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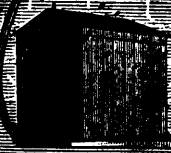
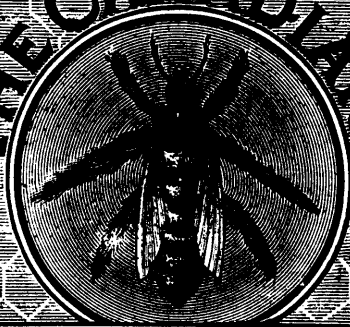
VOL. IV, NO. 51

1889

MARCH 13

PUBLISHED EXCLUSIVELY IN THE INTERESTS OF THE HONEY PRODUCER

THE CANADIAN



JOURNAL

THE FIRST \$

WEEKLY

IN THE WORLD

ONE DOLLAR PER YEAR

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- HONEY, some reasons why it should be eaten, by Allen Fringle. This is in the shape of a leaflet (4 pages) for free distribution amongst prospective customers Price, with name and address, per 1000, 3.25; per 500, \$2.00, per 250, \$1.25; per 100, 80c. With place for name and address left blank, per 1000, \$2.75; per 500, \$1.70; per 250, \$1.00; per 100, 50c.

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Send postal card for sample of leaflet, "Honey, some reasons why it should be eaten."

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We can supply Binders for the JOURNAL 55 cents each, post paid, with name printed on the back in Gold letters.

Subscription Price, \$1.00 per Annum Postage free for Canada and the United States; to England, Germany, etc. 10 cents per year extra; and to all countries not in the postal Union, \$1.00

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Communications on any subject of interest to the Bee-keeping fraternity are always welcome, and are solicited.

Beginners will find our Query Department of much value. All questions will be answered by thorough practical men. Questions solicited.

When sending in anything intended for the JOURNAL do not mix it up with a business communication. Use different sheets of paper. Both may, however be enclosed in the same envelope.

Reports from subscribers are always welcome. They assist greatly in making the JOURNAL interesting. If any particular system of management has contributed to your success, and you are willing that your neighbors should know it, tell them through the medium of the JOURNAL.

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# A POSTAL CARD

Is all it will cost you to get three copies of the **BEE-KEEPERS' REVIEW**. Of the year 1888 we have several hundred volumes, and so long as the supply holds out, we will send free to each applicant **THREE** copies selected from these back numbers. This is done to allow bee-keepers to become acquainted with the **REVIEW**, with the hope that the acquaintance may prove of mutual benefit. Price of the **REVIEW** 50 cts a year.

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is a neat little book of 45 pages. Price 25 cents. This and the **REVIEW** one year for 65 cents. The book and the **REVIEW** two years for \$1. Stamps taken, either U. S. and Canadian.

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## BEE SUPPLIES.

Until March 1st, Brood frames \$1 per 100, \$9 per 1000. Section Crates, Feeders, etc., correspondingly low. Send for price List to

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E. L. PRATT, Pub., Marlboro, Mass.

A 16-page Monthly devoted to Queen Breeders and Queen Rearing. Price 50 cents a year. Send your name on postal and receive a sample copy of this bright new journal. Address, The Q. B. Journal, 175 Main St., Marlboro, Mass

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Perfection Cold Blast Smokers, Square Glass Honey Jars, etc. Send ten cents for "Practical Hints to Bee-Keepers." For circulars apply

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Cor. Freeman & Central Avenues, Cincinnati

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The climate is splendid; heat rarely extends 90° in the summer and very mild in winter, and is exceedingly healthy—no malaria or yellow fever.

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Envelope, business size, No. 7,		
white.....	1 15	2 00
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Business Cards.....	1 50	2 50
Shipping Tags, 40c., 45c. and 50c. per 100.		

Our new book of labels contains nearly 100 specimens of elegant honey labels. Write for prices for any printing required.

THE CANADIAN BEE JOURNAL,

7

BEETON.

EXCHANGE AND MART.

Advertisements for this Department will be inserted at the uniform rate of 25 CENTS each insertion--not to exceed five lines--and 5 cents each additional line each insertion. If you desire your advt. in this column, be particular to mention the fact, else they will be inserted in our regular advertising columns. This column is specially intended for those who have bees or other goods for exchange for something else, and for the purpose of advertising bees, honey, etc. for sale. Cash must accompany advt.

**EXCHANGE**, one 10-inch Foundation Mill--Pelham--used one season, as good as new, for Beeswax, Rcot's chaff hives, or others.--D. W. MOORE, Jordan, Ont., Lincoln Co.

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100 COLONIES for sale or exchange for anything I can use. All kinds of bee supplies for sale also queens for sale in season.

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PRICES CURRENT

BEE SWAX

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"    "    over 50 lbs. ....	48c
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One full colony of pure Italians \$5 each. Ten colonies \$4.75 each, twenty or more colonies \$4.50 each. Tested Italian queens with enough bees to hatch one comb of sealed brood, sent by express before June, \$2.50 each; for five queens \$2.25 each; for ten queens \$2 each. After June 1st ten per cent. off for queens. Safe arrival guaranteed, and references given when wanted.

Address JULIUS HOFFMAN, Canajoharie, N. Y.

NEARLY 30 TONS OF DADANT'S FOUNDATION

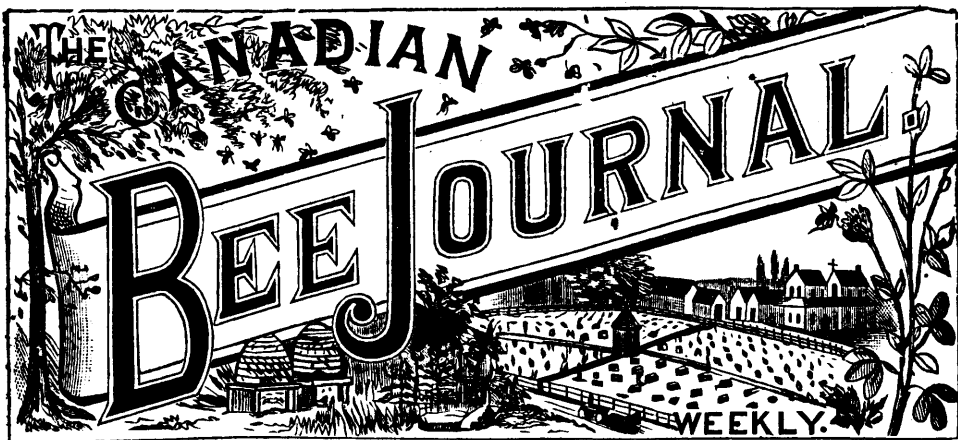
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IT IS KEPT FOR SALE BY MESSRS.

