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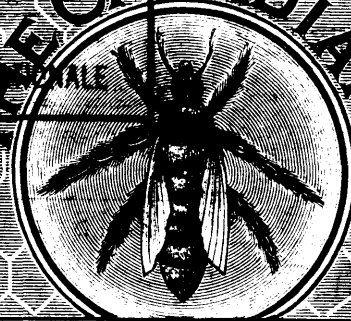
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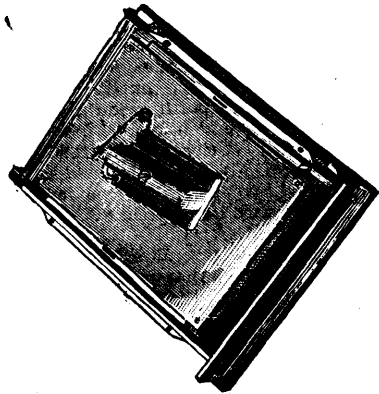
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VOL. II. No. 6. BEETON, ONTARIO, MAY 5, 1886. WHOLE No. 58

FOR THE CANADIAN BEE JOURNAL.
SCIENCE AND APICULTURE.

An opinion prevails with many that the teachings of Prof. Cook as to the very small quantity of air actually necessary for bees in repose are misleading and may be the cause of bee-keepers losing their bees by making them less careful than they should be about a proper change of air in their hives. Some of his recent statements on questions of physiology and dietetics indicate his reasons for differing from others with regard to the quantity of air needed, and the evolution of animal heat. I shall endeavor to compare Prof. Cook's views on the two great factors of life, food and air, with those of some of the leading physiologists of the day and discuss the experiments he gives in support of his opinions.

On page 728, Vol. I, of the C. B. J., Prof. Cook says: "The vital process is so far from mere oxidation or combustion that it is not that at all." On page 648 he says "All food is to nourish" and "heat is incidental."

In *Bulletin No. 8* of the Michigan Agricultural College, Prof. Cook says, regarding bees in repose: "The physiologist and especially the physio-entomologist will not be easily persuaded that insects, whose functional activity is so slight that a minimum of food supplies their wants, stand in need of much air."

Here we have his theory in a nutshell as follows:—No air is needed for the oxidation or combustion of food because no such process takes place; the quantity of air needed is in proportion to the degree of functional activity, and as this "is very slight" "they do not need much air;" the function of "all food is to nourish"

only; "a minimum of food supplies their wants;" hence there is hardly any nutritive action; "heat is incidental" to nutrition, therefore the amount of heat produced is small, being in proportion to the diminished nutritive action.

From the foregoing theory it follows that the temperature of bees in repose should be about the same as that of the lowest of the cold blooded animals, only a degree or two above that of the surrounding medium. But experiment shows that in the most quiescent state attainable, the temperature of a cluster of bees is at least from 20° to 30° higher than that of the air outside their hives, that is, they keep up a nearly constant temperature of about 70°, no matter how inactive the nutritive process may be. In view of this fact, Prof. Cook's theory must be regarded as unsound, because "in case of fatal disagreement between theory and definite experimental facts, the theory must be abandoned provided the facts are incontestable."

Some of Prof. Cook's most important propositions are contradicted by the very highest authorities of the present day. For example, in regard to oxidation or combustion within the body, Prof. Gamgee, of Owens College, Manchester, Eng., says, "The act of living is an act of combustion." (*Encyc. Brit.*, 9th ed., 1884, art, nutrition.)

Dr. Pavy says, "Physiologists refer the chief source of animal heat to the oxidation of carbon and hydrogen." (*Food and dietetics*, 2nd, ed., 1878, p. 64.)

Prof. Kuss, of the Univ. of Strasbourg, says, "It is now proved beyond all doubt that the combustion which takes place in the body is a source of animal heat." (*Lectures on Physiology*, translated by Duval and Amory, 1876, p. 340)

On page 78, Prof. Kuss says "The materials of this active combustion are principally hydro-carbons, for the muscle oxidizes scarcely any nitrogenous substances and muscular labor causes scarcely any increase in the excretion of urea. The fact that the muscle when at work consumes principally hydro-carbon aliments and not albuminous substances, is quite a recent acquisition to science and is part of the knowledge recently obtained as to the mechanical equivalent of heat."

Prof. Huxley says: "The oxidation or in other words the *burning* of these matters, (organic molecules) gives rise to an amount of heat which is as efficient as a fire to raise the blood to a temperature of 100°." (Elementary lessons in Physiology, 8th ed., 1874, p. 17.)

See also General Physiology of muscles and nerves, by Dr. T. Rosenthal, Prof. of physiology Univ. of Eerlargen, 1877, p. 83, published in the International Scientific series, as to the combustion of carbon hydrates for the production of heat.

This oxidation, or burning of the organic matters of the food, is, at least sometimes direct. On page 138 of his physiology, Prof Huxley says: "It is highly probable that the amyloids and fats are very frequently oxidized in the blood, without, properly speaking, ever forming an integral part of the substance of the body." And on page 139 he says, "Proteids are *tissue formers* inasmuch as no tissue can be formed without them, but they are also heat producers, not only directly, but because they are competent to give rise to amyloids by chemical metamorphoses within the body."

Dr. Wilson says, "There is no doubt that a certain portion of the nitrogenous constituents is directly decomposed in the blood, and so far they contribute directly to the maintenance of animal heat." (Hand-book of Hygiene and Sanitary Science, 5th ed., revised 1883, p. 29.)

Speaking of the saccharine constituents, Dr. Wilson says, page 30, "These like the fatty constituents are directly subservient to the maintenance of animal heat."

Dr. Chambers says, "Since the sugars, which may be regarded as including starch, do not in their normal condition pass into the secretions, but are oxidized in the blood, into carbonic acid and water as ultimate products they must contribute materially to the support of the animal heat." (Encyc. Brit., 9th ed., art. Dietetics.)

Instead of heat being merely incidental to nutrition or vital action as Prof. Cook says it is, its production by oxidation is one of the chief ends of bodily energy. Dr. Wilson says, page 27, "It may be broadly asserted that the ulti-

mate destiny of food is the development of heat and muscular action."

Dr. Michael Foster, says, "Manifold as seems the body's energy it has but one source, the decay of living material, *i. e.* the oxidation of complex substances, diversely built up into living matters, and but two ends, heat and muscular work." (Encyc. Brit., 9th ed. 1885, art. Physiology.)

Dr. Burdon Sanderson says, "The production of heat is one of the essential functions of animal tissue."

"So long as the tissues are neither gaining nor wasting the quantity of heat produced by the oxidation of the food consumed is equal to the quantity which would have been produced had the same quantity of oxidizable substance been converted into similar, more or less oxidized products out of the body."

"In the case of animals which are fed exclusively on hydro-carbons, *e. g.* bees, the quantity of heat produced is at once obtained by estimating the heat value of the food consumed."

"In such animals as can be fed exclusively on hydro-carbons of known composition, the carbonic acid discharged may be taken as an exact index of the heat production, not because the heat produced, as was at first erroneously assumed, is equal to the heat which would be disengaged by the oxidation of the quantity of carbon actually contained in the carbonic acid, and of the quantity of hydrogen contained in the corresponding quantity of water, but because in such an animal, the whole of the material consumed is completely oxidized, so that the quantity of carbon discharged as carbonic acid is always equal to the total quantity of the same element oxidized. On this account bees, which can be fed exclusively on hydro-carbons, and have the additional advantage that, although they are of variable temperature, their heat production is as active as that of warm-blooded animals, are especially adapted for the investigation of the relation between heat and oxidation." (Hand-book for the Physiological Laboratory, 1873, pages 336 to 338.)

