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THE CANADIAN BEE JOURNAL



"The Greatest Possible Good to the Greatest Possible Number."

VOL. VIII, No. 19. BEETON, ONT., JAN. 1, 1893. WHOLE No. 328

CARNIOLAN & ITALIAN QUEENS



bred from pure mothers for the coming season, at a grade of prices to compare with that of honey production; and the utmost care should be taken to have them as good as any man can breed. Carniolans or Italians, untested, each, 75 cts.; 3 untested queens, \$2.00; 6 untested queens, \$3.60; tested queens from either yards, after the 20th of June, each, \$1.00. All queens that are known to be mismated will be sold at 50 cents each, including all "Yellow Carniolans."

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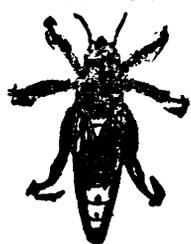
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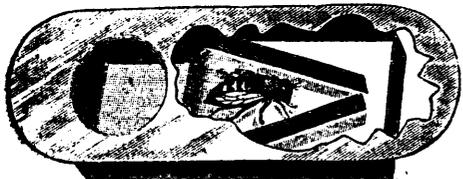
To Damn With Faint Praise

read at the last meeting of the Mo. State Bee-Keepers' Association.

The Bee Keepers' Review comes nearer to my ideal of what a Bee Journal should be than any other as yet extant on this continent. It is not without its faults, but they are mainly those which time and experience will correct. Mr. Hutchinson does not get offended when they are pointed out, but courts criticism and hails correction, deeming it a friendly act to point out an error in opinion, expression or grammar. He is both courageous and courteous. He is willing to give all a fair hearing. An accomplished bee-keeper; a natural born editor, who takes to literary work as a duck takes to water; a man with the enthusiasm of both his callings—bee-keeping and literature. I see in Mr. Hutchinson the rising star of bee-journalism; am glad he is already so highly appreciated; and hope, as I believe, that his shadow will never grow less. In the BEE-KEEPERS' REVIEW we have the ablest, broadest, most intelligent, manliest and freest exponent of apicultural ideas that has yet appeared in the western world. These expressions of opinion are spontaneous, unbought, disinterested, and made from no other motive than the promotion of the greatest good to the greatest number of Bee-Keepers.

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Organized Sept. 17th, 1880.
Incorporated March 1886

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- District No. 12.—E. A. Jones, Kerch.—Essex, Kent and Lambton.
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A General meeting of the members shall be held once a year and shall be known as the Annual meeting.

Every Affiliated Association shall receive an annual grant out of the funds of this Association. The amount of such grant shall be fixed by the board from year to year.

Each Affiliated Association shall be entitled to the privilege of two representatives at the meetings of this Association in addition to those who are already members of this Association, and such representatives shall be entitled to all the rights and privileges of members of this Association.

Any County or District Bee-Keepers' Association in the Province of Ontario may become affiliated to this Association on payment of five dollars, which shall be paid to the Secretary on or before the 1st day of May in each year, but every Local Association, so affiliated, must have on its membership roll at least five members who are also members of the Ontario Bee-Keepers' Association at the time of its affiliation and must continue to have a like number of its members on the roll of this Association while it remains in affiliation.

County and District Associations seeking affiliation should notify the Sec'y, Wm. Couse.

All members of this Association will receive the CANADIAN BEE JOURNAL gratis.

THE CANADIAN BEE JOURNAL.

"The Greatest Possible Good to the Greatest Possible Number."

VOL. VIII, No. 19.

BEETON, ONT., JANUARY 1, 1893,

WHOLE No. 328



M. B. HOLMES.

A CORRESPONDENT who has long been familiar with the bee-keepers of the counties of Leeds and Grenville, and who also gives instruction to those desiring it in beekeeping, sends us the following sketch:—

Editor Canadian Bee Journal.—

The subject of the above cut, Mr. M. B. Holmes, was born in the township of Bastard, County of Leeds, July, 29th, 1853, and is of Irish descent.

He commenced beekeeping in 1882, not

by his will and consent aforethought, but by a fortuitous incident, a swarm of bees coming to him in the harvest field in 1881. Being of a thoughtful turn of mind he acted on such information as he had time to acquire in the spare hours from the duties of superintending the farm. The result of his assiduous attention in six years is sixty colonies besides considerable sales and eleven thousand pounds of extracted honey. In the meantime he incorporated into his apiary a good percentage of Italian blood by introducing queens of that race.

He became a member of the B. K. A. of Ontario in 1884, and has been a director since that date.

I have noticed, Mr. Editor, in an acquaintance of over thirty years with hundreds of clever beekeepers in this as well as other countries, that nearly every enterprising apiarian in the course of events, is compelled to step on to the Bridge of Sighs and look a moment on the little stream below, where air castles are swiftly borne past on its turbulent beam. On the left bank he sees "blasted hopes" like phantoms, while on the right may be seen the wrecked paraphernalia of his genius. Some pass on with a defiant wave of the hand, others retreat and are never heard of again. When a stranger gets on the bridge, if honest, a hundred voices shout, "Come on; we have been there." Just here this Journal, by helping the doubter over the bridge, has done more good than in any other way.

Misfortune and mistakes may diminish

the financial stature of a man, but most men do, and all should, arise from such greater in all that is good, noble, pure, and elevating—illustrating the old axiom that "Knowledge is power."

Mr. Holmes with commendable frankness admits that reverses came in the shape of winter losses reducing his number to ten colonies. Happily in this case it was no disaster, simply a reverse, as it could not affect him financially. This happened in 1889-90. He began building up again on the nucleus system, and now has thirty colonies in winter quarters.

I would here beg leave to differ with Mr. Holmes as to the causes in part of his loss. I attribute it in a measure to theories long advocated and in practice at that date by quite a number of prominent apiarists who were also in the field when he began.

Some of the great discoveries long since made by the Rev. Dr. Langstroth, especially the Standard Form and Standard Size of a Hive, although these were obscured for a time by the clouds and smoke of funded opposition, in the United States, the Doctor's views have with irresistible force been all these years gravitating to the front, and now as they emerge from temporary obscurity shine with greater lustre, ever moving triumphantly onward in a grand line from Atlantic to Pacific. Mr. Holmes has been testing this matter and has changed his views materially, and believes there is a form and size of hive which approaches nearer the inclination of the bee than many others, and that Dr. Langstroth has worked nearer to a natural standard than any other inventor.

And now, Mr. Editor, I submit it, had all the correspondents of this journal (as a few did) for the last ten years, with equal candor with Mr. Holmes, confessed their losses promptly and given an honest opinion as to the cause, and abandoned favorite and cherished practices for more simple and rational mode, would not such a move have inspired nobler emulation, given a warm impulse and imparted universal confidence in apiarists and apiculture which has been felt by many to be wanting? Such

sincerity and truth would make this journal a necessity in more homes than it now is. I know beekeepers in many localities in Ontario whose bump of self-esteem and vanity is so high that they would sooner tell of doing a mean thing than admit a blunder or loss in bee matters. Their example is pernicious.

Mr. Holmes has a farm of one hundred and seventy-six acres, four of which are under orchard, with commodious buildings; on one side a view of Upper Delta Lake, on the other may be seen a low range of Laurentian hills with dark ravines, a pleasant country home. He owns and lives in a good brick residence in the handsome and thriving village of Athens. A vein of humor is noticeable in his communications. He is superintendent of the fine Sabbath school here, an exemplary class leader; he took a leading part in organizing the B. K. A. here, of which he is president; he is also a contributor to the Canadian honey exhibit at the World's Fair; he is a member of the village council, and enjoys the favorable opinion of all who know him.

W. S. H.

Athens, Ont., Dec. 1893.

ORIGINAL CORRESPONDENCE.

BRUCE BEEKEEPERS' ASSOCIATION.

