest, recreate and cultivate his mind and morals through the winter. He may be so located that he can have a lot of fun with his gun or something else. We were not made to work all the time. If we do not live a little as we go along, when will we live?

But then, you want to know what the poor fellow is going to do winters when he is starting out in the business, and before he has grown up to many colonies. If you will allow me to say that you never made a worse mistake than when you even hinted at fruit raising, something that requires all its due attention just at the time when the bees do, I will then say that your leader in last issue just about covers the ground. Nobody should try to say what it is best for anyone to do. A man who has got half gumption enough to succeed in the bee business will know better what to do as conditions present themselves, than any one can tell him in any article; for everyone's surroundings and capabilities are different from every one else's, and I would not for the world undertake to even hint at what John Smith or Henry Jones had best do in connection with bee-keeping, so long as he is in the predicament when something *must* be done. Whatever you do, don't let it carry away a large portion of your mental energy. Keep your mind on the bee business, or else keep your hands out of it, will be my parting words.

DOWAGIAC, Mich., Nov. 21, 1889.

Friend H., when we spoke of fruit raising, we meant the raising of apples or other fall fruit. We did not suppose that anyone would think of such a thing as growing *small* fruits, the ripened clusters of which would hang side by side upon the same bush with clustering swarms.

Let Bee-Keepers Keep "Jerseys," and Make Butter in the Winter.

T. B. TERRY.

FRIEND HUTCHINSON.—The writer is something of a specialist; at least, he is often called such. But, in truth, he is simply a farmer with about one-third as many irons in the fire as most farmers have. He believes in undertaking no more than can be done thoroughly well.

We grow three crops—potatoes, wheat and clover. The potatoes are the main money crop, of course. But, during all the years that we have grown potatoes, there hasn't been one when we haven't made a comfortable living and more.

After reading the November number of the REVIEW, it seemed to me that I wouldn't want to be a bee-keeping specialist. I wouldn't risk making a specialty of a business that might fail three seasons in succession, or even one for that matter. There would be too much anxiety and worry connected with such a business. Like Mr. Hunt, I would combine bee-keeping and farming; not mixed farming by any means; but just enough to keep me busy, as far as possible when the bees needed the least attention, and enough to insure me a living any way.

I couldn't advise small fruit growing, nor yet potatoes, for bee-keepers, as they require one's undivided attention at certain times, the same as bees. As a good German friend said at an institute last winter: "they won't splice." But I see no reason why a bee-keeper may not attend to a little dairy of cows, if he has a few acres of land. He has nothing to do winters that pays. I would have the cows fresh in the fall, as soon as business among the bees began to be slack. One could milk, care for the butter, and raise some good calves on the skim milk, having paying work until the bees needed his time again. Then the calves could be weaned, some young calves secured and put onto the cows, and all turned out to pasture for the summer, the young calves to be sold when good veal. For crops, I would grow clover, corn for ensilage, oats and wheat: a four years' rotation. Would put the first three crops for the most part in the silo, using the straw from the wheat for bedding the stock. I would leave the oats out, if it were possible to get the wheat in after the ensilage corn. These crops could be grown fairly well and secured in this way without that constant attention, or care at just the right time, that potatoes and small fruits require.

My business is much like bee-keeping, only it *always pays*. We are kept pretty busy through the summer season and have next to nothing to do winters. At present the farmers' institutes take up most of my time through the cold months. If I were at home I couldn't be idle, and would probably get a few Jerseys and do something as above.

I should object to sheep husbandry, which you mention, as it wouldn't give winter work enough. Most of the work would be getting food ready for winter. Ten good cows would keep me steadily at work, making the butter and caring for them, and if they were good ones, and I did my part well, there should be an income of $2 or $3 a day, seven days in a week.

There is the rub with me, however. If the cows could only be gone Sundays! But the brightest roses have thorns.