On this branch of the subject Dr. Pavy says: "In the case of sugar, starch and fat, it has been taken that the heat evolved under oxidation in the calorimeter represents the heat given off when consumed within the body, there being every reason to conclude that the ultimate products are in each case the same." (Food and Dietetics p. 51.)

On page 81, Dr. Pavy says: "Looking at these compounds (carbo-hydrates) as force (or heat) producers we must take them in their original state and upon the amount of unoxidized

oxidizable elementary matter they contain will depend their value as force (or heat) producers. In all of them their capacity for appropriating oxygen corresponds only with the carbon that is present."

On page 50 Dr. Pavy says: "As the force produced is in proportion to the amount of chemical action, we may measure the value of different articles for force production by the amount of oxygen they will relatively consume in undergoing complete combustion."

On page 15 Dr. Pavy says: "Food may be considered as comprising that which contributes to the growth and nutrition of the body, and by oxidation to force production."

On page 135 of his work referred to above, Huxley says: "As oxygen is not taken in by the alimentary canal it hardly comes within the ordinary acceptation of the word food."

From the foregoing statements and others which might have been quoted we are in accord with leading authorities of the present day in making the following assertions:

1. Besides the development and maintenance of the living fabric it is a principal function of food to keep up the animal heat at the proper standard, and in the case of bees this is accomplished principally by the direct oxidation of carbo-hydrates in the blood.
2. The amount of heat produced by bees in repose is in proportion to the quantity of carbonic acid discharged.
3. The carbonic acid discharged is in proportion to the quantity of carbon oxidized.
4. For the oxidation of any given weight of carbon (when in combination as in honey) the quantity of oxygen required can be determined by a simple calculation.

This was the method followed in the solution of problems on page 501, Vol. 1, C. B. J., and the quantity of air necessary for a stock of bees "from November till May" was found to be very much more than "a mere hive full."

In his letter on page 722, Vol. I. C. B. J., Prof. Cook says he does not recommend "no ventilation" for bees in winter. Quite true, but in his essay on "Insect Respiration" page 83, vol. xi. of the *A. B. J.* he says "Now does it not hold to reason that if we secure the best conditions for wintering, those which will secure the most persistent hybernation, as indicated by the most perfect quiet, our bees will need scarce any air, and hence no ventilation either upper or lower." His experience, which he says sustains this as a fact, is the oft repeated account of cases in which hives having their entrances closed with ice were entombed in snow for several months. On the other hand it can be shown by reference

to the bee journals that it is a matter of common observation among bee-keepers, that when hives are protected from the cold by being covered with snow, the heat of the bees soon melts the snow for several inches around the hive. The ice at the entrance would soon melt and the bees would not be long without good ventilation. Had accurate observations been made in the cases referred to this fact would have been noticed, and the results would not have been brought forward as experience to prove that "no ventilation is needed either upper or lower."

S. CORNEIL.

Lindsay, 26th April, 1886.

FOR THE CANADIAN BEE JOURNAL.
BEE-KEEPERS' ASSOCIATION OF WELLINGTON.

IT was quite a surprise to me, as it doubtless was to many other bee-keepers in various parts of this large county, to find, from the last issue of the *JOURNAL*, that a few persons living in and around Fergus had assumed to act for the whole of Wellington in the matter of organizing a Bee-Keepers' Association. I received an invitation by postal card to attend a meeting of bee-keepers in Fergus on the 15th of March, but had not the slightest idea that the formation of a county association was contemplated. It read as follows:—"Dear Sir, as we are about forming a bee convention in Fergus, we would like the pleasure of your company." I often get invitations of this kind, and would take pleasure in accepting them all, did time and means permit.

Your correspondent says, "A meeting was held for the purpose of forming a bee-keepers' association in the County of Wellington," which was all right, but they took upon themselves to form one for the county, which was very much like the celebrated action of the nine tailors of Tooley Street, who met in convention and issued a manifesto beginning: "We, the people of England, etc." Our friends in and around Fergus might have been content to follow the example set them at Listowel, where a number of bee-keepers met and organized a "Listowel Bee-Keepers' Association," which they were quite competent to do. Had this new organization been styled the "Fergus Bee-Keepers' Association," or had it even taken the name of the Centre Riding, probably none would have objected, but surely the parties to this movement have only to reflect for a moment to see that they have committed a blunder. They had no authority to act for the whole county, and must not be surprised if their action is repudiated.

For the information of these good people it may be here stated that the city of Guelph is the

county seat of Wellington, and naturally takes precedence of the village of Fergus as the place for holding a county convention. Furthermore, there are some bee-keepers in other parts of Wellington besides the vicinages of Fergus and Belwood, who have a right to be consulted in connection with a county movement. There has been from time to time much talk among bee-keepers round Guelph about forming an association, but they would not dream of calling a local meeting, and acting for the entire county.

It is very desirable that we should have organizations all over the province in affiliation with the Ontario Bee-Keepers' Association. But there is a right and a wrong way of going about these things. When it is proposed to organize for a county, the proper course is for several bee-keepers, in various localities, to issue a joint call for a convention, such call specifying the object of the meeting. Or some well-known bee-keeper might issue an invitation for such a meeting, as was done recently by Mr. R. F. Holterman, of Brantford, with a view to the organization of an association for the county of Brant. If our Fergus and Belwood friends wish to cultivate a spirit of friendliness and co-operation with their fellow bee-keepers, as no doubt they do, they will either have to draw in their horns and assume a local name, or take steps to have a general gathering of Wellington bee-keepers with a view to forming, in a legitimate way, an association for the county.

WM. F. CLARKE.

Guelph, April 24th, 1886.

Our report of the above meeting was taken from the *Fergus Advocate*, to which it should have been credited.

DOUBLE-WALL HIVES.

FROM Dr. J. C. Thom, we received the following query a short time since:

Page 81 of Mr. Heddon's book, *Success in Bee Culture*, middle of page, we find, "There should never be a dead air space, or double covering over the surplus work." Will you kindly, through the C. B. J., give Mr. H.'s reason for this statement if you know it. I have supposed a double roof to be of advantage in keeping the bees cool that are occupied in the sections during the hot days and nights we have during our best honey flow. Am I wrong?

It was forwarded to Mr. Heddon for his reply, as given below:

By request, I will give a little experience with double hives. Whatever style of hive I use, I always keep all hives shaded during the heated season. I have found that thin walled hives,

shaded, are the coolest in summer. If the sun is allowed to beat down on a hive, its effects would not be so quickly felt through double-filled walls, as through a thin, single wall, but after we are outside of the direct sunshine problem, the thinner and better conductors are the walls of our hives, the cooler may we expect our bees to keep.

If the outside temperature stands at 40, that inside the hive will be 30 or 40 degrees higher, because within the hive there is the action of animal life. We must expect this same animal life to increase the temperature within, when that without stands at 90. Some 12 years ago, when using 2 comb honey boxes, I covered them with a cap during a very hot time, and when honey was coming in fast, my bees ceased work, fearing the results of the commotion of passing in and out of the hive in large numbers. They deserted the honey boxes and laid out on the hives in great bunches. I lifted a cap and placed my hand upon the honey boxes, and found them hot. All the time the hives had been shaded, this heat coming from within. I at once pried off the covers of some 15 caps, placing blocks between them and the rims, thus giving ventilation when the bees of these colonies ceased laying out and resumed work.

We always kept, and always do keep, our shade-boards a space from our covers. We are told that chaff hives are "good to keep the cold out," and like the Darkhill cap must also be as good to keep the heat out. Well, there is no such thing as cold, it being simply a term that we apply to a certain temperature which lacks the same amount of heat as another temperature that we call warm or hot. Double walled hives are good in winter and spring, because they are nonconductors of the heat generated by the bees, and for this same reason they are not as good in summer. Outside of this, however, our system of summer management is such that we could not, for a moment, tolerate the use of other than light, readily movable hives. We prefer to winter in the cellar, but if outdoors, we prefer a removable packing.