The annual meeting of the Bruce beekeepers Association was held in the Town Hall, Walkerton, on the 15th ult., when the business usually transacted was attended to and the following officers were elected for the incoming year:—President, Andrew Rowand; Vice President, Fred Penton; Directors, John Harkley, Abram Rowand, Frank Ernst, W. H. Moffat, R. Rivers, A. E. Sherrington; Sec. Treas., Arch Tolton; Auditors, Abram Rowand, John Harkley. The Association affiliated with the O. B. K. A. as usual, and a committee was appointed to look after the interests of the O. B. K. A. which will meet in the County Council chamber, Walkerton, on Jan. 10th to 12th, 1893.

FOR THE CANADIAN BEE JOURNAL.

A CORRECTION, AN ADMONITION,
AND SO FORTH.

In last JOURNAL, in speaking of the duty on honey going from Canada into the United States, I said, "On comb honey there is, so far as I can learn, no duty." I have since ascertained that there is a duty on comb honey. Prof. Cook was my authority for intimating that there was no duty. Before the article in reply to Mr. Corneil was written, I wrote Prof. Cook asking definite information as to the duty on honey. He answered that on extracted honey there was a duty of twenty cents per gallon, but on comb honey none. Since last JOURNAL Mr. McKnight has written me that duty is collected on comb honey going from Canada into the United States "on the basis of eleven pounds to the gallon," which would be 19/11 cents per pound duty on comb honey. Mr. McKnight says he knows this to be a fact from experience.

THE SUGAR HONEY ENTERPRISE.

I set out to make a correction, and give an admonition. The one was easy, the other is not so easy. The readers of the C.B.J. are already aware that our enterprising apiarian friends across the line (some of them at any rate) are proposing to make a new departure in the honey business. Our American cousins think they can "beat all creation" in most things, and so they can. The thing is literally and figuratively true.

When I was a boy, about forty years ago, I heard a great deal of talk among the older heads about certain "Basswood hams" which were shipped across Lake Ontario from Uncle Sam's Dominions to Kingston (which was our nearest market then), and disposed of to some of the unsophisticated denizens of the "Limestone City," and the people round about. They were sold as the "ginoine sugar cured." I also heard of nutmegs made of the same material. That was commercial enterprise, for you! Whether or not the luckless Canadian paid duty on the "hams" and

"nutmegs," in addition to the other charges, I cannot say. At any rate, expensive as the food was, he failed to thrive on it. His stomach, though equal to the proverbial saw dust and tennpenny nails, drew the line at the Yankee hams.

Now, I do not undertake to say that the honey, so called, which it is proposed to manufacture across the border in "poor seasons," would be no better for a heathen's stomach, or a Christian's stomach, than the aforesaid hams; for we have the testimony of Prof. Cook and his students, and the editor of the *Review*, and brother Doolittle (and they are all honorable men), that it is just superb in taste, color, æsthetic beauty, and all that; and that it would bother a professional, apiarian, epicurean expert to distinguish the "counterfeit presentment" from the true metal. What I do undertake, however, to say is this:—that while these, our brethren, these, "our friends, the enemy" (in a fair way of becoming so) have an undoubted right, a natural right, to discuss the subject in their journals to their heart's content, and to experiment *ad infinitum*, and to make as much of the stuff as they like, they have no right, either natural or moral, to call it honey or sell it as honey. Every producer of honest honey anywhere has a say here. The definition of honey, which the world has and has had for a long time, will do for the present; and the article itself will do very well. I am for genuine progress every time. But there may be progress without improvement. Going to the sugar barrel instead of to the flowers for honey is a kind of progress in which I would "make haste slowly," and in which I would advise others to do the same. My admonition, therefore, is to our American friends to "call a halt;" and to Canadian bee keepers to "let it alone severely."

THE ANNUAL MEETING.

This is drawing near, and it is to be hoped will be well attended. Each meeting ought to be an improvement on past ones. I hope to meet as many of the intending exhibitors there as possible. It has been suggested to me by an exhibitor

that it would be well for all to bring a sample of their different kinds of honey to the annual meeting, so that the various honeys from the different localities could be seen and compared. Let all who can, do so. It will add interest to the meeting.

ALLEN PRINGLE.

Dec. 24th, 1892.

Selly, Ont.

FOR THE CANADIAN BEE JOURNAL.

OXFORD BEEKEEPERS' ASSOCIATION.

The eighth annual meeting of the Oxford Beekeepers' Association was called to order by the President, F. A. Gemmill, at one p.m., on Friday, Dec. 16th, for the transaction of business and for mutual edification.

The reading of the minutes and the financial statements showed the Society to be in a healthy and progressive state. The President's address was to the point, and elicited a unanimous and hearty vote of thanks. With the editor's permission we will give it in full in a subsequent issue of this JOURNAL.

The Association adopted the shortest cut possible in electing its officers for 1893, it being "moved by J. B. Hall, seconded by William Martin, that the old officers be reinstated," which was carried.

Some little time was taken up with the discussion of the resolution in reference to "sugar honey." We would like to draw the attention of readers of the C. B. J., and especially of those who are likely to be present at Walkerton, to the subject of honey or sugar honey produced from sugar fed to bees. The Oxford beekeepers unanimously condemn the whole business, as the resolution shows:—"We, as beekeepers of this section of the Dominion of Canada, consider the business as a fraud and one that will mar the honest production of pure honey. We do not want it introduced into our country. The beekeepers of Canada, and especially of the Province of Ontario, have labored in the past to maintain a good reputation as pure honey producers. To-day the Canadian products stand almost, if not absolutely

pure in the estimation of the world, notwithstanding lofty and vociferous manifestations to the contrary. We, as Canadian beekeepers, wish to maintain our integrity. To use the words of one of our leading politicians in regard to this sugar honey production,—“It must not be allowed; it must be stopped;” therefore, come prepared to intelligently and manfully consider the resolution brought before the Oxford Association.”

Moved by S. T. Pettit, seconded by J. W. Whealy, that, “Whereas, applying the name honey, or sugar-honey, to sugar syrup fed to bees and stored by them into combs, and the production or sale thereof, is a fraud upon the people and injurious to the beekeeping industry by injuring the sale of honey in our own market and in the markets of the world; therefore, be it resolved by this Association that it is expedient through the influence of the beekeepers of Canada to secure such legislation as will prohibit the importation, production and sale of the fraudulent article called sugar-honey in Canada.”

It was also moved by J. W. Whealy, seconded by Wm. Goodger, “That the delegates submit the sugar honey resolution to the O. B. K. A. in January, at the annual gathering in Walkerton.”—Carried.

Messrs. J. E. Frith, of Princeton, and S. T. Pettit, of Belmont, were elected delegates to the O. B. K. A.

A short discussion on spring dwindling drew from S. T. Pettit his plan of wintering in cellar; clay soil, wet, very damp; solid stone walls; every hive hermetically sealed by bees; propolis duck sheets, with cushion on top; wintering and springing a success for many years. Objects to outdoor wintering; all right, if bees get a midwinter fly; if not, all wrong. Mr. J. B. Hall thinks, from experience, that successful wintering and springing depends largely on the amount and quality of stores. A long column of statistics from his winter preparation notes showed a net average of fifty pounds of honey per colony going into winter repositories this fall. The members thought friend H.'s bees must fare as the Irishman's cow, which was

turned in to the hay stack,—“Shure, if she aits it, she'll aither give milk or die.”

The season, as a whole, had been favorable, and the members had secured a fairly good crop of honey. J. E. Frith, of Princeton, had suffered considerable loss by the tornado which visited his locality.

The adjournment, to meet in May, brought to a close a very good and profitable gathering.

J. E. FRITH, Secretary.

FOR THE CANADIAN BEE JOURNAL.

THE FOUL BROOD BACILLUS (*B. ALVEI*); ITS VITALITY AND DEVELOPMENT.

READ AT THE FOURTEENTH ANNUAL MEETING OF THE ONTARIO AGRICULTURAL AND EXPERIMENTAL UNION HELD AT ONTARIO AGRICULTURAL COLLEGE, GUELPH, ONT., CANADA.