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- CHAS. HERTEL, Jr., Freeburg, Ill.
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- M. J. DICKASON, Hiawatha, Kans.
- ED. R. NEWCOMB, Pleasant Valley, N.Y.
- J. W. PORTER, Charlottesville, Va.
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- J. M. CLARK & CO., 1409 15th St., Denver, Col.
- E. L. GOOLD & CO., Brantford, Ont.

and numbers of other dealers. Write for SAMPLES Free and Price List of Bee Supplies. We guarantee every inch of our Foundation equal to sample in every respect. Everyone who buys it is pleased with it.

CHAS. DADANT & SON, HAMILTON, Hancock Co. Ill.



"THE GREATEST POSSIBLE GOOD TO THE GREATEST POSSIBLE NUMBER."

VOL. IV. No. 51 BEETON, ONT., MARCH 13, 1889. WHOLE No. 207

## EDITORIAL.

### EXTRACTS FROM ENGLAND.

IN a long letter from our friend "Amateur Expert" we glean some items of interest to readers of the CANADIAN BEE JOURNAL.

They will regret to learn that "A. E." has been "off" work for some time, the result of a severe attack of bronchitis, from which however at time of writing, he was recovering.

"What's the matter with Dr. Mason and "Nom de Plumes?" he says, and what about "Mark Twain."

Of the weather in England he writes:

"We are getting it like May. My bees flew on Feb. 16th and yesterday (17th) and to-day as if it were summer. There is no wind and a very bright sun. I have not opened any of my hives yet, but fear some of them must be getting short of food. About Oct. 12 I introduced seven imported Carniolan queens to black stocks. The greater portion of the bees flying from the hives now are Carniolans, consequently breeding must have gone on pretty strong and a consequent consumption of food. I am hoping for a good season. I have a quantity of sections filled with comb worked out last year, stowed away ready for the bees to fill, so that I am hoping they will get a good start early in the season."

Speaking of the death of Mr. W. Raitt, he writes:

"It was a great blow to us to lose Mr. Raitt, although we have known it was probable he might go off suddenly for a long time; still we were scarce prepared for it when it did come."

### Ivar S. Young's Explanations.

AFTER a long period of waiting we have at last received a letter from Ivar S. Young, the editor of the *Norwegian Bee Journal*, who has been charged in these columns with unkind reflections on some of the leading bee-keepers of this country.

This is the second letter we have received from Mr. Y. since his visit to this country, the first one referring to his election as an honorary member of the O. B. K. A.—being a letter of thanks to the bee-keepers of the Province for the honor bestowed &c.

Concerning the charges made by Mr. Stahlhammar, his only reference to it is to the following effect:

"I will beg you to remember that I have all along sent you "our" not "my" bee-journal by which means you have at all times had opportunity to examine what I have written about my memorable journey in Canada and America. It would—allow me to say—have been easy to you, if you had any interest of it to have had a correct translation of my communication; you would there have found that Mr. S's accounts are less than exact."

While we are glad to have the above from Mr. Young together with his assurances that he "neither can nor ever shall forget the exquisite friendliness shown me by Canadian bee-keepers" we cannot yet remove all the blame from his shoulders. We must, however, accept the explanation that the

whole trouble has arisen over the translation, and the fact that Mr Young did not know the force of the word "ring" as we here understand it, and that he meant no disrespect to those interested. In our reply to Mr Young we recall to his memory promises made us while here, that he would have a friend in New York do the translating for us, and failing in that he would himself translate his articles for us, on our promising to correct any little inaccuracies of speech to suit the idiom of our own country, also that we wrote him after his return, pressing the request for these translations, but failed until now to receive any reply. This we write in answer to his remark that we had his journal always sent us, and that we might have examined it for ourselves.

From the Bee-Keepers' Guide.

#### Changes Effected in Syrup and Nectar by the Secretions of the Bee.

**T**HE changes effected in syrup and nectar by the bee are matters which are beyond the range of observation of the ordinary bee-keeper. To be able to say of one's own knowledge whether nectar undergoes a chemical change or not, when mixed with the ferments in the secretions of the bee, one would need first to examine the nectar as it is found in the different flowers, and afterwards, as it is stored in the hive. To do this properly, skill in the use of the polariscope, and of chemical tests is required, such as most of us do not possess.

We are therefore obliged to depend upon the results obtained by those whose life business it is to make such researches. The investigations made, go to show that the amount of cane sugar, or sucrose as the chemists call it, and glucose, found in the nectar of different blooms, varies very much. In a foot note, page 582, Bees and Bee-Keeping, Mr. Cheshire tells us that the nectar in the flower of the garden pea is almost wholly glucose, that of the claytonia is two-thirds cane sugar, and that of the fuchsia is five-sixths cane sugar, I have read elsewhere that nectar has been known to crystallize in the flowers of the fuchsia. Mr. Cheshire says further, "the blossom whence the bees gather nectar, yield mostly cane sugar, but this undergoes inversion [changing to glucose] through the action of the salivary secretions of the bee." The physiologists tell us that honey, and sucrose changed to glucose, are in the condition which requires no preliminary process of digestion, to fit them for

absorption into the current of fluid contained in the blood vessels. In view of this fact Prof. Cook is justified in calling honey, "digested nectar," because the change it has undergone meets the requirements of the definition for digestion, viz.:—A process which has for its object to fit substances for absorption into the system.