At the close of my article, "Deep vs. Shallow Frames," on page 29, you speak in your footnotes as though that article taught a doctrine favoring my new hive. Most certainly not. If greater comb-depth is better for wintering, then that is another card for the new hive, which is at once the deepest, as well as the shallowest of all hives in common use. All we have to do is to winter in two cases, or we may use three or more if we choose. I think, after another winter's experience, that I prefer but one case in which to winter. I see that even as yet, the

hive is not half appreciated. Its capabilities are yet beyond what is generally supposed.

JAMES HEDDON.

Dowagiac, Mich.

UNFAIRNESS.

THE POLLEN THEORY, HEDDON HIVE, ETC.

MR. Pond starts out on page 68 by saying that "the originator of the 'pollen theory' claims that in that theory lies the whole secret of success in wintering." On page 247 of the A. B. J. (the same date of issue as that of the C. B. J. containing the above) is an article written by Mr. Pond, which begins as follows: "Mr. Heddon says, 'I no longer doubt that practical success in wintering depends upon proper food and temperature.'" Will Mr. Pond please harmonize these two quotations?

But this is a small affair compared with the garbled quotations from Mr. Heddon's book. Mr. Pond does not take the trouble to explain that the cellar containing the forty colonies having sugar stores was kept very cold for the purpose of seeing what the effect would be, and that the thirty-five colonies that perished *showed no symptoms of diarrhoea*. They simply died of long continued cold. He fails to notice that the other cellar containing ninety-one colonies was kept warmer.

The bees in this warmer cellar, *i. e.* those having sugar stores, came through all right, while of eight on natural stores, six died of diarrhoea, and of ten with little bee-bread and mixed stores two died. Mr. Pond makes no explanation of this, but quotes in such a manner as to lead the reader to infer that *all* the colonies in this cellar had sugar stores. Just notice how he tells it, he says: "Of ninety-one colonies wintered in another cellar seventy-five on sugar syrup came through in good shape, while sixteen died." Not a word about the difference of temperature in the two cellars, nor that the bees that died in the warmer cellar had natural stores, or part natural stores, and died of *diarrhoea*. He does not explain that the bees that died out of doors having sugar stores did not die of *diarrhoea*, while those having natural stores *did* die of *diarrhoea*.

The space that it would require forbids my quoting from Mr. Heddon's book the report of wintering experiments of 1884-5, as given on page 107, 8 and 9, but how *anyone*, after reading it, could write as Mr. Pond does, is a mystery to me.

That the pollen theory is untenable may be among the possibilities, but not upon the grounds lately entered upon by Mr. J. E. Pond, Jr.

W. Z. HUTCHINSON.

Rogersville, Genesee Co., Mich.

When you speak of cold you touch a more important point than even pollen. We are more firmly convinced than ever that when the temperature is right the pollen will not be wrong, but too low a temperature may cause pollen to assist the difficulty. When we learn the proper degree of heat for the repository, under all circumstances we will have less to fear from pollen.

FOR THE CANADIAN BEE JOURNAL.

A GOOD REPORT.

THE 14th being a fine warm day I decided to take my bees out of their winter quarters, they having become rather uneasy owing to the temperature having got up to 52°. During the winter my house kept at 45° most of the time, only falling to 40° in the coldest weather and the bees kept very quiet till it rose above 45°. After taking the bees out of the house, which is built in a hill side, the temperature fell to 36°, so it seems that twenty colonies in a small house made a difference of 16°. The twenty colonies put in the house all came out alive and all but one or two seem as strong as they were in the fall. Of five wintered out of doors one died and I account for the loss of this one by its only having a cheese cloth quilt under thick sawdust cushion; of the other four, two had the propolised summer quilts under cushions and two cotton batting quilts, and they all did finely. The only one without starved in March after eating eight frames of honey—six I gave them in the fall and two I gave them in February. Colonies united the middle of September and full of bees with ten frames filled about half way down with honey, had five left when I examined them after they began carrying in pollen, which they did on the 14th.

Before ending my letter I wish to ask whether it is best if one moves the old colony to a new stand when it has swarmed and sets the swarm on the old stand, to give the old colony a queen or let them hatch their own queen? Also if a queen was given them would the bees accept her with queen cells in the hive, and how soon after the swarm issued would it be best to introduce the queen?

HENRIETTA F. BULLER.

Campbellford, Ont., April 26th, '86.

The queen may be introduced as soon as the swarm issues and the old colony placed on the new stand without running any great risk, but if the colony is a good one you might allow them to raise their own queen, as the moving of the colony would reduce its working force so there would be little chance of

its swarming again; but should it have a large quantity of brood hatched all the queen cells might be removed except one, or if you even place the old colony alongside the young one and remove it again just before the queens will hatch, there will be no danger of it swarming, as the young colony will receive all the working force. This system has been successfully practised by many. You only want a colony to swarm once and get as large a yield of honey from the young colony as possible.

DAMAGING STATEMENTS

Concerning all producers of Honey, and which all are called on to exert every means in their power to set right.

THE MONTREAL "WITNESS" ON GLUCOSE AND BEES.

IN the *Montreal Witness* of April 28th, among "General" questions and answers, the following incorrect and misleading statements are made about glucose and bees:

1. It is asserted that "glucose is very extensively fed to bees."
2. We are told that this is done not only for their own subsistence but for storage, and that bees actually "store it away unchanged as honey."
3. The climax is reached as follows:—"It is also put up directly in trade as 'honey,'—with which bees have had nothing whatever to do—being put by means of appropriate machinery, into artificial combs made of paraffine!"

The *Montreal Witness* has done excellent service to the interests of bee keeping in the past, as it doubtless will again. It looks very much as if the sub-editor in charge of the "General" question-drawer had been the victim of "a sell" by some glucose-dealer in Montreal. I have written a letter correcting these errors which will no doubt duly appear in the columns of the *Witness*, and meantime call your attention to the matter, that you may second my endeavors by giving us a good, stiff editorial foot-note on the subject, appended to this communication.

WM. F. CLARKE.

Guelph, April 29, 1886.

We thank you for calling our attention to the above, and we regret that that usually reliable sheet, the *Witness* should have given place to such statements as the above without first having had them verified by some practical bee-man. We feel quite satisfied that the *Witness* will make reparation at once, and give the item a firm and flat denial. Evidently the editor of this department has gathered his ideas from some "dealer in glucose" as you say or worse yet has been

reading the paragraphs which have appeared in some of the leading U. S. magazines, but, which, have been since, in most cases, corrected. The *New York Witness*, owned by the same firm we believe, promptly published the contradiction sent them by A. I. Root, editor, of *Gleanings*. If the publishers of the *Witness* will furnish us with such particulars as will lead us into the establishment where such glucose is "being put up by means of appropriate machinery, into artificial combs made of paraffine" we will gladly pay them \$100 for the trouble—yes, we will make it more if it is necessary. Now, friends of the *Witness*, we will ask you in all seriousness either to substantiate the slanderous report you have circulated against the honey-producer, or else contradict it, through the same medium as you have given it to the public. Your paper has too good a name to uphold, to admit of its injuring any class or community as you have (we believe unwittingly) done in this instance. In conclusion:

Glucose is not extensively fed to bees for any purpose, and

Glucose is not, never has been, nor (yes) never will be put up by means of appropriate machinery into artificial combs made of paraffine.

ARTIFICIAL HONEY MADE FROM CORN STARCH AND OXALIC ACID.

Artificial honey imported into England from this country has been found, on analysis, to be made of wheat or corn starch treated with oxalic acid. The fraud cannot be detected by the taste.