By J. J. Mackenzie, B.A., Bacteriologist of Prov. Board of Health, Ont.

GENTLEMEN,—At the request of your secretary, Mr. Holtermann, I undertook for your Union some investigations on the subject of foul brood, the results of which I purpose giving you in this paper. Although it is almost a year, now, since I undertook this work under the auspices of the Agricultural and Experimental Union, it is by no means exhausted, and there are many points which require to be further elucidated, which I have not had time as yet to touch on, owing to the fact that investigations on foul brood had to be carried on simultaneously with my regular laboratory work. These points I hope to work at next summer, and reserve the privilege of reporting again to your Union on the results of further investigation.

The subject of foul brood is an old one to apiarists, and an intensely interesting one to Canadian beekeepers; but in reading over the Bee Journals one cannot help being struck with the great want of unanimity amongst beemen as to the disease, how it should be treated, how it is spread, and on many other points. Some would have us believe that the disease arises *de novo* whenever unsanitary con-

ditions prevail; others claim that there is a specific infection, and where the disease arises it must have originated from previously existing disease; some claim that the honey is the only method of transmittal, others that it is not, and so on. On every point there seems to be plenty of arguments *pro* and *con*.

I have attempted in my work to take hold of some of these controverted points from a bacteriological standpoint in order to aid in coming to some definite conclusion. Some of these points I should consider settled from the results of previous investigation, but as many beemen do not seem prepared to accept this, my work will have value as confirming what had already been done.

Before an association which includes many practical beekeepers, it would be superfluous to enter upon a minute account of the clinical features of the disease. Most of you know them better than I do. I certainly would not be prepared to “spot” foul brood in an apiary, although I certainly think I can under the microscope. The infectious character of the disease has been generally accepted for many years; but not until Cheshire and Watson Cheyne worked it out scientifically, was it definitely proved. They isolated bacillus (*Bacillus alvei*) which they found in the diseased brood, and which they cultivated on nutrient media for many generations, finally re-infecting perfectly healthy brood from these pure cultures. This evidence to a bacteriologist is absolutely conclusive that bacillus *alvei* is the specific cause of foul brood. Consequently, when I began my investigations on some samples of diseased brood which were sent me through Mr. Holtermann, I looked at once for bacillus *alvei*; microscopically and by means of bacteriological methods I had no difficulty in isolating a bacillus which corresponds in all points to bacillus *alvei*. It is a bacillus similar to that of Cheshire's in size, produces spores which are somewhat thicker, giving the bacillus a clubbed appearance. On agar jelly it grows rapidly, so as to cover the whole surface. In gelatine its growth is very

peculiar, shooting out from the infected point in all directions. On potato it produces a yellow growth. All these characteristics show conclusively that it is identical with bacillus alvei. There seems no doubt, therefore, that the foul brood which we have in Ontario is the same disease, and produced by the same bacillus as in other places.

Many prominent beekeepers, both here and in the States, however, maintain that wherever unsanitary conditions are allowed to prevail, wherever chilled brood is allowed to putrify, or decapitated drones are left to decay in the hive, foul brood may arise *de novo*. This is not a new theory either in beekeeping or in medicine, but unfortunately it is a theory which is not supported by the results of investigation. Diphtheria naturally will develop more readily if unsanitary conditions are present, but it certainly will not develop if the bacillus diphtheria is absent.

The same is true of other diseases, and consequently when we come to consider such a decidedly infectious disease as foul brood, and learn the facts about it which such men as Cheshire have told us of, we naturally come to the same conclusion. If I were to maintain that a Carniolan queen might lay an egg which would develop into a humble bee, beemen would be inclined to think that not only my bee knowledge, but also my scientific knowledge, was at fault, but yet in all the bee journals I find many prominent beekeepers maintaining that an ordinary microbe which produces putrefaction may become metamorphosed into the specific cause of foul brood. It is easy enough, however, to combat such an opinion upon *a priori* grounds; not quite so easy, however, to offer convincing proof.

In order to do this I thought it worth while to try some experiments. With this end in view I obtained some comb containing chilled brood, and endeavored to isolate bacillus alvei from it, but without success.

There were plenty of other bacteria, but none which presented the well-marked morphological character peculiar to bacillus alvei. Again I had sent to the laboratory

a piece of perfectly healthy comb. I killed the brood by chilling, then I infected some of the cells from a pure culture of bacillus alvei. I allowed all the killed brood to putrify in a moist chamber for two weeks; at end of that time I obtained bacillus alvei again from the cells which had been artificially infected, but could find no traces of it in the other cells. I left this comb in a moist chamber for several months and again examined, but with the same results; in the cells in which bacillus alvei had been placed it was still to be found, in the others it was not present.

It seems to me that an experiment such as the above conclusively shows that there is a distinct difference between foul brood and ordinary putrefaction.

In considering the subject of the vitality of bacillus alvei, the first question which naturally arises is its power to resist heat. We know that bacilli which produce spores and those which do not stand in entirely different positions in this regard. The sporeless bacillus is destroyed at a much lower temperature than one which contains spores. Consequently in considering the question of the vitality of bacillus alvei, which produces spores very quickly and easily, we may confine our attention entirely to the vitality of the spore.

This is of special interest, as the question has been repeatedly raised, whether it is dangerous to use a comb foundation made from foul broody wax. Does the temperature to which the wax is raised in the manufacture of comb foundation sufficiently destroy the vitality of the spore? Can the spore germinate and infect the brood when once enclosed in the wax?

These questions have been raised by many careful thinkers among beemen, and certainly deserve attention. The second point ought to be considered first, since if surrounding a spore with a film of wax prevents its germination, we need pay no further attention to the question of heat. The crucial test of this would naturally be, supply a healthy colony with comb foundation known to contain the spore, and observe the result. This I had hoped to try with the assistance of your

secretary, but other work came up which interfered with the carrying out of this experiment, and consequently it had to be postponed until next year. However, I was able to perform one experiment which throws some light on the subject. Mr. Holtermann, the secretary of your Union, sent me several pounds of very fine wax, such as is used for the manufacture of comb foundation. I cultivated the bacillus alvei upon agar jelly until I had a large quantity of the bacilli containing spores; this was carefully scraped off the jelly and dried, first in the air and then over sulphuric acid. The resulting greyish mass was pulverized with a sterilized pestle and mortar and finally mixed thoroughly with the melted wax, kept at a temperature sufficiently low to prevent the immediate destruction of the spores by heat. By this means an enormous number of spores were introduced into the wax. After stirring the wax for some time in order to insure a proper mixing, it was allowed to cool. This, as you all know, takes some time, when dealing with a considerable quantity. During the cooling I was careful not to disturb the wax.

After it had solidified I set out to discover if I could again obtain my bacillus from the infected wax. If it could germinate in the nutrient media it certainly would in the bees, and that point was to a certain extent settled. Now I obtained the following results:—

From the upper layers of the infected wax I was unable to obtain cultures of the bacillus alvei, either by melting the wax in the nutrient jellies, or by allowing particles of the unmelted wax to fall on the surface of these jellies.

From the under layers, however, the results were different; particles of wax placed on nutrient agar in an oven kept at 90° F. became surrounded in twenty-four hours with a luxuriant growth of bacillus alvei. When the wax was melted into the agar or into beef tea I also obtained the bacillus, consequently it looks as if the mere fact of enveloping the spores with a film of wax was not sufficient to prevent germination. I confess I cannot under-

stand how a spore could germinate when surrounded with a film of wax. Spores in germinating require moisture, and if a spore is completely imbedded in wax, it cannot obtain sufficient moisture to germinate; I would rather believe, therefore, that in this particular experiment the spores had not each an envelope of wax, but that many of them were partially free from the wax. Now, if this was the case in my experiment, where I endeavored to make the incorporation of the spores in the wax as thorough as possible, I certainly think it may frequently be the case when foul broody wax is used, and no particular precautions taken. That even when spores are thoroughly surrounded by wax they may not be freed occasionally by the workers, is a point which requires further elucidation, and upon which I intend to try some experiments next year.