But what I particularly wish to discuss is the crystallization of sugar syrup in the combs, when fed for winter stores. Vinegar and other acids have been used to change the sucrose to glucose, but, as in the case of the nectar, it is impossible to know by mere inspection, whether or no the change has been effected, and often the first thing we do know about it is that the bees are starved between combs filled with candied sugar which they could not use, mixing honey with syrup to prevent crystallization is recommended by some, but it has not been a success with me, and, from the reports in the bee papers, the experience of some others has been no better than my own. Speaking of cane sugar when it is changed to sucrose, Prof. Wiley says "it does not crystallize." Evidently this is just the change we bee-keepers must learn how to effect, if we are to save our bees, when feeding sugar. Mr. Cheshire tells us that bees cannot take thick syrup without thinning it with their saliva, and that in the process of thinning the ferment in the saliva changes the sugar to glucose. He says further "when crystallized sugar is rapidly stored, the inversion [change to glucose] is very imperfectly performed, and considerable crystallization in the cells is the result." Ten years ago we fed in small feeders, which allowed the syrup to cool and become thick, and we rarely had a case of crystallization in the combs. Now we feed a gallon of hot, and therefore thin syrup, in a night, and it candies in the combs before spring. Recently Mr. Heddon wrote as follows: "For some reason unknown to me, sugars of late years are bound to crystallize in the comb, notwithstanding the more than usual amount of tartaric acid added." Instead of attributing the change to a difference in the sugar, I think it would be well to see if the supposed increase in its tendency to crystallize is not contemporaneous with the invention of a certain large feeder, which has "of late years" come into general use.

Rapid feeding has so many advantages that it is worth while to learn how to change the sucrose to glucose, before it is put into the feeders. I know of a gentleman, a graduate of English and German universities, who has made chemistry his special study. He has been for some years, and is now I believe, employed as chemist in a large sugar refinery in an American city. If I were the owner of a bee paper having 10,000

subscribers, I should consider the propriety of asking him to give me directions, such as could be carried out by ordinary bee-keepers, for making from the best of granulated sugar, a syrup of a given density which shall be all glucose, but which shall contain nothing injurious to bees. I should also ask him to describe how people of ordinary intelligence could apply tests, such as would be necessary to show whether the desired change had been effected in the sugar or not. For such information a chemist, such as I refer to, might charge \$50, or possibly a \$100, but so many hundred dollars worth of bees would be saved, even in a single season, that the publisher would become at once a public benefactor. I throw out this hint in hope that some one may have sufficient public spirit to take the matter up, and place us all under obligations.

S. CORNIEL.

From Gleanings.

#### CARE OF COMB HONEY IN WINTER.

HOW MUCH DOES IT DETERIORATE IF PROPERLY CARED FOR ?

**A** GREAT many honey-producers seem to act on the belief that honey is a perishable product, which must be placed on the market as soon as possible after it is secured. Just as soon as the honey is taken from the hives or at least as soon as cold weather is at hand, they make haste to ship it to commission merchants in some of the large cities, or to crowd it upon grocerymen of their own neighborhood, far beyond their immediate needs. Various evils result from this. In the first place, the markets are often so overcrowded that prices are forced down below where they really belong and would remain if more wisdom had been shown in disposing of the product. As it is, these impatient and over-hasty sellers often fix the price for the remainder of the season, causing loss not only to themselves but to others. The offenders in this direction are usually the small producers; but many large producers are not exempt from the same charge.

An objection that is perhaps more serious to this careless way of disposing of a season's labor is the fact that honey usually deteriorates very rapidly after it leaves the producer's hands. Comb honey may be kept from one season until the next, unimpaired in quality, but it requires some care and a proper place for keeping it. The producer ought to be able to supply these, while it is too much to expect of the dealer. The average commission store is a very poor place for storing comb honey, and many grocery stores are not much better. It is almost needless to say to any

honey-producer, that honey should always be kept in as dry a place as possible, because in a damp place it soon absorbs moisture, and becomes thin and watery. The surface of comb honey "sweats," or becomes covered with drops of moisture, and the nice white comb becomes dark and unattractive, owing to the increase in bulk of the honey in the cells. Sometimes the caps of the cells even burst from this cause, and frequently the honey undergoes a partial fermentation, and loses much of its sweetness. The honey in unsealed cells and broken places becomes so thin that it runs almost as readily as water when the comb is turned on its side, daubing everything beneath.

All these results I have seen for myself. Once while making a tour of inspection among the commission houses of one of our large cities I came across a large lot of honey, the producer of which was known to me, and I knew that he had taken unusual pains that his honey might reach the commission merchant in the best condition possible. There it was, stored in a cellar which, with its damp, cold atmosphere, was of all places the most unsuited for the proper keeping of honey. At another place I found a large lot of honey in a room intended for the cold storage of butter and eggs. It was, (or, rather had been) an extra fine lot of honey, and the merchant was taking extra pains with it, as he supposed; but somehow, he said, it was not keeping well. No wonder. It was worth at least three cents a pound less than when it left the producer's hands. Some may see in this a reason why their honey sold for so much less than they expected.

This state of affairs may perhaps be somewhat improved by a little missionary work among commission men; but the producer must expect to bear the brunt of it himself. In the first place, honey should be prepared by a thorough ripening. This is best done by storing the honey in a room which may be heated to about 100°, and kept at that temperature as long as desired. An oil-stove will be found an excellent arrangement for heating the honey-closet, or, if the closet is small and the weather not very severe, an ordinary large-sized lamp will answer. Neither of these will require attention more than once or twice a day.

This ripening process should begin as soon as all the honey is removed from the hives and stored away, and continue for several weeks. By this means the honey is thoroughly ripened, and acquires that rich pleasant taste so often remarked as belonging to the honey which has been left in the hive for a long time. More than this the honey in all unsealed and broken cells is



evaporated down until it is so thick that it cannot run from the cells. Any one who has ever handled leaky and dripping comb honey will appreciate the advantage of this. "Your honey is always so clean and dry—no stickiness about it," was the remark made to me not long ago by a dealer of considerable experience.

After the honey is once well-ripened it is scarcely necessary to keep the room at this high temperature although it would no doubt be advantageous. Unless it is kept reasonably warm and dry all the while, it should be warmed up whenever the weather is very damp or cold. If this is done, the honey will not attract moisture, nor crack, as often happens in very cold weather. If proper care is taken in regard to temperature and dryness, comb honey may be kept in good condition for an indefinite time.

I hope I shall not be thought egotistical if I remind some who have written of this plan as if it were their own, that I was the first to recommend artificial heat for ripening comb honey. "Honor to whom honor is due." Surely, brethren, it does not cost much to give proper credit for an idea.

After you have your honey in good condition for the market, do not ship it off to commission men in large lots unless you are sure it will receive proper care until it is sold. Keep all who handle your honey, whether commission men or retail dealers, constantly supplied, but let their stock on hand be gauged as closely as possible by the running requirements of their trade. Any amount beyond this is safer in your own hands.

J. A. GREEN. .

Dayton, Ill., Jan. 30, 1889.

From the American Bee Journal.