The above item was clipped from the *Smith's Fall's Independent*; where it originated we can not say but surely the brain of the editor of that paper was never so fertile as to bring forth such a false and unfounded story as this. We have only to add that it is as false as it is improbable. Will the editor of the *Independent* please furnish us with the source of his information?

QUERIES AND REPLIES.

UNDER THIS HEAD will appear Questions which have been asked of, and replied to, by prominent and practical bee-keepers—also by the Editor. Only questions of importance should be asked in this Department, and such questions are requested from everyone. As these questions have to be put into type, sent out for answers, and the replies all awaited for, it will take some time in each case to have the answers appear.

USING OLD FOUNDATION.

QUERY No. 71.—The foundation I used for brood chamber last season was much heavier and darker in colour than usual, and when hung in the hive the bees would only use it when very much crowded, and then would build on to it instead of drawing it out. In many

cases it acted as a division board. Was it the fault of the foundation or the coolness of the season that made the difference? R. H. S., Falkenburg, Ont.

DR. A. B. MASON, WAGON WORKS, O.—It was the fault of the foundation.

G. M. DOOLITTLE, BORODINO, N.Y.—Should say the fault was in the foundation.

ALLEN PRINGLE, SELBY, ONT.—Probably both in connection with improper manipulation.

S. CORNEIL, LINDSAY, ONT.—If the material of which the foundation was made was good wax I would rather attribute the fault to a poor honey flow.

M. EMIGH, HOLBROOK, ONT.—If there was a fair flow of honey at the time I would say it was the fault of the foundation, if not it might be the season.

PROF. A. J. COOK, LANSING, MICH.—I think the fault was probably in the season, though the foundation may have been too hard. I have not found that bees objected to dark foundation if soft.

S. T. PETTIT, BELMONT, ONT.—If all the other conditions were right the fault was not in the weather but in the foundation, although very cool weather retards comb-building.

DR. J. C. THOM, STREETSVILLE, ONT.—Would suppose the foundation to be at fault. If the bees were crowded on the sheets they ought to have accepted them if they had been properly manufactured.

H. D. CUTTING, CLINTON, MICH.—I have noticed several times if foundation was *very heavy* the bees did not draw it out but would build on to it. I have also seen the same thing in sections. I have one section now in which the foundation has done duty three years and I expect to use it again this season.

DR. C. C. MILLER, MARENGO, ILL.—I think likely the foundation. Before foundation was made, I made some sheets of wax and with some of them the bees acted just as you describe. I have, however, had bees work well on foundation which was very dark, as well as upon that which was very heavy.

H. COUSE, THE GRANGE, ONT.—I have seen some very dark foundation used and very heavy, less than four square feet to the pound, but have never seen any that the bees would not draw out if placed in the hives at the proper time, that is when the bees require more room for brood

rearing or storing honey. R. H. S. surely must have given this foundation when the bees were not crowded for room, or to weak colonies, or late in the season.

BY THE EDITOR.—Have never used any that the bees would not draw out.

PLACING SECTIONS ABOVE FRAMES.

QUERY No. 72.—Should sections be placed parallel to, or on, a line with brood frames, or should they be at right angles to, or across, the frames? Does it make any difference in either top or side storing? C.

G. M. DOOLITTLE, BORODINO, N.Y.—I can see no difference as far as quantity stored is concerned.

S. CORNEIL, LINDSAY, ONT.—Unless there are continuous passage-ways it is simply a matter of convenience. No.

DR. A. B. MASON, WAGON WORKS, O.—Best to be parallel to the brood frames and with continuous passage way.

H. D. CUTTING, CLINTON, MICH.—My sections go at right angles to the brood frames. Do not practise side storage.

H. COUSE, THE GRANGE, ONT.—(1) They should be placed parallel or on a line with brood frames. (2) For both top and side storing.

ALLEN PRINGLE, SELBY, ONT.—I place them both ways as convenient, though I prefer them at right angles with the frames.

M. EMIGH, HOLBROOK, ONT.—Don't think it makes any difference which way the sections set as to the quantity of honey stored.

S. T. PETTIT, BELMONT, ONT.—For top storing sections should be parallel with brood frames. Have no experience in side storing.

DR. C. C. MILLER, MARENGO, ILL.—I think likely the bees will work just as well one way as the other, but as a matter of convenience I prefer them parallel to the brood frames.

PROF. A. J. COOK, LANSING, MICH.—I place lengthwise of frames. This is the style with the Heddon case, which gives the neatest results of anything I ever tried. The bees will work equally well in either case I think.

DR. J. C. THOM, STREETSVILLE, ONT.—I have never used sections across the frames, always parallel, and I think they should be placed thus. I think it would make a difference in the

crop in top storing; have no experience in side storing, therefore will not pronounce an opinion.

BY THE EDITOR.—Thus far we have not been able to perceive any difference in the quantity of honey stored and think there can be little if any. For side storing they should be placed up as close to the brood as possible.

SUNDRY SELECTIONS.

PRODUCTION OF WAX.

DR. PORTER.—We are frequently told that it requires 20 pounds of honey to produce one pound of wax. What proof have we that this ratio is correct?

Great Neck, N. Y., March 1, 1886.

We do not know that 20 lbs. is the exact amount required to produce a pound of wax. We have heard of a pound being produced with about thirteen pounds of honey. Will some of our friends give us their experience to prove conclusively how much it takes to produce a pound of wax in the different seasons of the year.

PACKING FOR WINTERING OUTDOORS.

APIARIST.—For wintering on summer stands is $1\frac{1}{2}$ inches of space for packing enough for the body of the hive?

When the hives are packed with chaff, when wintering out of doors we would prefer to have an outside case packed with sawdust not less than six inches or chaff from twelve to sixteen inches.

THE FRAME FOR COMB HONEY.

Is a deep frame 12 inches equally as good for the production of comb honey as the Langstroth providing the brood chamber can be contracted to size in cubic inches of the above.

Mr. Doolittle, we believe, takes as large an average as any of our comb honey producers and he uses the deep frames, but there are some new inventions which are likely to cause a revolution in the production of comb honey; these will be fully explained in the C. B. J.

MAKING NUCLEI.

My nuclei box for wintering is 8 inches wide and frames 11 x 12. Would you advise using four or five frames to fill up the eight inch space if the four contained enough stores.

If the space is only about eight inches wide by twelve deep we think there should be enough bees to occupy that

space filled with combs and sufficient stores.

How do you account for the fact that in the United States, where there are millions of dollars worth of honey every year produced, that the price is never mentioned with other produce that is actually of less importance, such as carrots and other minor vegetables.

That is the case but honey is fast gaining a place in our market reports and will soon, we believe, be quoted the same as other marketable products.

A HINT TO BEE JOURNALS.

R. F. HOLTERMAN.—Whilst attending our late Union at the Ontario Agricultural College I had occasion to look for a book upon Apiculture. I regretted to find that the library, which is a very good one, was entirely without such a work. Permit me to suggest that an institution such as this is, turning out every year in the vicinity of seventy-five young men, a number of whom will, no doubt, engage in bee-keeping more or less, could be profitably supplied by the publishers of bee-journals and works. The college has an excellent reading room where over one hundred papers are constantly on file. The journals directed "Reading Room, O. A. C., Guelph, Ont.," will be placed on file there: they, I believe, are all mentioned in the annual report besides being visited every year by many farmers. The probability is that such an outlay by the publishers would amply repay. In conclusion, it is only just to say that I find the CANADIAN BEE JOURNAL has been enterprising enough to do this from the commencement. Prof. Panton, entomologist, etc., takes a great interest in bee-keeping and appreciates bee-literature of merit. Brantford, April 7th, 1886.

SIMMIN'S NEW BOOK.