In looking through the bee journals, however, I find it everywhere maintained by foundation-makers that they never knew of a case of foul brood originating from foul broody wax; and I have yet to discover a well authenticated case where this has occurred. What explanation can we offer of this wide spread opinion?

I explained to you above that I was unable to cultivate bacillus alvei from the upper layer of the infected wax. Your secretary also sent me a small specimen of wax which he stated he knew to be from foul broody comb. This I examined repeatedly for foul brood, but was unable to obtain it only once. I think we must look to the physical conditions for an explanation of the freedom from infection through comb foundation. The difference in the specific gravity of the bacteria and of melted wax is so great that throughout the process of manufacture the bacteria tend to fall to the bottom. The first refining of the wax must of course remove the greater quantity, and the vast majority of the remainder will settle to the bottom during the process of foundation manufacture. But that the simple process of mixing the infected material with the melted wax is not sufficient to prevent germination, I think, is shown by the results

quoted above, where simple fragments of infected wax, when placed on agar jelly, gave rise to a culture of bacillus alvei.

This question I hope to touch on again after I have had an opportunity of supplying healthy bees with foundation made from infected wax.

The other question is whether the temperature to which wax is raised during foundation making is sufficiently high to destroy the spores of foul brood? In order to decide this question there are several points to be noted. The first is the character of the heat. We know that moist heat will destroy bacteria and their spores much more quickly than dry heat, and Mr. Corneil, of Lindsay, has raised this point several times, claiming that the heat to which the bacteria are exposed in melted wax is not moist heat, but dry heat, consequently we must heat to a high temperature and for a long time, in order to destroy the spores. The point is undoubtedly well taken, and can only be settled by direct experiment. In order to determine the temperature at which the spores are destroyed in melted wax, I used a method which was first described by Koch. Sterilized silk threads were saturated with a beef tea culture of bacillus alvei in which there were large numbers of spores. These threads were then allowed to dry, and in the dry state were preserved. These dried threads were introduced into the melted wax and allowed to remain in it for a definite time at a fixed temperature. At the end of that time the thread was introduced into melted agar or into beef tea, heated to the melting point of wax, and thoroughly shaken, so as to separate the wax as much as possible from the threads; then the culture medium was rapidly cooled and the tubes placed in the ordinary cultivating oven kept at 98° F. If I obtained a growth of bacilli I concluded that the threads had not been sufficiently heated in the wax; if I did not, I concluded that they had been sufficiently heated. The following are my results:—

At 212° F. (100° C.) for	$\frac{1}{2}$ hour,	growth.
" "	$\frac{1}{2}$	"
" "	1	"
" "	$1\frac{1}{2}$	"
" "	2	"
" "	$2\frac{1}{2}$	no growth.

At 194° F. (90° C.) for	$\frac{1}{2}$ hour	growth.
" "	$\frac{1}{2}$	"
" "	2	"
" "	3	no growth
" "	4	"

On the other hand a temperature of 122° F. (50° C.) did not destroy the spores in twenty-four hours.

I have repeated these experiments several times with the same results, so that I would conclude that to destroy the foul brood in wax it is necessary to heat to a temperature of at least 194° F. for at least three hours. Now the question arises does this take place during the process of manufacture of comb foundation? In order to get as much data as possible on the subject I wrote to Mr. Larrabee, of Michigan Agricultural College, as he had kindly offered me any assistance in his power. He applied to two prominent foundation-makers for the information. From their replies it is apparent that for a short time at any rate during the refining and purifying of the wax, it reaches a temperature quite at or near 212 F. During sheeting, however, it apparently does not reach a temperature much above the melting point, say 175° F. They both seemed to agree that steam heat for too long a time injures the quality of the wax.

In the *American Bee Journal*, 1891, page 470, we find some statements on the subject in a reply by two prominent foundation makers, to an article by Mr. Corneil upon the dangers of infected comb foundation. One of them, Mr. Daland, states that in refining it is heated for sometime at 212° F., and is kept liquid for twenty-four hours. The other, Mr. M. H. Hunt, states that it is kept at the boiling point for six or seven hours. If these are the actual temperatures reached during foundation making I am inclined to think there is little danger from foul brood in that direction.

I thought it possible that the whole question could be settled by introducing a certain amount of some disinfectant, say Beta Naphthol, into the melted wax, but my results have not been satisfactory. Apparently even the introduction of one per cent. Beta Naphthol into wax did not

hasten materially the destruction of the spores. I was able to demonstrate the presence of living spores in wax, containing one per cent. Beta Naphthol, and heated for two hours to 194° F.

From these facts, and taking into consideration also the physical fact of the settling of the bacilli to the bottom, I should think that, with reasonable care in the preparation of comb foundation, the dangers of infection from this source would be slight. But that the spores may germinate after being mixed with the wax, I think I have shown.

Why the spores of the bacillus alvei are killed so quickly in the melted wax, I am not able to explain; but it may be due to the fact that the wax itself, when heated to such a temperature, has antiseptic value. That the spores resist other antiseptics as strongly as do the spores of anthrax, I have proved by testing.

Cheshire and others recommend a solution of two per cent. carbolic acid for disinfecting the hive after removing infected comb, but on actual experiment with the infected silk threads, I found that two per cent. carbolic acid did not kill the spores in six days. These results are similar to those obtained by Koch for the spores of anthrax, and show that two per cent. carbolic acid cannot be relied on to destroy the spores. However, the question of the value of antiseptics I will take up more in detail later on in this paper.

I would like to say a word or two now on the methods of treating the disease. There are practically two methods; first, the starvation method, and second, the method by medicated syrup. Mr. McEvoy's method of treatment seems to me, practically a modification of the starvation method. The first method is widely used both here and in the United States, whilst in England and in Europe generally the second method is adhered to.

Considering the vitality of the spores of foul brood, it would seem at first sight useless to try any process which did not recognize as its foundation the destruction of the germ. I find, however, that many prominent beekeepers who have had

practical experience with the method of starvation, or Mr. McEvoy's method, accept it as successful. I have not had an opportunity to examine colonies which have been cured in this manner, and so cannot say that the bacilli have disappeared; I hope next summer to test this question more fully. We may, however, examine into the rationale of the method. In conversation with Mr. Corneil of Lindsay, he made a suggestion which may be quite familiar to you all, but which seems to me the only explanation. That suggestion was that either starvation or comb building carried the infected nurses past the period at which they act as nurses, and give them a chance to rid their intestines of the germ. If this is combined with a removal to absolutely clean hives with new foundation it may succeed; but I must say that absolute cleanliness in this respect must be insisted upon.

As I said above, I have not had an opportunity of investigating the results of these methods practically, and so cannot speak with certainty.

The fact of the presence of the bacilli in the workers and in the queen bears to a certain extent upon this question. Cheshire and others make the statement that the bacilli are found in the intestine of the workers and in the ovary of the queens. My own experience confirms this, I have found them repeatedly in the workers, and in five queens from infected hives I succeeded in obtaining the bacillus from the ovaries of three. That they are not always present in the ovaries of the queens from diseased colonies is certain; their presence there is apparently accidental. For instance: in the case of one of last year's queen; in a hive rather badly diseased, I was unable to find the bacillus, whilst in a six weeks queen from a hive in which there were only a few diseased cells I succeeded in finding it. Cheshire's statement that he found a bacillus in an egg of an infected queen seems to me to require confirmation. I have not been able to find the eggs infected myself, but it is a question which would require very long and careful investigation before

one could be able to deny or confirm such a statement.