Now, friend H., I think farming, if not too mixed, and properly systematized, the best business on earth, all things considered, and, although, of course there are many other things that bee-keepers might do winters, it seems to me that nothing else would quite so naturally "splice" in as a little good farming, properly arranged, for those who need some other business.

Your lawyers, doctors, clerks, etc., that keep a few bees for recreation, have no interest in this, but the specialist who keeps bees only, it seems to me, ought to have.

But kindly mention to the friends that I was not so presumptious as to volunteer this information; that you asked me, as being a sort of brother specialtist, to write what I thought about it.

SUMMIT Co., Ohio. Nov. 23.

Some Splendid Testimony in Favor of Carniolans.

C. H. CHAPMAN.

EARLY in the spring of 1888 I ordered my first Carniolan queens. They reached me in due time and in fine shape, but I assure you I looked them o'er and o'er with a suspicious eye; half believing they were too dark to ever become favorites of mine (for I was all Italian then); but, as they represented hard cash, I gave them the places of five or six of my golden beauties and closely watched the results. The very first time I opened their hives I found they were not so much German or black bee as I had taken them to be, for they were not in the corner of nor under the hive when found, but moving about on the combs attending strictly to business, and I have yet to find a Carniolan queen off the comb when taken from the hive. In due time the young bees began to appear, when I knew *positively* that I had something *new*. Now I commenced to watch and compare and have continued to watch and compare ever since.

So well pleased was I with the first queens that in August I sent for more queens which, with what I had, and with what I reared, gave Carniolan queens (not all purely mated of course) to just one-half of my apiary.

The test began with thirty-five colonies of each. As all wintered without loss I cannot say that either had the lead on May 1st, 1889, but *then* the Carniolans commenced to lead, and all were in just grand shape when the cold wave struck us the last of May. During the cold spell three Carniolan and nine Italian colonies died outright, and the rest were in a sad state. Every queen cell that I had started was lost—but to the text. The first five colonies to swarm were Carniolans; the first half ton of comb honey finished ready to come off was gathered by Carniolans, and full three-fourths of the 3,800 pounds of comb honey that I secured this year was stored by the Carniolans; and then the superior appearance of the product was such that I have this fall replaced all queens with those reared from my best Carniolan queen.

Although I work for comb honey I have extracted 600 or 800 pounds of honey from autumn bloom and have 110 colonies now in the cellar all in prime shape.

For extracted honey I can see but little difference in the two races. Think the Carniolans the more readily shaken from the combs.

CONOCTAH, Mich., Dec. 5, 1889.

The ✣ Bee-Keepers' ✣ Review,

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Editor & Proprietor.

TERMS:—50 cents a year in advance, two copies for 95 cents; three for $1.35; five for $2.00; ten or more, 35 cents each; all to be sent to ONE POST OFFICE. In clubs to different post offices, NOT LESS than 45 cents each.

FLINT, MICHIGAN, DECEMBER 10, 1889.

OUR ADVERTISERS.

With our politest bow, we ask each reader to look through our advertising columns (in which we have a pardonable pride) and see if he does not find something in which he is interested. We believe all our advertisers are honest and will faithfully fulfil every promise. In responding to an advertisement, please mention the REVIEW, and thus confer a favor upon both advertiser and publisher.

PRIZES FOR ESSAYS.

Bro. Newman is offering prizes ($5.00, $3.00 and $2.00.) for the best essays on "Extracted Honey;" each essay not to exceed 2,000 words; to be written by a subscriber and received before January 1, 1890. We have often thought of adopting this plan, but have not done so because of the difficulty in making just decisions that would be satisfactory to all. Some of those who receive neither prizes nor compensation for their essays *may* think their talents not appreciated. We shall watch with interest Bro. Newman's enterprise.

SENDING "BEES BY THE POUND" THROUGH THE MAILS.