As we are about to go to press we receive from the editor, Mr. S. Simmin's, proprietor of the great Sussex apiaries in England, his book on Apiculture. We find the following on the title page: "A new era in modern bee-keeping. Simmin's original non-swarmer system as adapted to hives in present use. It is based on purely natural principles, and is the only system that can ever be relied upon, because no other condition exists in the economy of the hive that can be applied to bring about the desired result." Other matters of first importance to all bee-keepers are also included. It contains 64 pages. The typographical work is good, and the book is profusely illustrated. After a more thorough perusal we will notice it further.

REVERSING QUEEN CELLS.

CHAS. MITCHELL.—Will bees winter as well when combs are solid to the wood above and below, or will the queen travel as readily from one comb to another when extending the brood chamber in Spring? What kind of queens do you get when reversing frames? We all know that queens are raised with their heads down; now suppose that you reverse about half the combs in your apiary when queen cells are in full blast, can you get this outward absorption of "Royal Jelly" which takes place with the head down?

We have usually found about as much brood in box hives in proportion to their size as in movable comb hives where the combs were not manipulated. We think there are always passages or openings to allow the queen to go back and forth as easily as they do in movable comb hives. We think the queens would travel from comb as readily in such hives as in movable comb hives. It was decided at the National Convention at Detroit by many of our best bee-keepers that reversing the combs would cause the bees to destroy the queen cells. Would advise you not to reverse your combs with queen cells on, if you wish to keep them, as we do not imagine that combs reversed with queen cells would produce as good queens as it left in their natural position, even though they are not torn down.

Have you seen any well developed queens with their heads up? or is this the outcome from reversible bee-keepers.

We do not know that we have raised any up side down.

CONVENTION NOTICES.

MICHIGAN STATE BEE-KEEPERS' ASSOCIATION.—The next annual convention of this association will be held in Ypsilanti, Mich., Dec. 1st and 2nd, 1886. H. D. CUTTING, Sec., Clinton, Mich.

The Central Michigan Bee-Keepers' Association will meet on May 18, 1886, with Capital Grange at their Hall in North Lansing, Mich., to hold 3 sessions, viz: Forenoon, afternoon and evening. All interested in bee-culture are invited to attend and bring articles of the apiary for exhibition. For any special information address the Secretary. E. W. WOOD, N. Lansing, Mich.

You are requested to attend a meeting of the North Middlesex Bee-Keepers' Association to be held in the Ailsa Craig Town Hall, on Thursday, May 20th, at 2.30 o'clock. It is expected that a large number of prominent Bee-Keepers will be there and that the meeting will result in much profit to all interested in apiculture. A. W. HUMPHRIES, Sec.

THE CANADIAN BEE JOURNAL.

JONES, MACPHERSON, & Co.,

EDITORS AND PUBLISHERS,

BEETON, ONTARIO.

WEELY, \$1.00 per Year, Postpaid.

BEETON, ONTARIO, MAY 5TH, 1886.

A cage containing some living bees—Italians—and very nice ones too, came to us the other day from Thos. Horn, Sherburne, N. Y. whose advt. appears in our columns.

Without binding we will furnish Vol. I complete for 75 cents—or Vol. I and II for \$1.75. We are now having Vol. I bound in a handsome cover, and titled on back, and we offer it at \$1.25, or clubbed with Vol. II at \$2.00.

Reports from all over lead us to form the opinion that, on the whole, bees have been pretty well wintered, and the orders for supplies are coming in rapidly—our letters average 70 to 75 per day, and the majority of them contain orders

The season for discussion on other subjects than the "Pollen Theory" are at hand, and as we think most everybody has had their say, we will "give the theory a rest" for a while, *i. e.* as soon as what articles we now have on the subject have appeared.

I again forward my subscription for the CANADIAN BEE JOURNAL. I have had many copies of the different bee-papers, and I don't see why I would leave the *one* that put me in the right road, though I have nothing to say against the others.

F. D. TESSIER.

Mount Oscar, Que., April 24, 1886.

COME TO STAY.

The first number of the second volume of the C. B. J. is received, and all dressed in its new clothes "is a thing of beauty." It has outlived the experimental stage and takes its first steps in its new suit with columns filled with the best talent among the honored members of the bee-keeping fraternity. It has come to stay, there is no doubt. Long may it live and hold the position it has so justly earned.

A. W. OSBURN.

Apartado 278, Havana, Cuba, W. I.

PRICE LISTS RECEIVED.

F. J. Crowley, Batavia, N. Y. 12 pages—Bees, queens, etc.—reduced list.

Will. Ellis, St. David's Ont.—4 page price list—supplies for Root's simplicity hives, comb foundation, etc.

HONEY MARKET.

DETROIT HONEY MARKET.

There is not a ton of comb honey in the city, and but little wanted. Best 1 lb. sections, 14c. Beeswax scarce at 25c.

Bell Branch.

M. H. HUNT.

BOSTON.

Honey is selling very well but prices are very low, and we are often obliged to shade our prices in order to make rates. We quote 1 lb. comb, 14 to 16 cents. 2 lb. comb, 12 to 14 cents. Extracted, 6 to 8 cents.

BLAKE & RIPLEY.

CINCINNATI.

No new feature whatever on the market of honey. Trade perhaps duller than usual. Manufacturers are seeming to take a rest. Prices are nominal and no changes to note from last quotations. There is a fair demand for beeswax which we quote at 20c. to 25c on arrival.

CHAS. F. MUTH & SON.

CHICAGO.

Without any material change. White comb honey in one pound frames brings 16 cents; very fancy 17 cents. Dark is slow sale. Extracted honey 6 to 8 cents per pound. Beeswax 25 to 26 for yellow, market steady.

R. A. BURNETT.

Chicago,

NEW YORK.

We quote quite an improvement in sales of comb honey the past two weeks, and owing to the lateness of the season prices rule low. In consequence of the low freight rates from San Francisco to New York, many dealers in honey are availing themselves of the rates and shipping extracted honey to this market at prices ranging from 4½ to 5½ cts. per lb. This has already had its effect on stale goods. We quote prices as follows: Fancy white comb honey, 1 lb. sections, 12 and 13 cts. per lb.; fancy white comb honey, 2 lb. sections, 9 and 10 cts. per lb.; fancy buckwheat comb honey, 1 lb. sections, 9 cts. per lb.; fancy buckwheat comb honey, 2 lb. sections, 7 and 8 cts. per lb.; off grades, 1 and 2 cts. per lb. less; extracted white clover honey, 6 and 7 cts. per lb.; extracted buckwheat honey, 5 and 5½ cts. per lb.; extracted California honey, 5 and 6 cents per lb.; extracted Southern, as to color and flavor, 5 and 6 cts.

MCCAUL & HILDRETH BROS.

EXCHANGE AND MART.

Advertisements for this Department will be inserted at the uniform rate of 25 cents each insertion—not to exceed 5 lines—and 5 cents each additional line each insertion. If you desire your advertisement in this column, be particular to mention the fact, else they will be inserted at regular rates. Cash must accompany the advt.

BEES! BEES! For sale—Thirty or forty col- in fine condition, cheap. Address, W.H. SANFORD, Tottenham.

WANTED—CASH OR BEES—For village lots 195 and 196, (adjoining corner lots on John, Mary and Moir sts., Elora), unencumbered, and title perfect. Good colonies of bees will be taken in exchange for this desirable property. Correspondence solicited. J. R. MORRISON, Royal City Apiary, Guelph, Ont.

BEES FOR SALE.—Ten colonies at \$7 per colony; 25 colonies, \$6.50 per colony. Bokhara clover seed, 50 lbs. \$6. IRA ORVIS, Whitby, Ont.

BEES, good, strong swarms of Italians, Syrio Italians, and Syrians, in eight frame hives, made light for shipping, or in other hives if preferred. Safe arrival guaranteed by express for \$8 per colony; Hybrids for \$7. ILA MICHENER, Low Banks, Ont.