### GOOD HONEY YEAR.

THE PROSPECTS FOR THE SEASON OF 1889.

**T**HE lower centre of atmosphere which has been moving eastward struck us quite heavily here to-day, and with its round about-to-the-west motion, brought up some warm air from the sunny South, producing effects that could not be said to be far from those of summer.

Consequently to-day, Feb. 16, colonies are having a busy time in carrying out defunct bees, and rendering the bottom-boards of their hives free from the excrementitious ordure that congregated itself there during the winter months. But maugre all this seemingly unpleasant household work, they are having a pleasant time in exercising their wings—but not their stings; at least not on my cutis as in days gone by, and limbs.

It was a pleasant sight for me to stand and watch them in the act of circumvolution, after being confined so many days to winter quarters. As I stood and looked at my bees cutting divers circles, and ellipses, I could not help thinking about the Minor Planets—of which there are some three hundred—how that, in all their deviating ambits, and their great eccentricity of orbits, they neither touch nor collide with one another; when, if it were desired to lift one out of its orbit, all the rest would have to come along, so numerously intersected are their ambits.

Therefore, I say, the apicultural vista that met my gaze seemed to me to resemble the astronomical sight that presents itself to the eye of the astronomer peering through the immense telescope; and, I can say that it was as pleasant to me as the aforesaid sight of the astronomer is to the man of stars and planets, albeit a modicum of each is visible to the eye at once.

The winter here has been a mild one, and so far all my colonies are alive. Of course we do not know what is coming.

Heaven from all creatures hides the book of fate,  
All but the page prescribed, their present state.

and if there is not a killing frost, accompanied with baleful effects to the bees, between this time and spring, I think we can safely say, this year is going to be a boomer for apiarists in general. Therefore, since we have this hope, let those apiarists who have met disaster after disaster, awake themselves out of their lethargic state of misfortune, and press forward to the goal of success, rendering everything in readiness to catch the "honey showers," and be found not napping when the huge gates of nature that guard the honey canal, shall drop open, and let in the "little busy bee."

HENRY K. STALEY.

Pleasant Ridge, Ohio.

### Circulars Received.

Geo. E. Hilton, Fremont, Mich.—Eight pages—general supplies.

From Dr. G. L. Tinker, New Philadelphia, Ohio, come his annual circular and price list. The doctor makes about the most handsome white popular sections, it has ever been our pleasure to see.

Messrs C. Dadant, Jas. Hamilton, Hancock Co. Ill., send us their circular regarding Comb Foundation and other supplies. They are perhaps, the largest, Foundation manufacturers in the world, and their make of F'dn. has created for itself a name and a fame unsurpassed. Accompanying their circular comes another referring to the new revision of Langstroth on the "Hive and Honey Bee,"—price \$2.

# PRACTICAL BEE-KEEPING.

BY D. A. JONES.

PAPER V.—CONTINUED.

## COMBINATION HIVE.

**H**IS hive is of my own design, and was devised with the object of producing a hive which would give good results when used either for extracted or comb honey. Very many of our customers wanted to make the production of comb honey their chief object, and at the same time wished to utilize all the combs they had (Jones' deep frame) without resorting to the use of the wax extractor, rendering into wax their entire stock. Then, too, the frames seemed rather deeper than was consistent with the best results for comb honey; while being somewhat shallower, was not going to deteriorate the value of the hive for extracted honey.

To meet both ends—get a shallower hive, and save any waste of comb—this hive was gotten up, and, all things considered, I do not know that, had we been working from a scientific standpoint, we could have done better or constructed a hive better suited to the wants of the occupant.

The deep frame hive, turned on its side, gave me the frame for the combination hive.

## COMBINATION HIVE BROOD CHAMBER.

The body of the hive is made up of pieces of the measurements following: The front and back are plain pieces twelve and a quarter inches deep by fourteen and three-quarter inches long and of seven-eighths inch material, as are all the pieces in this hive with the single exception of the lid, which is five-eighths inch. Out of the front board is cut the entrance three-eighths inch by eight inches long. The end pieces are twelve and a quarter inches deep by twelve and a quarter inches wide; the inner edges are rabbeted seven-eighths inch by half inch, the full depth of the hive, and these fit over the side pieces, making the inside measurement thirteen and three quarter inches long, ten and five-eighths inches wide, and twelve and a

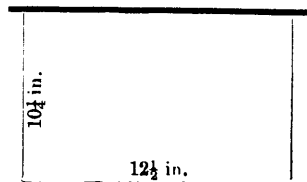
quarter inches deep. Out of the ends the usual rabbets are cut and the saw-cuts made, into which the metal supports are placed which uphold the frames.

The bottom-board is fifteen and a half inches wide by fourteen inches long, and a strip seven-eighths of an inch square and fifteen and a half inches long is tacked along the front end to prevent warping.

The lid board is constructed similarly to those used on the Langstroth and Jones deep-frame hives. It is sixteen and a half inches long and thirteen and three-quarter inches wide. The end cleats are one inch by one and three-quarter inch, by thirteen and three-quarter inches long with rabbets in the sides, which slip over the edges of the cover and hold it true, and free from danger of warping.

## COMBINATION HIVE BROOD FRAME.

The frames are constructed after the same principles as those employed in the Jones deep frame hive as to top-bar, bottom-bar, projections, etc., and the dimensions are the same in all but the lengths. The inside measurement of the frame is twelve and a half inches wide and ten and a quarter inches deep



COMBINATION HIVE BROOD FRAME.

—a trifle less in depth than the inside width (ten and three-quarter inches) of the deep frame. The proper bee-space is maintained at ends of frames and below the bottom bar, while there is just a half bee-space between the top of top-bar and top of hive.

## SECOND STOREY.

The second storey or extracting chamber is similar to the brood-cham-

ber, being nothing more or less than the two sides and two ends of the said brood chamber nailed together between which go the queen-excluding honey-boards, on each side of which is the half bee-space, by which means the proper width is maintained.

#### COMBINATION HIVE SUPERS.

The supers are nothing more or less than four plain pieces of board four and seven-sixteenths inches wide and cut in width and length the proper outside dimensions of the hive. When cut to four and seven-sixteenths inches deep they are used in conjunction with the reversible honey-boards and reversers. They are cut a quarter of an inch deeper when adapted to skeleton crates or  $\perp$  rests.

#### HAND-HOLES IN HIVES OR SUPERS.

I believe I have not before mentioned that all the hives I have been writing of are supplied with hand-holes cut in the sides or ends as the case may be. These are indispensable to a good hive.