Notwithstanding the opposition that has been manifested against the unwise scheme of sending "bees by the pound" through the mails, Bros. Pratt and Doolittle are still inclined to champion the cause: intimating that those who oppose the cause may be lacking in enterprise, or fail to see how advantageous it will be to those living some distance from an express office. Not for a moment would we stand still in the pathway along which improvements are leaving their footprints; and we know from years of ex-

perience what it is to live miles from an express office; yet we are not ready to approve even of experiment in the way of sending large packages of bees by mail. There is one factor that sweeps away all other considerations. *Somebody* will be sure to put up bees in such a manner that the package will be smashed; the contents of the mail pouch soiled a little; and some official *scared* almost to death. Then away will go the precious privilege of sending queens by mail. Just so sure as this practice is begun, just so sure queens will be eventually thrown out of the mails, *never* to be re-admitted.

MICH. STATE, BEE-KEEPERS' CONVENTION.

The twenty-fourth annual meeting of the Michigan State, Bee-Keepers' Association will be held at Lansing, in the Capitol building, on Dec. 26 and 27, 1889. Reduced rates at Hudson House. Half fare on nearly all railroads. A few roads will charge one and one-third fare for round trip. A number of interesting papers are promised. It is hoped and expected that all bee-keepers who can attend, will do so. H. D. Cutting, Sec'y.

The editor of the REVIEW expects to "be there," and will be glad to meet as many as possible of his friends.

SPECIAL NUMBERS.—EXTRA PAGES.

It seems to be the fashion with magazines, and a good one it is, to get out especially fine issues at the close of the year—Christmas numbers. Extra pages, illustrations and interesting articles make glad the hearts of many readers. The REVIEW falls into line this year with *eight* extra pages; and we hope our friends will find as much enjoyment in their perusal as we do in the giving. The time spent in making these extra pages and in attending the International convention, makes this issue a few days late, but we feel sure that, under the circumstances, the delay will be excused.

ILLNESS OF MRS. NEWMAN.

The first time we visited Chicago—that great city that is almost a magical world of itself—we were the guest of Bro. Newman. Well do we remember the kindness with which we were welcomed by Mrs. Newman. We occupied the same bed-chamber with Father Langstroth. All in all, those were happy hours. Now, Mrs. Newman is ill. For four years she has suffered from that terrible disease, erysipelas. Much of the time, she has been confined to her bed. We know, from experience, what it is to perform mental labor when the *mind* is at the bedside of a suffering loved one; and our heart goes out in sympathy to Bro. Newman and his family as we think of him toiling on with this great care upon his mind. Lighten his burdens, brothers, all that you can.

APIARIAN PREMIUM LISTS AT FAIRS.

Since publishing our "model" premium list it has received the following criticisms: The exhibition of bees is objectionable, because bee-keepers dislike to take their choice stocks to a fair, where the risk of injury is almost a certainty.—The premiums offered for the making of foundation on the grounds are too high. Reasons: most exhibitors have no mills, and thus no chance to compete. *Per Contra.* No premium at all ought to be offered under this head, as it is so much work to bring all the paraphernalia from a distance.—"No good" in offering a premium on the most attractive display of wax, as nothing is to be gained by making wax "ornamental."—No premium ought to be offered upon black bees, as their propagation ought not to be encouraged.—The list ought to specify that honey and wax shall be the product of the exhibitor, otherwise fine honey may be purchased and exhibited, and premiums and "honor" secured by some one who does not merit them.—Don't send out the list as endorsed by the Michigan State Bee-Keepers' Association, if it *is* so endorsed, to agricultural societies that are getting up their premium lists, because such endorsement might lead to its adoption, and it might not suit the bee-keepers of that locality.—Honey vinegar may not be *pure* honey vinegar, hence this ought to be stricken off the list, if honey cakes and candies are dropped for the same reason. In reply we will say that the bees form a *very* attractive part of an exhibition, but a single-comb nucleus will show *more* than a full colony, and the cost is slight even if it is wholly lost. —It is true that all do not own foundation mills, but *some* do, and while the exhibition of the manufacture of foundation is very interesting, it is also considerable trouble, and the premiums ought to be liberal.—