ADVERTISEMENTS.

Send for one of my Price Lists, and see

HOW CHEAP I OFFER BEES,

Apiarian Supplies, Bee Hives, etc., very cheap. S. P. HODGSON, Horning's Mills, Ont.

BEESWAX WANTED.

WILL pay the highest market price for any quantity of pure wax. Comb foundation for sale to suit any frame or section. 35 cts, for wax. Wax worked on shares or for cash. All freight to Campbleville station, C. P. R. If by mail to

ABNER PICKET, Nassagaweya P. O., Ont.

Also agent for D. A. Jones' supplies.

COMB FOUNDATION.

Headquarters in Canada. Four first premiums in two years. We are now entering our fourth year without one complaint. A. I. Root's Simplicity Hives & Supplies. Circulars free. WILL. ELLIS, St. David's, Ont.

FOR SALE.

A number of colonies Italian bees bred from A. I. Root's queens, \$8 to \$11. Hatching eggs from pure bred W. F. B. Spanish, \$1.50 setting of 13, or \$2.50 for 2.

JAS. STEWART, Meaford, Ont.

Bees For Sale!

We will sell a limited number of colonies of bees—bred for business—being special strains which have been proven for their prolificness and honey-gathering qualities. Each colony will have seven to eight frames, and good laying queen.

Price per colony..... \$10 00
" " 5 colonies, each..... 9 50
" " 10 colonies, each..... 9 00
Smaller colonies at less prices.

Bees should always go by express unless they are personally cared for en route. Terms—are cash with order.

THE D. A. JONES CO., LTD.

Beeton, Ont.

ITALIAN QUEENS 1886.

For Italian Bees and Queens in their purity for beauty and working qualities they are equal to any in the U. S. or Canada. Comb foundation 40c. per lb. Untested queens \$1 each, \$11 per dozen; tested \$3.50 each. Queens reared in full colonies from egg; safe arrival and satisfaction guaranteed. Send for circular
T. S. HALL,
Kirby's Creek, Jackson Co., Ala.

50 COLONIES OF BEES FOR SALE.

ITALIANS, \$9. HYBRIDS \$8.

Also bee-smokers, honey knives, comb foundation, perforated metal and apiary supplies. No circular. Write for wants.
D. P. CAMPBELL,
Park Hill, Ont.

J. W. GREEN, ALDRESHOT, P. O.

Manufacturer of Roots' Chaff and Simplicity Hives and Apiarian Supplies. Catalogue free, by sending your name or P. O.

ESTABLISHED MAY 1ST, 1883.

The * American * Apiculturist,

A JOURNAL OF 32 PAGES DEVOTED TO

PRACTICAL BEE CULTURE

SEND FOR SAMPLE COPY.

We also deal in first-class supplies, and under the direction of Mr. Henry Alley, we run the largest queen rearing apiaries in the world. Circular and price list free. Address
AMERICAN APICULTURIST
Wenham, Essex Co. Mass

20 COLONIES

Of Italian Bees for sale. Originated from D. A. Jones' and S. Corneil's apiaries. Complete Jones' hive; 10 frames with each hive; good queens Price \$9 to \$10. Apply to
ERNEST SCHULZ, Lethbridge, Muskoka.

Foundation Wholesale and Retail.

I make a specialty of manufacturing foundation of all kinds and sizes and in any quantity. Correspondence with dealers solicited. All of my foundation is made from pure yellow wax, and cleansed and purified by steam, and I guarantee every lb. equal to samples. HEAVY, 5 to 7 sq. feet, cut to fit any frame, in 25 lb. lots, 49c.; 50 lbs., 48c.; 100 lbs., 47c. BEAUTIFUL THIN foundation, 10 to 12 sq. ft., 25 lbs., 53c.; 50 lbs., 57c. FOUNDATION MADE UP, HEAVY, 50 lbs., 12c.; 100 lbs., 11c. THIN, 25 lbs., 20c.; 50 lbs., 18c. Papered and packed in light boxes free. Customers have choice of mills on which foundation is made. A few fine stocks of ITALIAN BEES in May or June on 7 L. frames in light shipping box, \$8. A good 2 1/2 inch SMOKER by mail, \$1. SECTIONS, CRATES, &c. FREIGHT to Montreal per 100 lbs., 28c.; Express per 100 lbs., 35c. No CIRCULARS. Prospective customers furnished with SAMPLES of foundation upon application. Remember I continue to act as agent for all makes of FOUNDATION MILLS, and write me before purchasing. See former ad. REFERENCES: Exp-Agent, P.M., or Manager E. T. Bank, all of Bedford.
FRANK W. JONES,
Bedford, Que.

DOOLITTLE!

Wishes to say to the readers of the CANADIAN BEE JOURNAL, that he has concluded to again rear queens for sale, during 1886, at the following prices:

Untested Queens, each	\$ 1 00
“ “ per five	4 00
“ “ “ ten	7 50
“ “ “ twenty	14 00
Untested Queens, reared by natural swarming, each	1 50
per five	6 25
per ten	11 00
per twenty	20 00
Tested Queens, each	2 00
“ “ per five	7 00
“ “ by natural swarming, each	3 00
“ “ “ “ “ per	15 00

or after, each..... 5 00
Extra selected, two years old, each... 10 00

Circular free, giving full particulars regarding each class of Queens. If Canada money is sent, add 5 per cent., as it costs me that in exchange. Also add eight cents for single Queen, six cents for two and ten cents for five to cover extra postage to Canada. Address

G. M. DOOLITTLE,

BORODINO, OVAN Co., N. Y., U. S.

BEES FOR SALE.

For sale cheaper than the cheapest.—Blacks, Hybrids and Italian bees in lots of from one to fifty, in Jones' hive. Price \$5, \$6 and \$7 respectively, for strong colonies delivered at the nearest railway in May. Also one Honey Extractor, good as new, for sale cheap.

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J. J. MARTIN & CO.,
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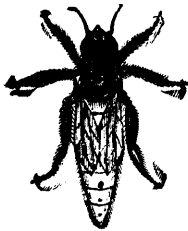
THE INVERTIBLE HIVE

INVERTIBLE FRAMES,

Invertible Surplus Honey Cases, Entrance Feeders, Top & Bottom Feeders, Hive-Lifting Device, Honey Extractors, Wax Extractors, Comb Foundation, etc.

My new Illustrated Catalogue is now ready, and will be mailed to all who apply for it. Address

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THE ITALIAN APIARY.

M. B. HOLMES, Delta, Ont.

IMPORTER OF AND DEALER IN

ITALIAN :: BEES :: AND :: QUEENS.

The best of Italy's choicest queens their mothers. Not one dissatisfied customer in 1883, 1884, and 1885. Price, untested, \$1.50; Tested, \$2.00; Selected tested, \$3.00. Colony in Jones' Hive, \$9.00.

Agent for all kinds of Apiarian Supplies.



BEE-KEEPERS' SUPPLIES.

Having just completed our Large Factory we are prepared to offer all kinds of Bee-Keepers' Supplies at

LOWEST BED ROCK PRICES.

WE MANUFACTURE

5 Styles of Hives, 6 Styles of Honey Extractors,
7 Styles Foundation, Etc., 2 Styles of Smokers,
2 Styles Wax Extractors, "V" Groove Sections, Etc.
WE GUARANTEE OUR WORK FIRST-CLASS.

Liberal Discount on Large Orders.

Send a Postal Card for our Illustrated Catalogue

ASPINWALL & TREADWELL, BARRYTOWN, N.Y.

EGGS FOR HATCHING.

From two grand yards of W. F. Black Spanish and One yard of Light Bramahs. Eggs, \$2.00 for 13, or \$3.50 for 26. A few Fowl for sale. Send for circular.

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QUEENS. 1886. QUEENS.