#### THE HIVE I PREFER.

I believe that all the readers of the CANADIAN BEE JOURNAL are aware that this is the hive I prefer, and I regret that so far we have been so remiss as not to have an engraving made of it.

When I say that this is my choice of all the hives I have written about, I must qualify the statement by saying for "all purposes."

Were I going to take nothing but extracted honey I venture the belief that I could be just as successful with the deep frame hive as with any other hive that I know of, and some of the most successful honey-producers in the Dominion I believe would back me up in this assertion, yet what we want is not a hive that a few can be successful with, but one which, because of its great simplicity and conformity to the natural laws of the honey bee, adapts itself to the requirements of the merest novice as well as the skilled apiarist. We want, too, a hive which is inexpensive and which will reduce to a minimum the cost of the production of honey—and we have it in this hive.

#### THE SIZE OF BROOD CHAMBER.

This is probably the first item which should be considered, and just here it is

hardly necessary for me to state that in this department the eggs are laid, the young bees hatched and the food stored for winter.

I have always maintained, and I see no reason after many years of experience to change my views very materially, that the nearer a square the frame the more of it will be utilized by the queen, the eggs being laid in a circle. So long as there is sufficient room for a winter's supply of food, above and at the sides of the brood on each frame, the less distance the queen has to travel in her egg-depositing duties the better.

Just here I might mention that the Messrs. Dadant in their Revision of Langstroth say with reference to this very subject of frames :

"If they are large, they are unhandy, and their depth makes them difficult to take out *without crushing* bees. We have used some sixty hives, American frames 12 x 12, for eighteen years or more, and *this is our greatest objection to them.*"

The italics in the above are so put by me. Do you not see the great beauty of the projections on the bottom-bar of the frame as we make it? If this be their greatest objection to deep frames (12 x 12), then frames a little wider and some two inches shallower would seem to be just about right. And speaking in this connection they say :

"The Langstroth Simplicity frame is long enough, but hardly deep enough. The Quinby frame (the one they most largely use) is deep enough (eleven and a-quarter inches) but would be better if a little shorter."

There are eight frames in the brood-chamber, which gives us a cell space of about 59,000 cells. At the outside edges of the frames will be as much room as is likely to be needed for stores for breeding purposes, and the queen will thus even in a good season have plenty of room to "spread" herself.

Before the queen is likely to occupy all the space in the lower chamber with eggs and brood, the season will have advanced sufficiently and the honey harvest will be so near that a second storey will have been added, and a frame of brood may be taken from the brood-chamber and placed in the surplus chamber to allow the brood to hatch, or in case of working for comb

honey, a frame of hatching brood might be given to some other weaker colony.

If I were making any change in this hive, it would only be to add another frame, but for all practical purposes here in Canada the number used will if properly manipulated give the best of results.

This hive is perhaps the most simple and *cheapest* of any in the market, and its cheapness in price has a good deal to do with my admiration for it, though I would wish it borne in mind that I would never dispense with utility for the sake of economy.

The authors of the revised Langstroth say on the point of a good hive :

"Of such hives, the best are those which best unite *cheapness* with simplicity, with *protection in winter* and *ready access* to the spare honey-boxes."

In the issue of *Gleanings* March 1, 1889, Mr. Ernest R. Root says :

"The tendency of the times is more and more toward simplicity. The most practical honey-producers (those who own colonies by the hundreds and not by the tens) incline toward (if they do not already use) cheap, substantial and simple hives and fixtures. Indeed the price of honey is such that they cannot afford expensive and complicated arrangements."

#### DIVISION BOARDS.

Ever since I first began to keep bees I have used division boards, or dummies as some call them, and I consider them an indispensable adjunct to any apiary. Besides being used for contracting the size of the brood chamber in spring or fall, and reducing the size of the hive for winter, they answer many other important purposes. In the winter the vacuum behind the division board may be filled with packing of some sort, thus reducing the size of the repository and requiring less heat to be generated to keep the brood chamber at a proper temperature. These division boards always keep the brood chamber compact even in summer when the frames do not occupy all the space. Keep them always close up behind the last frame, spaced from it just as if it were another frame. When handling the frames there will be much less trouble in loosening them after the division board has once been moved.

#### PAINTING HIVES.

I want to see every hive in an apiary painted. Paint keeps out rain and cold as well as preserves the wood. In an apiary of many hives, different colors would be better to assist the bees in the matter of location. Let all the colors be dark. I use a dark drab mineral paint very extensively about my premises, and on hives shipped out. Sometimes in the hurry of work we are forced to use hives before we get time to paint them, but we take the first opportunity of giving them a coat.

#### ROOT'S DOVE-TAILED HIVE.

During the past few months our friend Root has been devising a hive which would be more simple and cheap than the Simplicity, yet with as many and as good qualities. They believe they have found it in what they call a "dove-tailed hive." The brood chamber is exactly similar in construction to the brood chamber of the Langstroth hive as we have always made it, except that it is dove-tailed at the corners instead of being rabbeted and nailed together as we do it. No metal frame supports are used. This is, I think, a mistake which they will find out after a little experience. The body, too, is a trifle shallower, made so because the frames come flush with the top of the hive—the bee-space being arranged in the honey-board.

The supers are dove-tailed at the corners and are made four and five-eighths inches deep. They are so arranged that the  $\perp$  rests may be used, or, for those who prefer it, wide frames less the top-bar. This last item is, perhaps, the newest idea in the whole construction. They are the Heddon wide frame minus the top-bar, and with the remaining bottom-bar the full width of the end pieces. Out of the two sides of the bottom-bar, and so that they will come directly in under the openings in the sides of the sections, pieces are cut one-half bee-space in width, four to each side. Along the bottom edges of the super are nailed tin strips, and these "section holders," as they call them, seven in number, rest thereon. The principle of making openings in the bottom-bars to correspond with the openings in the sections, we applied

to wide frames, for taking comb honey in the body of the hive, years ago.

On the whole, I think our friends have made a decided improvement in their hive, and I feel sure they will find it much better than the old style beveled-top hive, to which they have clung so long and persistently.

With becoming modesty our friends do not claim to have originated a new hive, but simply to have combined several well known principles all in one hive.

NOTE.—In our next issue we hope to give a description of the Richardson hive, and this will end our papers on "Hives." We will at the same time add some remarks as to hive-making by amateurs, and suitable machinery therefor.