Perhaps nothing would be gained by an attractive display of wax, as we are not catering to the public taste as regards wax, as we are honey.—We are not yet quite ready to lay the black bee on the shelf.—Judges must never be asked to give the premiums to a man because he *says* the honey is his own production.—We have no desire to force a list upon anyone who does not wish it: and hope no bee-keepers will allow us to thus get the start of them.—It is quite likely that honey vinegar can be "doctored," and we would take it from the list: or else *add* "pastry" and "candies" and put the premiums so low that it would scarcely be worth while to "doctor." The exhibition of these articles simply calls attention to the different uses to which honey may be put.

We had no intention of omitting honey plants from the original list. It was simply an oversight. Instead of offering a premium upon the largest number of plants, which brings out dozens of plants that bees never even smell of, we would *restrict* the number. This would bring out the idea: *which are the best honey producing plants?* We would word the matter something as follows: "The Best Specimens of the Best Honey Producing Plants, Pressed and Mounted, not to exceed fifty varities, 1st premium, $15.00; 2d, $8.00." Possibly we have placed the number of varieties too high.

WHAT WILL BEST COMBINE WITH BEE-KEEPING?

It is evident that no cut and dried, cast iron rules can be laid down upon this subject. The best that can be said is that a man must most thoroughly study himself, his surroundings, and the conditions of his particular case. Most thoroughly have our correspondents gone over the ground, pointing out what pursuits must be avoided, which may be chosen, and giving a vast amount of general information upon the subject. At the International convention, over at Brantford, Mr. R. L. Taylor, after enumerating the avocations that might be combined with bee-keeping, exclaimed: "After all, if bee-keeping is so profitable, I can't help thinking, why not keep more bees? If it isn't profitable, why keep them *at all?*" Byron Walker, of Capac, he of "migratory bee-keeping" fame, passed a few hours at the "home of the REVIEW" a few days ago, and in the course of conversation he said he believed that he had lost more bees than any man in Michigan. He had been compelled sometimes to borrow money to buy more bees, but he had no thoughts of abandoning the pursuit, or of combining anything with it. By the way, he has this year secured 19,000 pounds of honey; one-half comb. But we must not forget that all men are not constituted like Mr. Walker. Failure does not stimulate everyone to greater effort,—to the borrowing of money and the extending of business. Some prefer less brilliant success and a lessening of the chances for complete failure. Others, again, actually *prefer* to sacrifice their love of financial gain to the pleasure of being engaged in more than one pursuit. As we said at the outset, men and conditions differ, and it is well they do, and when they are such as to call for a combination of bee-keeping with some other pursuit, we feel that the present discussion need not be perused in vain.

HONEY BOARDS, WHY AND WHEN THEY ARE NEEDED.

Years ago, honey boards were used to support the honey boxes. Now, honey boxes are no more and the modern section box is supported by the super in which it is placed. The modern honey board is not, perhaps, a honey board, strictly speaking, but it is doubtful if a change in name would be advisable, even if a more appropriate name were found. Certain it is, that its construction, characteristics and requirements are different from those of former years. It seems to be the instinct of the bee to build and attach brace combs to whatever comes *next* to the top of its brood-nest. At least, such is the case with ordinary top-bars; those that are $\frac{7}{8}$ wide by $\frac{3}{8}$ deep. If the sections come next to the brood-nest, they are connected to it by the brace combs, and when they are removed, either to tier them up or because they are completed, a dauby, mussy mess is the result—every experienced bee-keeper understands this. To prevent this, Mr. Heddon devised the slatted, break-joint, bee-space, honey board. When placed over the brood-nest, the bees fill with brace combs the bee space between the honey board and the brood-nest, but leave the upper bee-space—that between the honey board and the sections—free from brace combs. Only those who have tried it can

comprehend the delight that attends the lifting off of case after case of sections with their bottom bars as "slick and clean" as though they had been simply sitting upon a table. Latterly, honey boards have been made to answer another purpose, that of keeping the queen out of the supers, by slipping strips of perforated metal into saw kerfs cut in the edges of the slats.