In the second method of treatment by medication I do not think that an absolute destruction of the spores takes place any more than in the starvation method. As I have shown above, two per cent. carbolic acid was not sufficiently strong to destroy the spores; consequently it is not likely that 0.2 per cent. (one pint in 500) would be strong enough. I tried 0.2 per cent. but found it quite unsuccessful. Its action then must have another explanation. To test this I made up a sterilized beef broth containing one per 500 of carbolic acid and in it placed my infected silk threads. I found that there was no indication of growth. These threads were then taken out and placed in ordinary sterilized beef broth and I obtained a luxuriant growth, i.e., the 0.2 per cent. carbolic acid in the culture fluid, although it did not destroy the spores prevented their germination. That then is the explanation of the value of carbolated syrup in the treatment of foul brood, it prevents the germination of the spores. The bee-journals contain numerous examples of cases where carbolated syrup produced an improvement, but as soon as it was stopped there was a relapse. It is evident that here again as in the starvation process there must be combined an extremely thorough cleaning up, so that the best possible results may be obtained from the treatment. Medicated syrup does not destroy the spores, it simply prevents their development and gives the bees a chance to rid themselves of the infection, and in that respect I certainly think resembles the starvation process. Its advantage over that is that it can be carried on for a longer time.

In the course of these experiments I tried another substance which has been much used since Lorteth's work on the subject, viz.: Beta Naphthol. I do not think myself, from recent work on this substance, that Beta Naphthol should be ranked very high as an antiseptic, mainly on account of its insolubility in water. I found, however, that a beef broth containing 1 per 1000 Beta Naphthol would not allow spores of bacillus alvei to

germinate, and consequently had an equal value with 1 per 500 of carbolic acid. It has an advantage over carbolic acid on account of the disagreeable taste of the latter, and I think would be more acceptable to the bees. Salicylic acid in syrup has apparently the same effect, and I would not recommend the addition of borax, as it has been shown that borax lowers considerably the antiseptic value of salicylic acid.

I tested also formic acid in the same way, but my results so far have not been satisfactory, owing to the uncertain strength of my sample of formic acid. I prefer to reserve a report upon it and other substances, which I wish to try, until later.

Mercuric chloride I have not tested, as I do not think it wise to use it around the hive. The idea of using a 1 per 1000 solution to spray the diseased combs, as suggested sometimes, is, I think, absurd, and would be a rather serious operation for any living brood.

You will see that I consider all these methods of treatment do not in themselves necessarily presuppose the destruction of the spores, but depend upon the fact that for a longer or shorter period the spores are prevented from germinating, and in this period they are eliminated from the infected bees. Whether the vitality of the bees themselves has an effect upon the elimination or destruction of the spores is a point which would be extremely interesting, but one on which at present we have no definite information. From the results of bacteriological work on other diseases, we know that the animal body is engaged in a constant warfare with the diseased germs which may be introduced, and this also may be the case in foul brood. Much more extended investigations, however, would be necessary to prove this. It is much safer for apiarists to accept the possibility of a recurrence of the disease after a course of treatment, owing to the lodgment somewhere of some of the spores of bacillus alvei, and by care and cleanliness remove this possibility. To do this, the hives and frames in which a foul broody colony has lived must be sterilized, and this may be

done in various ways. For the sterilization of material by disinfectants, there was a tendency formerly amongst bacteriologists to run to such disinfectants as corrosive sublimate, carbolic acid, etc., but later work has shown that there are a number of common chemicals which will act just as well, or perhaps better. Corrosive sublimate has lost much of its reputation as a disinfectant within the last few years, and carbolic has been shown to be not nearly so powerful as at first supposed. For cleaning hives and frames which are suspected to contain the spores of foul brood, a hot 10 per cent. solution of soft soap is perhaps as effectual as any that can be recommended. A good strong solution of washing soda when hot is also very active, destroying the spores in a few minutes. Both these are certainly better than five per cent. carbolic for disinfecting the hives and frames, as their cleaning properties are so much better than it, and Belwing has shown that five per cent. carbolic requires at least three hours at blood heat to destroy the spores of anthrax. In case the soap or the washing soda is used, however, it must be used as hot as possible. Of course, anything which is of no value should be burnt.

I trust that in this paper I have thrown a little light upon some of the facts in connection with the disease of foul brood; but as I stated in the beginning, I reserve the privilege of submitting to you, at a future meeting, the results of next summer's work. Before closing, I desire to express my thanks to your able secretary, Mr. R. F. Holtermann, for the assistance he has given me, and also to Mr. S. Corneil, of Lindsay, for advice and for the use of volumes of all the principal Bee Journals, which he has supplied me with; also to Mr. H. H. Larrabee, of Michigan State Agricultural College, in connection with the subject of comb foundation.

NOTES AND COMMENTS.

We have an explanatory note from the editor of the *A.B.J.* in reference to Prof. Clarke's assertion and the former's

denial as to the editor's presence at the Illinois State Beekeepers' Convention, and our own remarks thereon. It appears now that we were all of us right in relation to one aspect of the affair, and all wrong as to another. Prof. Clarke stated in his report to us that the editor of the *A. B. J.* was present at the meeting, etc. On page 753 of the *A. B. J.*, the editor says he was not present—an assertion which led us to say that if he was not there the fault was his own, and not Prof. Clarke's, who evidently "took it for granted that the editor of *A. B. J.* was there." It now turns out that Friend York was there and was not there; that is to say, that although he really attended the meeting, he was not present when the resolution referred to by Prof. Clarke was passed, in consequence of the fact that it was necessary for him to be absent for a short time to meet some friends who had just arrived in the city, the resolution being passed in his absence. We feel a little disappointed to think that our remarks, which were conceived entirely in a jocular vein, should have been regarded *au sérieux*. However, it's all right now, and we won't any of us do it again.

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We are exceedingly obliged to the editor of the *Australian Bee Journal* for its kind and complimentary remarks in regard to our modest work, and are happy to know that we have touched upon some topics which may prove of interest in Australia. In this respect, we are glad to be able to reciprocate, inasmuch as we find our antipodean contemporary brimful of valuable matter for consideration. Its column of "Recipes" is really a very valuable contribution to the economic adaptation of honey to domestic culinary purposes.

o o o

We observe from the *Bulletin* that Mr. W. S. Pender, of Drumfin Apiary, West Maitland, Australia, has been notified by the postal authorities that the department has determined upon allowing the transmission through the post-offices of the colony of packets containing bees from

America. No doubt many of our Canadian apiarists could supply any number of packets, and our transcontinental and trans-Pacific mail services are admittedly the best in this hemisphere and across the continent.

O O O

To those of our readers who are beekeepers as well as poultry-raisers, we would strongly advise the propriety of keeping their pets as far apart as possible. At least, if they have any special regard for their bees, don't let biddy get within range of the hives. Poultry, fowls particularly, are exceedingly fond of bees, and will go for them every time they can get within range of them. There is a peculiar fascination for an old-time hen in a good plump bee, especially if the bee has not got any extra business on hand about the time the hen happens to find itself in its neighborhood. It is not impossible that the bee may have the same gustatory effect upon a Buff Cochin or a Wyandotte that a stick of molasses candy has upon the Peck's bad boy species. To an observer, the action of a wily, experienced and particularly observant old hen in proximity to a bee is worthy of special attention. She won't by any means let it be understood that she has any special regard for a bee, but she will keep her predatory eye upon him all the time until he or she gets within striking distance, when the action is quick and unerring, and the locality and society among which *apis* moved know him no more for ever. He hasn't even time to protest against the offence, no time to get even upon the wary foe with his cruel sting. He goes "down like McGinty to the bottom of the"—well. A satisfactory cackle and a surprised hum is all the requiem that is sung, and the same admirable pose and disinterested preoccupation on the part of our feathered friend are assumed for a repetition of the misdemeanor. Given the neighborhood of two or three colonies of bees, and two or three active Dorkings or other beekeeping improvements of that sort in close proximity, and we think we are safe in saying that eggs will be plentier than bees in that neighborhood

before many days are over, without anybody knowing anything about it except the few culprits who could a tale unfold that would harrow up the soul of the most careful beekeeper in the world.

FOR THE CANADIAN BEE JOURNAL.

LEEDS AND GRENVILLE BEEKEEPERS' ASSOCIATION.