From the Nor-West Farmer.

#### How Bees Act.

**A**N Edmonton correspondent asks the following questions:—

1. Do you find bees unusually cross after the honey flow is ended?

Yes. Bees are like anybody else. When times are dull they are cross and find fault, and the chances are that they will vent their feelings on some one who is not to blame. They are quite human like.

2. Have you noticed an unusually large amount of dead bees cast out of any of your colonies this fall or any fall previously?

Yes in some of them, but not so noticeable in former seasons. I cannot venture an opinion as to the cause, unless they were the older bees hurried to their end through the effects of a sudden cold spell.

3. Do you think that bees require acclimatizing, the same as imported animals to withstand this country's climate before they will succeed properly?

Newly imported bees, if they arrive in good shape, seem to do well; yet, I believe acclimatized bees are better. Why should they so differ in this respect from other classes of the animal kingdom?

It is a law of nature that animals will accommodate themselves to their surroundings providing the chances are not too extreme. I have as a rule had better returns from acclimatized bees. In the spring the most trying time of the year, is when well acclimatized our native bees would have the advantage.

4. Have you known of bees being frozen to death when in good dry well ventilated hives in Manitoba or elsewhere, or can they be frozen to death in dry times where there is no rain or frost?

No, but if you attempted to winter them in much of our 40 degrees below zero weather, they most likely would freeze to death. In such extreme cold the bees could not keep the inside walls of the hive warm enough. The moisture from the bees coming in contact with the cold sides of the hive would condense and form rime. If the bees survive a cold spell and the weather moderates a little, the heat from the bees would melt the rime and you have a very wet hive.

5. My bees were flying when the thermometer was showing 5 and 6 degrees in frost. Is this an unusual thing with you?

So unusual that I have never seen it occur except when the bees were disturbed and then they repented of it right away. There must be something peculiar about your atmosphere or altitude, or bees, that has got them into that habit.

C. F. BRIDGMAN.

From the Dominion Grocer.

#### HONEY.

##### SCIENTIFIC FACTS.

**H**ONEY is secreted by the nectariferous glands of flowers, from whence it is collected by the working or neuter bees, which extract it by means of the proboscis, and pass it into the dilatation of the œsophagus, known as the crop or honey bag. When the animal has arrived at the hive, it disgorges the honey, probably altered by admixture with the secretion of the crop. It is used by the bees as food, but it is its general properties and uses to man that here require notice.

##### COMPOSITION OF HONEY.

The composition of honey varies somewhat according to the food of the bees, their age, the season, etc. Hybla, a mountain in Sicily, and Hymettus, a mountain in Attica, were in ancient times celebrated for their honey; doubtless in consequence of the wild thyme and other fragrant herbs growing upon them. The honey of Narbonne and Chamouni is now held in high estimation for similar reasons; and honey obtained by bees having access to heather has, as is well known, a peculiarly agreeable taste.

The substances which have been recognized in honey are sugar of two kinds—one crystallizable and analogous to glucose, and the other uncrystallizable, mannite, gummy, waxy, coloring

and odorous matters and pollen. The proportion of crystallizable sugar increases with the age of the honey, so as to give it in time a granular character. The best and newest honey is a clear fluid contained in a white comb, while older honey is of a yellowish and even reddish tint.

#### ITS EARLY HISTORY.

From the remotest times honey has been employed as an article of food; and to the ancients, who were unacquainted with sugar, it was of more importance than it is now. "A land flowing with milk and honey offered the highest conceivable advantages to the oriental mind.

#### MEDICINAL RELATIONS.

Taken in moderate quantity, honey is nutritive and laxative, but dyspeptic persons often find that it aggravates their symptoms. Its therapeutic action is probably not very great, but it is employed with advantage to flavor and give a demulcent character to various drinks or mixtures prescribed for allaying coughs; and in the form of oxymel, which is usually prepared by mixing honey, acetic acid and water, it is frequently added to gargles, or mixed with barley water, so as to form an agreeable cooling drink in febrile or inflammatory affections, or given as an expectorant in coughs or colds.

#### ITS MENTION BY GREAT WRITERS.

It should be mentioned that honey occasionally possesses very deleterious properties. Xenophon, in his history of the retreat of the Ten Thousand, describes the honey of Trebizond as having produced the effect of temporary madness, or rather drunkenness, on the whole army, who ate of it. A Mr Abbot writes from Trebizond, in 1833, that he has himself witnessed that the effects of this honey are still precisely the same as those which Xenophon describes, and he adopts the views propounded by Tournefort, in 1704 that the poisonous properties are consequent on the bees extracting the honey from the *Aranea Nontica*. Many other instances of poisonous honey are on record.

#### COMMERCIAL IMPORTANCE.

Honey, although not of much importance commercially as it was before sugar became so large an importation, is nevertheless exported abroad in large quantities, which in addition to the home consumption shows that it is still largely in demand.

#### GENERAL REMARKS.

The French is very fine, and is used chiefly for domestic and medicinal purposes. The Greek is the finest, and is used only as a table delicacy; most of the other kinds are inferior, and except-

ing some portions which is used by tobacco manufacturers, to give a spurious sweetness to tobacco, it is difficult to account for the consumption of so large a quantity.

#### ADULTERATION OF HONEY.

Probably comb honey never was nor never will be adulterated. But the fact is potent to every producer of extracted or strained honey, who offers his product to the trade in our cities and larger villages, that the great hinderance to selling extracted honey is the hard repute honey in liquid form put up in jars or tumblers or in any way except in the comb, has acquired from adulteration. Americans do not care for extracted honey. They prefer the natural or comb honey. Most wholesale dealers are honest men, no doubt, but that there are some who are not, is plain. A dealer in New Jersey was convicted of selling adulterated honey and fined \$50 therefor. The great majority of producers are honest men, no doubt, but there is a trace of moral turpitude still lingering in the ranks of bee keepers which belies them amazingly. It is as not long ago that a prominent honey producer accused another of putting upon the market only adulterated honey. The fact is, producers, grocers and customers look with suspicion upon honey put up in any form except the "original packages" by the bees themselves. It is probable that the evil of adulteration is not so much practised as formerly. Consumers are becoming better informed and educating the local markets to discriminate between a pure article of honey and an adulteration. When there is no market for the goods, adulteration will cease, because it will not pay. The producer who sells in the local markets should practice wise discrimination in putting his extracted honey on the market, until he has established his reputation with the custom; the bare fact that the grocer believes in him will not always avail. There are many grades of honey and only two or three at most in a season which is safe to place upon an untried market. After one's trade and reputation is established, his word either from his label, or from his personal utterances, will be taken in good faith. That which the producer may deem the nicest flavor in honey is not always concided in by the customer. Many people have many tastes, hence, when one has established a trade he can sell the various grades of honey, and no one, but few at least, will find fault and accuse him of adulteration.