Bred from Imported Mothers. Two, three, and four frame nuclei. Safe arrival and satisfaction guaranteed. Send for price list. Address

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OR

MANUAL OF THE APIARY.

11,000 SOLD SINCE 1876.

The twelfth thousand just out. 10th thousand sold in just four months. 2,000 sold the past year. More than 50 pages and more than 50 costly illustrations were added in the 8th edition. It has been thoroughly revised and contains the very latest in respect to Bee-Keeping.

Price by mail, \$1.25. Liberal discount made to Dealers and to Clubs.

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NORTHSHADE APIARY

AND COMB FOUNDATION WORKS.

Prices greatly reduced. 50 to 100 colonies of choice Italian bees for spring delivery. Nuclei, queens, and bees by the pound, for the season. Foundation for sale. Wax worked by the pound, or for a share. Samples of foundation free. Send for price list.

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BEE CULTURE!

A short, practical treatise on the art and description. Catalogue of bee-keeper's supplies, with prices. Send for one to

WATTS BROS.
Murray, Clearfield Co., Pa.

For Sale Cheap

50 colonies in frames 10 x 12, and 10 frames per hive only \$5 each, also 500 or 600 straight combs built on e. f. cheap. Illustrated circular free, ready by 1st of May. Send for it, and save freight in ordering from Montreal. Address,

J. B. LAMONTAGNE,
Box 964, Montreal, Que.

Italian Bees and Queens.

Full Colonies, Nuclei and Queens, sent on short notice.

A. NEEDHAM
Sarrento, Orange Co., Fla

J. P. Connell,

HILLSBORO, HILL CO., TEXAS.

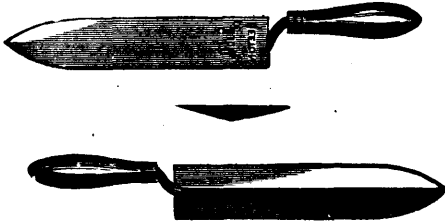
Makes a specialty of rearing Pure Italian Queens and of Shipping Bees in two, three, and four frame nuclei. My queens will be bred from the best imported mothers. Tested Queens, in March and April, \$2.50; after, \$2.00. Untested Queens, in April, \$1.25; after, \$1. Safe arrival and satisfaction guaranteed. **Send for circulars.**

BUCKEYE SECTIONS, V. GROOVE

White as snow, any size, very cheap. We manufacture the Scientific Bee Hive, shipped in the flat (body and frames) can be set up in five minutes without hammer or nails. This hive beats them all for honey. Send for circular to
J. B. MURRAY,
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We have just to hand a large shipment of honey knives from the makers, Lockwood Bros. Sheffield, England. These are undoubtedly the finest we have had... yet, being the most perfect in shape and neatness of manufacture.



These Knives are made of the Finest Razor Steel

- Ebony Polished Handle, mirror polish.....\$1 50
 - Ebony Polished Handle, glazed polish..... 1 25
 - Wood Polished Handle, glazed polish..... 1 00
- If by mail, add 15c extra for each knife.
THE D. A. JONES CO., LD., Beeton

WHAT EVERYBODY WANTS.

—THE—

CHAMPION EGG TESTER.

PRICE, 50 CENTS.



Use it at home, everywhere. Take it with you in your pocket when buying eggs. Save money and trade. Bad ones are seen at a glance. For incubating purposes they are far superior to anything out—durable, nice form, and will last a long time.

THE CHICK'S HEART can be seen beating through the shell in three days, and dead ones are plainly noticeable. After eggs have been under a hen or incubator for five days, the unfertile ones should be removed. This can be done by using an Egg Tester

We will send one of these Egg Testers free to every person sending us \$1.25, the price of one year's subscription to the "POULTRY MONTHLY," the best magazine of its kind. If you have already paid your subscription, induce one of your neighbors to subscribe, mail us the amount (\$1.25) and we will send you the Egg Tester free of charge for your trouble. Send for Price List of Poultry Supplies. Address

THE POULTRY MONTHLY.
 P. O. Box 215, Toronto, Canada.

1884 TARBEE ARIARIES. 1881
ABBOTT L. SWINSON,
 71-66.

PROPRIETOR
 Goldsboro. Wayne Co. N.C., U.S.A.

Price list of warranted American Albino Italian, (the best Bees in America) Syrian and Carniolan Queens

For the Year 1886	April	May	June	July & on
Untested laying, each....	\$1 50	1 00	1 00	1 00
Untested laying, 1/2 doz....	8 00	6 00	5 25	5 00
Fine Tested Q's each....	3 00	2 50	2 25	2 00
Fine Tested Q's 1/2 doz....	15 00	1 12 50	11 00	

My AMERICAN ALBINO ITALIANS, all show 3 yellow bands and many the 4th and 5th, with an equal No. of white silvery bands of fine fuzz, these are my specialty for 1886. Syrians and Carniolans are bred from Imported mothers of Mr. F. Benton. The Syrian was SPECIALLY selected to order, for producing the gentlest and whitest banded bees to be found in Syria. Nuclei—Add 75 cents for each L. frame of Bees and brood to price of queen. Bees by pound, same price each month as untested queens. Pelham foundation 45c. and 55c a pound. Untested queens by April 15th. Circular free.

NOW THEN ORDER.

Having determined to devote my time exclusively to the production of

PURE ITALIAN BEES & QUEENS

the coming season, I am enabled to offer the following prices:

- Tested Italian Queens.....\$1 00
- Bees per lb..... 1 00
- One Frame Nuclei with Tested Queen, 1/2 lb. Bees and 1 Frame Brood..... 2 00
- 2 Frame Nuclei, 1 lb. Bees & Tested Queen 3 00
- 3 " " 1 1/2 " " " " 4 00
- 4 " " 2 " " " " 5 00
- 1 Tested Queen and 1 lb. Bees..... 2 00
- 50 choice Colonies for Queen rearing for \$10 each.

See what last season's customers say:
 PENETANGUISHENE, CANADA.

Queen received all right. She is a noble looking queen and pleases me better than any I have yet received.

HARVY L. LEACH.

The queens are both giving satisfaction.
 R. M. TAYLOR,
 Port Dover, Can.

Those two queens I got from you are giving excellent satisfaction.
 JNO. G. KNIDENGER,
 Kilmanagh, Mich.

I am very much pleased with the tested queen I got from you last summer.

J. S. SEELEY,
 Sodus Point, N.Y.

and hundreds of others.
 I will commence mailing soon after May 1st and of course first orders are first filled, so order now. Terms cash with order. Safe arrival, and satisfaction guaranteed in every case. Sample of live workers free by mail.

THOS. HORN.
 Box 1691, Sherburne, N. Y.

FRIENDS If you are in any way interested in
BEES AND HONEY.

We will with pleasure send you a sample copy of our **SEMI-MONTHLY GLEANINGS IN BEE CULTURE**, with a descriptive price-list of the latest improvements in Hives, Honey Extractors, Comb Foundation, Section Honey Boxes, all books and journals, and everything pertaining to Bee Culture. Nothing Patented. Simply send your address on a postal card, written plainly
A. I. ROOT, Medina Ohio

180 ACRES SELECTED,

High, gray hammock and pine lands, not subject to overflow, situated on the

GULF COAST RIDGE,

In Tropical Florida, 81° 50 m longitude west of Gr., and 26° 35 north latitude. 16 miles south of Fort Meyers, 23 miles distant from Ostego Bay, crossed in its whole length by the lovely Estero Creek, for the culture of Oranges, lemons, limes, pineapple datepalm, coconuts and winter vegetables, etc. Climate grand and delightful, water good and healthy, health unsurpassed. In 5 acre lots, \$12.50 per acre. The whole, a 140 acre tract, at \$10.00 per acre. 70 to 100 colonies of Italian bees can be had if wanted. Apply to

G. DAMKÖHLER,
Puata Rassa P. O., Monroe Co., Florida.

50 Colonies of Bees For Sale.

Containing Queens raised from choice mothers. They are on straight selected frames, most of which are wired. The queen can occupy them nearly to the top bar. Prices as follows: One colony of bees on eight Jones' frames for delivery in May, \$9.00. Hives or boxes for shipping extra as follows: Box, suitable for shipping, 50c. [can be returned if desired]; a hive to hold 10 or 12 frames, \$1. or \$1.50 for my special storey and a half hive, 28 inches long inside, with one inch chaff space at the sides, contains 2 division boards, and has a special feeder whereby you can feed without removing cover or disturbing cushion. It is made of first-class material and well painted. With this hive the honey can remain until well ripened, as you can extract 50 lbs at one time.