So much in favor of honey boards; now let us look upon the other side. Honey boards cost something, and must be removed and replaced when the brood-nest is opened. A few have reported that no brace combs would be built above the brood-nest if the top bars were wider or deeper, or both wider and deeper. When attending the International convention at Brantford, we had a long talk with J. B. Hall, of Woodstock, Ont., upon this subject. He began using square top bars, not to prevent the building of brace combs above them, but for another purpose which we will not now take the space to describe, and was surprised to find that the bees *did* leave the top bars clean and free from brace combs. It will be seen that the openings between the top bars are exactly "bee space" and about one inch deep, and the space above the top bars, between them and the sections, is also bee-space, and Mr. Hall assured us that the bees positively *did* leave these spaces free from comb. At the last Northwestern convention at Chicago, and in a recent number of *Gleanings*, Dr. C. C. Miller has said that he had trouble by the bees building brace combs above the Heddon honey boards. We have thought about this considerable, and we have been wondering if the excellent honey crop that the doctor has enjoyed the past season may not have had something to do with the trouble. When honey comes in with a rush, bees will sometimes, especially if crowded a little, store honey in every nook and corner—even between the frames and the hives. Again, there were some at the Chicago convention who had tried square top bars, and found that while their use diminished the number of brace combs, the diminuation was not sufficient to allow the honey board to be discarded. Then again, if the use of square top bars *would* allow us to dispense with honey-boards, so far as brace combs are concerned, how about queen excluders? Would it not still be necessary to use them, when they *were* used, in the honey-board form?

For several months we have seen this subject coming to the surface, and we believe the time is now ripe for us to take it up as a special topic, so we have decided to devote the January REVIEW to its discussion.

General Index to Volume II.

INDEX TO SUBJECTS.

Index to Correspondents.

THE "REVIEW."

The distinctive features of the BEE-KEEPERS' REVIEW are that of reviewing current apicultural literature (pointing out errors and fallacies and allowing nothing of value to pass unnoticed), and the making of each issue a "special number"—one in which some special topic is discussed by the best bee-keepers of the country. If you wish for the cream of the other journals, already skimmed and dished up, and to learn the views of the most experienced bee-keepers upon the unsolved, apicultural problems of the day, read the REVIEW. Price of the REVIEW, 50 cts. a year. Samples free.

"The Production of Comb Honey."

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

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

SPECIAL OFFER.

For 65 cts. we will send the REVIEW one year and "The Production of Comb Honey." For $1.00 we will send the REVIEW TWO years and the "Production of comb Honey."

Back Numbers at 2 and 3 Cents.

Of most of the issues of the REVIEW we have several hundred copies. Instead of keeping them stowed away in the attic several years, and finally selling them as waste-paper, we propose to have them out doing good; have them helping bee-keepers and, at the same time, be making known the REVIEW. So long as the supply lasts, we will sell them at TWO and THREE cents per copy. Three cents if YOU pick them out; two, if WE pick them out. The reason why we make a difference, in price, is this: Some three or four issues have run so low that we would not care to sell them at less than three cents a copy. We would mention which are the three-cent issues, were it not that some other number will soon "run low" and be added to the three-cent list, and then another, and so on. If you wish for certain issues, send three cents apiece, and tell which numbers are desired, and you will get them, if you don't wait too long. If you don't care which numbers you get, then simply send whatever sum of money you think best, and say: "For the enclosed, please send back numbers of the REVIEW," and we will send as many numbers as we can at two cents each, and send no two that are alike. If the amount sent pays for more numbers than we care to sell at two cents each, the balance will be returned, or else the sender notified and asked what shall be done with it.

Remember, each number is complete in itself; is, in reality, a little pamphlet containing the best that is known upon some important, apicultural subject.

Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, FLINT, MICH.