One of the most common materials used for that purpose is flour; samples of honey have also been found adulterated with gelatine; the latter cannot so easily be detected, as there is

always present naturally a portion of gelatine in honey.

QUALITIES OF HONEY.

The qualities of even the best depends upon its careful refinement or clarifying. If honey be rightly heated the chief impurities rise to the surface, and can easily be removed by skimming; this is usually done in case of virgin honey, which is generally sufficiently pure for most purposes.

TO PROVE HONEY.

Genuine honey can be readily distinguished from manufactured honey by a microscope. The former has few or no sugar crystals and abounds with pollen grains, while the imitations have little else than these crystals, with rarely a trace of pollen grains. The honeyed taste of the manufactured article may come from honeycomb or beeswax being mashed up with the article used in the manufacture. Each class of plants has its own specific form of pollen grain, and any one conversant with this branch of botany could tell from what part of the world the honey came by by studying the pollen grains that it might contain.

From the Bee-Keepers' Guide.

LARVAL FOOD.

WHAT IS USED TO FEED THE BROOD OF THE BEES?

On page 582 of the American Bee Journal for 1888, Query 572 asks for the amount of honey used for brood-rearing. The most of those who reply say, "I do not know," Some guessed, and guessed very high. So this seems a question, which even veterans cannot answer, but we are not quite as helpless.

Von Planta analyzed the larval food. The composition of it for worker larvæ, including the water it contains, is as follows:—

Water .....	71,630
Nitrogenous matter .....	14,528
Fat .....	1,941
Glucose .....	7,844
Other parts .....	4,057

We see that nitrogenous matter is the most important part of this food; and this comes, without doubt, from the pollen.

Von Planta found in dried pollen of the hazel the following:

Water .....	4.98
Nitrogenous matter .....	31.63
Ash .....	4.01
Cane sugar .....	14.70
Starch .....	5.26
Other matter .....	40.42

We can easily calculate that to 100 parts of larval food for workers'

14528
31.63

which equals 45.9 parts of dry pollen, is used by the bees to get plenty of the nitrogenous matter. These 45.9 parts of pollen contain

45.9 x 14.7

100

which equals 6.75 parts of cane sugar, and they are changed to F. 1 glucose in the stomach of the nurse-bee. The starch of the pollen is likewise changed to sugar. So we see that the pollen contains more sugar than is necessary to prepare the larval food.

These analyses make it quite certain that the larval food for workers is prepared from pollen and water only, and no honey at all is used for this purpose.

It may be possible, that after the fourth day the worker larvæ receive a food which contains more sugar, but Von Plata says this is not probable.

We have observed that in early spring, if no honey can be gathered by the bees, and breeding is going on rapidly, a great amount of honey is consumed by the bees. This seems quite contrary to the above facts. But we know that the bees consume some honey to secure the necessary high temperature. If bees do not breed, the cluster is contracted, and it will take less fuel to warm this small cluster; but if in the spring the cluster is expanded as much as possible, to get room for the brood, the amount of fuel needed is very great, and we can observe this by the rapid decrease of honey in the hive.

Again in summer, when the outside temperature is nearly as high as necessary for the brood, the bees need no fuel. This explains why a strong colony needs less honey, comparatively, than a weaker one. Surely the bees will consume some honey in summer, too, but now they need it to change it to power, which moves their wings, etc. It seems very probable that pollen is the food for the bees, which builds up the body, while honey is the fuel which warms and moves it.

If we find that pollen only is used to feed the larvæ, we may ask what amount of pollen is necessary for this purpose? I do not know this but I have some reasons to believe that surely not more than one pound of pollen is used to feed 3,000 larvæ—very probably less.

This matter is of great practical importance. At first we see that a very warm quarter in the spring will save some honey, and even more than in the winter. Second, that by caging the queen in summer, to avoid breeding, the surplus honey cannot be increased, and this idea has to be abandoned—the sooner the better.

It is said, that it is no difference, if pollen is used for the brood or honey—both have to be

gathered by the bees, and if they need no pollen they could gather some honey instead. But this is not true, because the bees fill up the brood-chamber with pollen for future use, if no brood is present—what every bee-keeper surely will have observed.

Some experiments show that more honey is secured, if the queen is caged or entirely removed for some time. I do not doubt this, but it is easily explained, if we say that the bees used the empty cells for storing honey, which in the other experimental hive were occupied by the brood. Here they had not enough cells for the honey. If we always give to a strong colony empty cells, we will see that nothing is gained by caging the queen. This caging may be done with advantage for the purpose of preventing swarming. I will not discuss this here.

Further, we see how important it is that the bees have plenty of pollen when brood is reared. Some experiments prove that for a short time the bees can rear brood without pollen. They use some surrogates which they find in old combs; in this condition they may use some honey too, but then the larval food will be of other composition. The larvæ may not die by this diet, but surely we will rear a degenerated colony, and in many cases the bees stop breeding entirely.

L. STACHELHAUSEN.

Selma, Tex., Jan. 10, 1889.

From the Nebraska State Journal.

### NEBRASKA BEE-KEEPERS.

THE tenth annual meeting of the Nebraska State Bee-keepers' Association began in the Botanical Lecture Room of the University on Jan. 9, at Lincoln, Nebr., at 3:30 p. m., with President M. L. Trester, of Lincoln, in the chair.

Nothing of special importance beyond perfecting the preliminary organization was done in the afternoon meeting, but a little discussion was had on granulated honey.

In the evening the Association listened to a report on glucose, and an essay on wintering bees, by R. V. Murr. A general discussion followed, participated in by nearly all the bee-keepers present, and covering the entire subject.

A vote of thanks was tendered Mr A. Tower, for his able work in conducting the bee-column in the *Western Resources* during the past year.

An adjournment was taken at 10.40 p. m. until 9 o'clock the next morning.

SECOND DAY.