On the 8th of October, 1892, a fair representation of the beekeepers of the united counties of Leeds and Grenville, was convened in the town hall of Athens, and resulted in the organization of a society to be known as the Beekeepers' Association of the united counties of Leeds and Grenville. The officers of the Association are as follows:—President, M. B. Holmes, Athens; Vice Pres., F. L. Moore, Addison; Sec. Treas., Fred Wood, Athens; Executive Committee, the above officers together with Miles Lockwood, Phillipaville; W. W. Howard, Delta; A. E. Earl, Fairfield East.

Throughout the convention a growing interest in beekeeping was manifested and the time was most profitably spent.

The following valuable papers were read:—Greeting—W. S. Hough; Management of Bees in Spring,—F. L. Moore, and F. P. Clare; Extracting Honey. When and How, W. W. Howard; Why Should Honey be Eaten?—Dr. Reeves; Marketing Honey,—F. P. Clare; Successes and Reverses,—M. B. Holmes.

The next annual meeting of the Association will be held in Brockville.

F. WOOD, Secretary.

FOR THE CANADIAN BEE JOURNAL.

CAN'T GET THE MONEY.

Mr. W. Ellis, of St. Davids, Ont., writes us as follows, under date Nov. 30th, 1892:—"I sold Coolican & Co., Toronto, some honey, and cannot get my money. Beekeepers had better get their cash before they ship to them. I have a letter to-day from another beekeeper who lost by them also. Publish this in the interest of our beekeeping friends."

UNITED STATES DUTY ON HONEY IN RELATION TO PRICE.

On receipt of the C.B.J. for Dec. 15th I reread Mr. Pringle's letter to me, in which he asked permission to make use of a private letter, and I now see that it was the last paragraph he wished to use instead of, as I supposed, that part which referred to the preparation of honey for shipment. Whatever blame there may be for any further discussion of the trade question in the columns of the C. B. J. is attributable to my want of attention, which I regret, in reading Mr. Pringle's letter. From the portion of my letter quoted it will be seen that I wrote freely, as a friend to a friend, and it is easy to see that the phraseology would bear revising had it been known that it was to be published.

When Mr. Pringle wrote on page 233 as follows:—"Of course if the honey is sold there the duty must first be paid upon it." I thought he had said all that was necessary and that the half column which follows about what he terms "the confounded duty" might better have been left unsaid. Mr. Pringle has not quoted all I wrote on this matter. I remembered that two or three years ago, in a letter published in the Toronto Mail he said that if Unrestricted Reciprocity would bring about annexation "let it come." With this in mind, I said he should not forget that he now represents those who dearly love to have a country which they may call their own, as well as those who would sell their country for a mess of pottage. As the representative of the beekeeping industry in Ontario, I regard Mr. Pringle with pride, but as he is now a government official, soliciting voluntary exhibits of honey, from stalwart Canadians, whose patriotism has been recently aroused by the prominence given to views only a little more advanced than those of Mr. Pringle, referred to above, I thought it not improper to remind him of his dignity, and to intimate that, in my opinion, it would be better he should keep those views, on the future relations of the two countries, or any discussion which

might lead up to them, in the back ground, while acting in his official capacity.

My reply to Mr. Pringle's arguments on the trade question must be brief. The American duty on honey is 20 cents per gallon, or say 1 2/3 cents per lb, while the Canadian duty is 3 cents per lb, and to this difference mainly may be attributed the fact that, up to the present year, prices have been higher in Canada than in the United States. This year, according to my observation, they are about the same. Mr. Pringle's position is that if there were no duty, that is, if no double tariff wall existed between the two countries, I, as a Canadian producer, selling to an American dealer, should not only receive present Canadian prices, but in addition thereto I should receive the American duty. (See foot of second column, page 282, C.B.J.) I shall show that he is mistaken.

In order to simplify the question let us consider the duty only as affecting the price, leaving out the expense of shipment to distant points, dealers' profits, and all other modifying causes, as these matters are not in dispute. We assume then that adjoining the tariff wall there is a scarcity on the American side, while dammed up, as it were, by the same wall, on the Canadian side there is at least the usual supply, ready to flow where it is most required, if the wall were removed. If this wall had not been in existence, the honey crop on both sides being free to move, there would be no more scarcity on the one side than on the other, and the prices on both sides would be equalized just as certainly as that two bodies of water, when left free to move will find a common level. It must be clear to every one that the price of honey on the American side would, under such circumstances, be lower than it now is, and that the American dealer would not be obliged to pay me the present American prices, much less present Canadian prices, plus the American duty.

There are several modifying circumstances, besides the removal of the duty, which, for a time at least, would affect the price to some extent, but believing that the

reader has had enough of the trade question in his *bee paper*, I shall not follow it any further in these columns.

Mr. Pringle thinks that Canadian honey in the comb is admitted free to the United States markets. A little enquiry at the proper place will likely show that the United States Custom House officers have a way of gauging a gallon of honey, no matter whether it is in the comb or out of it.

S. CORNEILL.

Lindsay, 24th Dec., 1892.

WHAT ABOUT ADULTERATION?

We have received the following article from Mr. Newman in regard to the above subject. We have already expressed our views in reference to one of the proposals submitted for consideration.

This number of the *BEE JOURNAL* contains several articles on the subject of honey adulteration, and, with what is presented in these editorial columns, makes this a very interesting issue. Please read all that is written on this important matter, and then see what you think about it.

As Bro. Root, in last *Gleanings*, makes a number of excellent suggestions relating to this whole subject, we reproduce them for the benefit of our readers. Here is the editorial referred to:

ADULTERATING HONEY—IS IT PRACTISED? IF SO, WHAT SHALL WE DO ABOUT IT?

IN THE *AMERICAN BEE JOURNAL* for Nov. 17th, Prof. Cook has an able article in which he shows the extent to which honey is adulterated. As chemists are now able to successfully detect all sorts of honey mixtures, he urges that our States adopt good laws, such as, for instance, Michigan has. In his opinion, the National Bee-keeper's Union is just the organization to enforce them, because good laws will not enforce themselves.

Under the able management of Mr. Newman, and with a modified Constitution, he thinks the Union could make things lively. In the next *AMERICAN BEE JOURNAL* Mr. Newman replies. So far, he says, not one of the members of the Union has asked to have the organization reorganized.

Right here may we suggest that people generally will not express themselves unless given an opportunity to vote. It the Gen-

eral Manager would state, in a circular letter, the desirability of having the Constitution changed, and submit to them a voting blank, which they could return, we feel sure that everyone would ask for the change.

But to return: The present General Manager, on account of ill-health, feels that he is unable to assume such added responsibility. It would need a younger man, he thinks—one full of vigor and push. Mr. Newman is the man, but if he is not available, we would recommend some bee-keeper who is also a lawyer and legislator—such a person, for instance, as R. L. Taylor.

With a Bee-keepers' Union of 5,000 members, its chief could be salaried, and yet have necessary funds for carrying on the work of securing evidence, and arresting and prosecuting the guilty parties. But how about the membership? We feel that a very large number of our own subscribers (and this will be true of the constituency of other bee-papers) would fill a membership blank and plank down a dollar if a return envelope were placed before them.

The reason, we think, why there has not been a more hearty response before is because we have not yet given those who are diffident about writing, an opportunity to express themselves. At any rate, it would not cost a great deal to try the experiment.

Out of our over ten thousand paid-up subscribers, to every one of whom we would submit blanks, we feel pretty sure we could get pretty close on to 2,000 who would become members of that organization.

The present Union does not offer enough substantial benefits to make the mass of bee-keepers feel the necessity of enrolling their names. But a Union that could not only defend them against disagreeable neighbours, but could also ferret out and carry on successful prosecutions against adulterators—in fact, champion the rights of bee-keepers in all things, would offer sufficient inducements to call out a large support from bee keepers.

We should like to hear from our prominent contributors, for next issue, as well as from the General Manager through the *AMERICAN BEE JOURNAL*. There is yet time enough for us to get the matter in such shape that it can be presented before the national association at Washington.