G. A. DEADMAN,
Druggist, etc., Brussels

THE YUCCA BRUSH!!

BY MAIL SIX CENTS EACH.

I also manufacture a first-class article of Comb Foundation, and keep in Stock, Sections, Honey Knives, Cans, Smokers, etc. Write for particulars.

W. W. BLISS,
Duarte, Cal.

ESTABLISHED 1855.

BEE SWAX HEADQUARTERS.

We have constantly on hand a large stock of Domestic and Imported Bees-wax in original shape, which we offer to manufacturers of Comb Foundation at lowest prices. We guarantee all our beeswax absolutely pure. Write to us for prices. Address,

R. BOKERMAN & WILL,
Beeswax Bleachers and Refiners. **Syracuse, N.Y.**

NORWAY SPRUCE.

Something for every Bee-Keeper. Shelter your Apiary. Large quantities at low prices. Send for price list.

A. GILCHRIST,

GUELPHI P. O., ONT

BEE - HIVES, SECTIONS,

Foundation & Apiarian Supplies.

Having a large stock of sections on hand we will fill orders in March at the following prices:

4 1/2 x 4 1/2, in lots of 500 to 4,000, per 1,000	\$5.00
" " " 5,000	4.75
" " " 8,000	4.50
" " " 12,000	4.50

4 1/2 x 4 1/2, at same prices. All V-grooved.

Our Section-Cases and Shipping-Crates are as good as any in the market, and at correspondingly low prices. For description and prices of the **SUCCESS HIVE**, send for Price-List. Estimates given on all other hives

QUEENS AND BEES FOR 1896.

We make a specialty of rearing the **ALBINO QUEENS AND BEES**. Price-List free.
S. VALENTINE & SON Hagerstown, Md.

SECTIONS!

SECTIONS!

Lake's All-in-One-Piece !!

4 1/2 x 4 1/2 x 2 - to 1 1/2 \$3.00 PER 1,000.
5 1/2 x 5 1/2 x 2 - to 1 1/2 \$4.00 PER 1,000.

SPECIAL FREIGHT RATES GUARANTEED.

New Firm.

New Factory

New Machinery.

Samples and Price List, with unsolicited Testimonials, sent on receipt of five cent stamp to pay postage.

"Sections received. As far as material and workmanship is concerned they cannot be excelled. Send me 10,000.

"R. STEBLE,
Marietta, Ohio.

"We would like the exclusive agency of the whole Northwest Territory. Send us 10,000 at once.

"HAVE & SON,
Council Bluffs, Iowa.

Address,

LAKE BROS. & CO.,
CATONSVILLE, MD.

LOOK BOX, 17:

APIARIAN SUPPLIES

MANUFACTURED BY

W. T. Falconer - Jamestown, N. Y.

Are unsurpassed for **Quality** and fine **Workmanship**. A specialty made of all styles of the **Simplicity Hive**, including the **Van Dusen-Nellis**. The "**FALCON**, **Chaff** **Hive**, with movable upper story, continues to receive the highest recommendations as regards its superior advantages for **wintering** and handling bees at all seasons.

DOVE-TAILED SECTION.

Same price as one-piece. Also manufacturer of **VAN-DEKORT FOUNDATION**. Dealer in a full line of **Bee-Keepers' Supplies**. Send for Illustrated Catalogue for **1886**, Free. **Prices always reasonable**. Mention this paper.

I. R. GOOD'S PRICE LIST.

Italian Bees and Queens For 1886.

HAVING again located at NAPPANEE, where I expect to devote my entire time to the breeding of **PURE ITALIAN BEES and QUEENS**, can also procure and furnish **IRIAN BEES and QUEENS** bred in my Tennessee Apiary. I queens warranted pure to name and untested Queens granted purely fertilized.

- Tested Queens prior to June 15th.....\$3.00
 - Tested Queens, later than June 15th, each..... 2.00
 - Untested Queens, prior to June 15th, each..... 1.00
 - Untested Queens, later than June 15th, each. 1.00
 - Six for \$5.00. 12 or more 75c. each.
 - me Nucleus, very strong, prior to June 15th, \$5.00. later \$4.00 each. With untested queen \$1.00 less
- Bees by the pound same price as untested queens also furnish all kinds of sections and hives at A 1 price.

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is established by hundreds of the most practical and disinterested bee-keepers to be the cleanest, brightest, quickest accepted by bees, least apt to sag, most regular in color evenness and neatness, of any that is made. It is kept for sale by Messrs.

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and numbers of other dealers. Write for **SAMPLES FREE** and Price List of Supplies, accompanied with

150 COMPLIMENTARY

and UNSOLICITED TESTIMONIALS from as many bee-keepers in 1883 **We Guarantee every inch of our Foundation equal to sample in every respect.**

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1886. ITALIAN QUEENS. 1886.

Six Warranted Queens for \$5. Send for circulars No circulars sent unless called for.

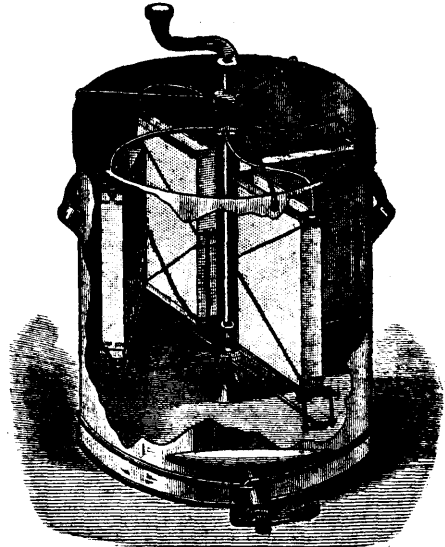
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Manufacturers of and dealers in a full line of **BEE KEEPER'S SUPPLIES.**

Also Bees, Queens and Honey. Sole Manufacturers in Canada of



THE STANLEY AUTOMATIC HONEY EXTRACTOR

The only self-reversing, as well as the most perfect, complete and durable Honey Extractor known. It reverses the combs all at once by simply reversing the motion. There is no danger of breaking or time lost in handling combs when reversing. These machines have taken all first prizes wherever shown for the past two years. We have now made arrangements with the patentee and manufacturer, Mr. G. W. Stanley, of Wyoming, N. Y., so that we can ship them from our manufacturing establishment, Brantford, Ont., at about his prices. Every machine is warranted to work perfectly and to do more than double the work of other Honey Extractors taking the same number of combs. These Extractors are made to take 2, 3, 4, 6, 8 and 10 frames. The greatest demand is for the 4-frame machine. Send for free circulars and price list. Agents wanted to canvass every County in the Dominion.

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—AGENT FOR—

E. L. GOOLD & CO.'S BEE-KEEPER'S SUPPLIES.

Wholesale Honey Depot. 75 Colborne St., Toronto. Glass a specialty.



Flat Bottom Comb Foundation.

High side-walls, 4 to 14 square feet to the pound Wholesale and retail. Circular and samples free

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