The convention began with an essay treating

on the question, "Does it pay to plant for honey?" by A. C. Tyrrel, of Madison. Mr Tyrrel advised planting clover for early forage, and melissa for surplus honey in the fall.

Mr Johnson agreed with the essayist in recommending planting for honey, and advised adding alfalfa to the list of profitable plants.

Mr. Tower suggested that buckwheat ought to be added.

Mr. Muir thought it hardly advisable to plant for honey except in the case of melissa.

Mr. Hardy favored all of the plants mentioned, but thought that none of them would pay to plant for honey alone.

Mr. E. T. Abbott had visited Colorado, and was much pleased with alfalfa. He said that it produces excellent honey, and makes good food for stock.

Mr. Whitcomb recommended alfalfa, if planted where it could be irrigated, or in soil that is not deep to water. Other suggestions were also made by various members. The discussion being very interesting and profitable.

A report of the work of the season was made by Mr. R. R. Ryan, of Bradshaw. He reported that he increased his apiary by division, and complained of imperfect queens. The subject of rearing prolific queens was discussed, a majority favoring rearing queens under the swarming impulse, and dividing the colony when it swarms.

The address of the President, Mr. M. L. Trester, was given in the afternoon. Many valuable suggestions were made, the most important being that pertaining to a better law in regard to foul brood.

An essay was read by Mrs. J. N. Heater, of Columbus, on "How to produce the most honey in marketable shape." As this is the object of all the bee-keepers, the essay was discussed at length. All were of the opinion that it is necessary in this region to keep bees breeding at stated times, in order to have a large number of workers to gather the nectar when the flowers that produce honey are in bloom.

The remainder of the afternoon was taken up with a discussion of the subjects, "How much foundation should be used, if any?" and "How to dispose of honey to the retail trade."

The evening session was well attended, and the meeting proved to be a very interesting one. The principal feature was an essay by the Rev. Emerson T. Abbott, of St. Joseph, Mo., on "Bees and Horticulture."

Mr. Abbott explained that when he prepared the essay he did so with the understanding that the Nebraska State Horticultural Society would meet in Lincoln at the same time and place,



and in view of this fact, the subject "Bees and Horticulture," had been decided upon.

When the essay was nearly completed, he learned that the Horticultural Society would not meet with the bee-keepers, but, as the subject was a fitting one, he did not change it.

The great mutual benefit to be derived by the bee-keepers and the fruit-growers acting in harmony was commented upon.

At the conclusion of the address there was considerable discussion on the subject, after which the meeting adjourned until 9 a.m. the next day.

#### THIRD DAY.

The morning session was devoted to routine business and an inspection of the buildings of the University, under the guidance of Prof. Bessey.

Among the principal business done was the report of the committee appointed to consider the recommendations of the President. The request that the constitution be so amended as to make the tenure of office one year instead of two, was reported upon adversely, and the Association agreed with the committee. In the matter of foul brood, it was decided to appoint a committee of investigation, consisting of Messrs. Johnson, Whitcomb and Burnett.

Mr. E. Whitcomb was recommended to the State Board of Agriculture as a satisfactory man for the place of Superintendent of the bee and honey exhibit at the next State Fair. Messrs. Whitcomb, Burnett and Tower were appointed as a committee to revise the Premium List for the State Fair, and endeavor to get more and larger premiums.

The convention then adjourned to meet in Lincoln on the second Wednesday in January, 1890.

J. N. HEATER, Sec.

## SUNDRY SELECTIONS.

That bees sometimes send out advance scouts to find a location before swarming, is a fact. That they always do has yet to be proved. A neighbor who had several empty hives, in which the bees had died the previous winter, one day noticed a number of bees going in and out at one of them—cleaning out the hive he thought. The following day about noon he heard a swarm in the air, and on looking up discovered they were coming in his direction. He hastily picked up a pan and commenced making a noise on it. Before he had his "tin band" in full working vigor, however, he noticed they were moving straight toward the hive where he saw the bees at work the day before. The swarm soon clustered at the entrance and afterward went in and commenced housekeeping. We had the pleasure of arranging the interior decoration

for this colony of squatters a few days later.—*Bee Hive.*

#### BEEES IN THE SPRING.

**AMERICAN Agriculturist:**—When the first warm, spring-like days arrive the bees which have wintered in chaff hives upon their summer stands require immediate attention. The chaff cushions, if damp, should be turned over and exposed to the sunshine to dry thoroughly, and repacked at night. If there is any lack of food it should be supplied in the form of bee candy, made by boiling pure white sugar in water until it is ready to granulate; then pour it into a shallow dish. This is the only form in which artificial food can safely be given to bees until settled warm weather comes. Sirup is likely to produce dysentery if fed during cold weather. If any colony shows signs of this disease it should be put in a clean hive, on dry combs, and kept on a diet of candy. Even in colonies which have plenty of surplus honey to carry them through until spring opens, it is well to feed candy, as it stimulates them to early brood. In warm days, when the bees fly freely, the hives should be thoroughly ventilated. Bees which have been wintered in a cellar or cave should be left undisturbed until it is time to place them on their summer stands, unless they are short of food, in which case supply the candy.

#### WINTERED WELL IN A LIGHT CELLAR.

**A. BRIDGE.**—As I have not seen any report from this section of country for 1888 I thought I would send you mine. I commenced the season with 75 colonies and increased to 78, making a total of three colonies increase for the season. I had 300 lbs. of buckwheat honey, making an average age of four lbs. to the colony. This is about the average for bee-keepers in this section; some have done a little better and some worse. There are two bee-keepers in Williamsville six miles from here. I have been informed they had to feed their bees. I am wintering 78 colonies this winter: 77 are in the cellar and one outside in a double-walled hive. I examined them to-day and am happy to say they are all in fine condition, not the first sign of dysentery in the cellar. You know I winter my bees in a light cellar. This is the third winter that I have brought them through in good shape in a light cellar. I shall never think of wintering bees in darkness again. I partly darken the window about this season, March 1st, as they will get uneasy when the weather begins to get warm. I keep the temperature as near 45 as possible. It was quite warm to-day and the colony outside had a good flight. I uncovered the hive and let it get a good airing. This colony is nearly as strong as it was last fall; very few bees have died. The hive was completely covered with snow during the month of February and I had to shovel the snow from the front of the hive to let them out. The bees were flying for six hours and not over one dozen dead bees could be found on the snow. This is a sure sign that they are very healthy. West Brook, Ont. March 4th, 1889.

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