It is very generous in Bro. Root to offer to "submit" blanks to the subscribers to *Gleanings*, but he will find it will not pay, unless he has much better results than the *BEE JOURNAL* has had after devoting thousands of dollars worth of space to adver-

tising the Bee-keepers' Union, and then has only secured about 500 members. However, we should be much pleased to see the experiment tried.

General Manager Newman sent us the following letter for publication, after having read the foregoing from Bro. Root :

I have carefully read the editorial on page 897 of *Gleanings*, for December, and as therein requested, I will offer a few remarks on the matters at issue.

Mr. Root desires me to "state in a circular letter, the desirability of having the Constitution changed, and submit to the members of the National Bee-keepers' Union a Voting Blank, with return printed envelope," etc.

The advocates of the measure should certainly be the ones to show the "desirability of the change," and if Mr. Root, or any other one of its advocates, will undertake that duty, I will quote it in my forthcoming Annual Report, and call for a vote on the subject. As I have never *advocated* the measure, it would be quite out of place for me to champion the measure before the members of the Union. I will act in an impartial manner, and refrain from the discussion, simply to get the full, free and unbiased vote of the members of the Union.

I hope to have my 8th Annual Report ready about Dec. 20th, and then the whole thing can in it be laid before the membership, and the matters to be voted upon can be included in the regular voting blank for officers. This can be done without extra expense to the Union, and will settle the whole question in a legitimate and authorized manner.

Bro. Root very generously offers to send out ten thousand circulars, voting blanks, and return envelopes to his subscribers.

Why, that will cost \$100 for postage alone, besides printing and stationary. Why not request all the bee-periodicals to devote one advertising page to the Union, and print thereon a circular and voting blank? Then ask the subscribers to fill up the voting blank and enclose with a dollar for annual dues, to the manager. That will save hundreds of dollars, and still get at all the intelligent and progressive bee-keepers of America at one and the same time.

If this meets the views of the advocates of the measure, I will get up a voting blank, and send an electrotype of it to all the bee-papers, for publication as suggested.

I will send this letter to every bee-paper, and endeavor to get the views of the editors, and if the proposition is agreed to, will send the electrotype in time for the first issue of each periodical in 1893.

I will also do anything that seems wise, which may be suggested by other persons, and I hereby request any one who has suggestions or ideas on this subject to offer, to send them to me at once—for "in the multitude of counsel there is wisdom," said an ancient sage.

THOMAS G. NEWMAN,
Chicago, Ill., Dec. 9, 1892.

FOR THE CANADIAN BEE JOURNAL.

NOT ENOUGH MONEY FOR IT.

MR. EDITOR,—Some person who does not know his business has sold twenty-three hundred pounds of honey at 6½c. The buyer smilingly admitted that he would have got more if he had asked for it,—“We generally pay what is asked.” Of course the individual referred to is not a reader of the C. B. J.; but if he chances to see this, he may please write me through the editor.

Yours, etc.,

SUNLIGHT,

SNUFF THE CANDLE.

BY L. M.

I sing the Gate which fails to stand ajar
Yet, through its portals gleaming,
Reveals to me no surplus combs afar
Or preachers at them cleaning.

If but that Gate would, through its doors
ajar,
Give light for information
How vastly better it would be by far
Than to illumine another generation.

Oh Gate translucent send thy light afar
Through A. and C. B. J. and *Gleanings*.
Shine out upon the world, a brilliant Star
With wondrous wisdom gleaming.

MISCELLANY.

HONEY can be used in cooking anything, just as sugar is used, merely using less milk or water than called for when sugar is used, on account of honey being a liquid.

MILK AND HONEY.—Take a bowl of milk and break some light wheat bread and also some white comb honey into it. This is delicious—the proverbial “milk and honey” of the ancients. If comb is not at hand use extracted Honey.

METHUELIN.—Mix honey and water strong enough to carry an egg; let it stand three or four weeks in a warm place to ferment; then drain through a cloth, and add some spices to suit the taste.

: : : THE : : :

Canadian Bee Journal,

ISSUED 1ST AND 15TH OF EACH MONTH

D. A. JONES, - - EDITOR.

DEVOTED EXCLUSIVELY TO THE INTERESTS OF
THE HONEY PRODUCER.

ONE DOLLAR PER ANNUM IN ADVANCE.

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Time.	1 Inch.	2 In.	4 In	1 Col.	Page.
1 month ...	\$ 2 00	\$ 3 00	\$ 4 50	\$ 6 50	\$ 10 00
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3 months...	4 00	5 50	9 00	15 00	25 00
6 months...	6 00	9 00	15 00	25 00	40 00
12 months...	10 00	15 00	25 00	40 00	75 00

CANADIAN BEE JOURNAL.

EDITORIAL.

The report of the N. A. B. K. A. came to hand too late for this issue.

o o o

The many friends of Mr. J. E. Pond will very much regret to hear of his recent illness. We learn from a communication that he has been deprived of his eyesight for some five or six weeks. We are pleased to hear that he is rapidly recovering.

o o o

Mr. W. Couse, Secretary of the O.B.K.A., notifies us that he has made arrangements with the proprietor of the Hartley House, Walkerton, for a special rate of \$1 per day for beekeepers while attending the annual convention.

o o o

We have a postal card from Bro. Hutchinson of the *Review*, intimating his intention to be present at the coming Walkerton convention. We shall be pleased to meet Bro. Hutchinson, and trust that he may have an interesting and agreeable visit.

The C.B.J. will also have a representative at the Walkerton convention, who will be happy to receive such arrears from visiting and other brethren as may be due on account of this Journal, and to receipt for such additional subscriptions thereto as he may be favored with.

o o o

The very important article published in previous pages in regard to Foul Brood Bacilli, read by J. J. Mackenzie, Esq., B.A., (Bacteriologist to the Provincial Board of Health) at the Fourteenth Annual Meeting of the Ontario Agricultural and Experimental Union, is too important to be more than referred to in this issue. We shall have some reference to it in our next.

o o o

Mr. John Lewis, of Oregon, writes us: "The bees gathered very little honey in this locality this season. I started with two colonies which have since increased to ten. They have stores enough for winter, but it seemed impossible to prevent them from swarming. I was afraid they would swarm themselves to death. I got a few gallons of surplus honey."

o o o

Mr. R. McLean, of Hopewell, N. S., writes us:—"I have been taking the C. B. J. since it was born, and been pleased to note the improvements in it during the last few months. I take a number of Bee Journals. For what I know about bees I am greatly indebted to the C.B.J., and wish it very much success. This has been the poorest season I ever knew for beekeepers—too dry. For two months the bees gathered scarcely anything, from the middle of July until the middle of September. Some colonies entirely stopped brood rearing. I fear the consequences will be seen before spring."

EXCHANGE AND MART.

52 CENTS pay for a five line advertisement in this Column. Five weeks for one Dollar Try it.

SEND us fifty cents and get Hutchinson's "Advanced Bee Culture." C B | B eton.

WE have several bound volumes of Clark's "Birds Eye View" of Bee-keeping with mail on receipt of 10c **CANADIAN BEE JOURNAL**, E-ton, Ont b-24-tf

FOR SALE—20 colonies bees, at a sacrifice, in good hives, will weigh from 75 to 100 lbs. Must be sold at once. Will give a good bargain. R. J. GRACEY, Wellandport, Ont.

3300 lbs. No. 1 Extracted Basswood and Thistle Honey for sale. Extra quality. Cash offers solicited. R. ROBERTSON, Harwich, Kent Co., Ont. b19-5t

FOR SALE—1000 lbs. of extracted honey, clover and Basswood of extra quality, put up in 50 lb. cans. WELLINGTON J. SAUNDERS, Meaford, Ont. b19-1t

ONE THOUSAND pounds clover and Linden Honey at 5c. F.O.C. Ripley Station W. H. WATERS, Verdun, Ont. b19-5t

1893. WRITE now and see how low I can supply you with odd and regular sized hives and frames. Also get pieces on sections, foundation, Honey Extractors, Knives, smokers, and anything you may need in the apiary for 1893. W. A. CHRYSLER, Box 450 Chatham, Ont.

ONLY ONE DOLLAR. Every Bee-keeper should have it. Cook's "Bee-keeper's Guide, or Manual of the Apiary," by Prof. A. J. Cook, the well known authority on apiculture. Brimful of information for Bee-keepers. A regular ABC of the apiary. If you have not one already, forward us \$1 and we will send it by return mail.—**CANADIAN BEE JOURNAL.**

FIVE BANDED GOLDEN ITALIANS.

My Five Banded Golden Italians are not excelled by any bees in existence. A fair trial will convince. Queens, at or June 1st, \$1 each; 6 for \$5.00. Special prices on large orders. Safe arrival guaranteed. Send for descriptive circular giving full particulars.

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ONE



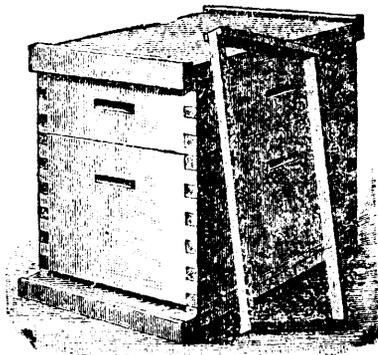
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p16 b16 of

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The neatest, the strongest, the cheapest, the best. It pleases everybody. Takes the Standard L. Frame Address:

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NOW LISTEN!

Until I tell you that **MYERS BROS.** are offering **5 PER CENT. DISCOUNT**

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NONE OTHER GENUINE.

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Ontario Bee-Keepers.

INTENDING exhibitors of Honey at the Chicago Exposition, will kindly place their Extracted Honey in tin jars, as the Commission intend shipping the Honey in these cases to Chicago. The Dominion Government will furnish glass jars in which the Extracted Honey will be shown. This will save weight and transport, and Exhibits will reach Chicago in much better shape.

NICHOLAS AWREY, M.P.P.,
Ontario Commissioner World's Columbian Exp.
b14 tf.

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HAND

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This cut represents our Combined Circular and Scroll Saw, which is the best machine made for beekeepers' use in the construction of their hives, sections, boxes, etc. Machines sent on trial. For catalogues, price lists, etc., address W.F. & JNO. BARNES, CO., 574 Ruby street, Rockford, Ill. b4ly.

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HONEY EXTRACTOR!

Square Glass Honey-Jars,
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Honey Sections, &c., &c.
Perfection Cold-Blast Smokers

Dealers in honey and beeswax.

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Send 10 ct stamp for 'Practical Hints to Bee-Keepers'
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offers for sale **Untested Queens**. May and June, \$1; After, 75c. Imported of Doolut's mother, as preferred. Contracts solicited. Roots goods for sale; also Celery plants, July to S. pt., at \$2 per thousand. b4 1y
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Is better, cheaper and not half the trouble to use that it is to wire frames. Every cell perfect. Thin, flat bottom foundation has no fish-bone in surplus honey. Being the cleanest is usually worked the quickest of any foundation made. J. VAN DEUSEN & SONS, Sole Manufacturers, Sprout Brook, Montgomery Co. N. Y. b4 1y.

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GEO. H. CHANDLEE,
Washington, D. C.

Atlantic Bldg.,
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ADVERTISEMENTS.

1852

REDUCTION ON THE PRICE OF

1892

LANGSTROTH ON THE HONEY-BEE, REVISED.

Price by Mail, \$1 40; by Express or Freight With Other Goods, \$1.25.

By its copious indexes, by its arrangements in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee-keeping yet published. A French Edition Just Published.

1878 Dadant's Comb Foundation 1892

More than ever. - Better than ever. - Wholesale and Retail.

Half a Million Lbs. Sold in Thirteen Years. Over \$200,000 in Value

It is THE BEST, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year.

SAMPLES, CATALOGUE, FREE TO ALL. SEND YOUR ADDRESS.

We also make a specialty of cotton and silk tulle of very best grade for bee-veils. We supply A. I. Root and others. 7000 yards just received. Prices very low. Samples free.

Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginners with Circulars free.

Chas. Dadant & Son, Hamilton, Hancock Co., Ill.

MENTION THIS JOURNAL.

b-6 1y

BUSINESS EXTENDED !

BEE-KEEPERS :

Our business for 1892 has again very much increased and our factory is far too small for our business. As a result E. L. GOOLD & Co. will henceforth be known as

THE Goold, Shapley & Muir Co.,
(Limited)

We have procured three acres of land in the city of Brantford upon which are being erected a large factory 200 x 40 feet, besides dry kiln, engine house, blacksmith shop and store house. This we expect to move into early in the spring of 1893.

We solicit your orders, and would draw your attention to the

5 PER CENT. DISCOUNT

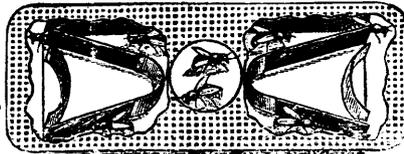
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Address all communications to

THE GOOLD, SHAPLEY & MUIR Co., (Ltd)
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BEE



ESCAPE

Send for sample of Hastings' "Lightning Bee Escape and you will be convinced that it is the best and most practical Escape yet produced. It will clear the supers in a short space of time (2 to 4 hrs.) and it is impossible for the bees to clog the passage as they cannot return. Each Escape guaranteed as represented. Price by mail, each, 20c.; \$2.25 per doz. Full directions with each Escape. Write for discount. Electrotypes for dealers' catalogues furnished free.

TESTIMONIALS.

M. E. HASTINGS,

ORISKANY, N. Y., March 7, 1892.

Dear Sir,—The Lightning Ventilated Bee Escapes which you sent to me last season worked well and all that you claimed for them. They do not clog, and clear the supers rapidly. In fact it is the best escape I have yet used. I cannot speak too highly of the Escape, and consider it a great boon to bee-keepers.

Respectfully Yours,

W. E. CLARK.

Dear Sir,—

NEW YORK MILLS, N. Y., April 4, 1892

The Bee Escape invented by you is the best I have yet seen, freeing the sections most effectually in short order, and its construction being such as to make it impossible to get out of repair. It will therefore meet with the approval of all bee-keepers.

Yours Respectfully,

F. A. GLADWIN.

M. E. HASTINGS,

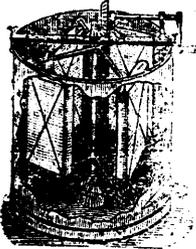
UTICA, N. Y., October 21, 1892.

Dear Sir,—Your Lightning Bee Escape does away with the hard, disagreeable work attending the harvesting of honey, being very much easier than the old way. In my opinion it is the best Escape yet produced

Truly Yours,

B. E. FOSTER.

HASTINGS' POSITIVE REVERSIBLE EXTRACTOR

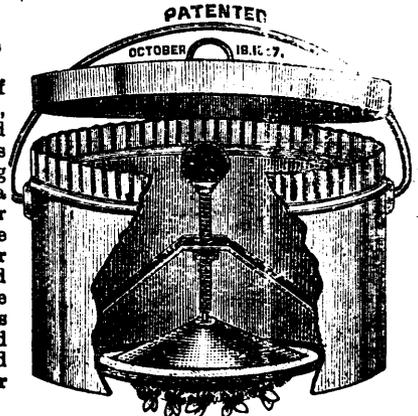


The above illustration shows a New Extractor now ready for the market. The principal features are that it is positive in the reversing of the baskets, as they all move at once without either the use of chains or reversing of the crank.

It is not necessary to turn the crank more than one way in extracting; but if desired it can be turned either way. It is pronounced by experts in extracting to be the most desirable Reversible Extractor yet produced. When ordering send a sample frame and price will be quoted on either 3, 4, 5 or 6 frame Extractors.

Hastings' Perfection Feeders.

These Feeders are now made with a capacity of two quarts, and the price is reduced to thirty cents each, or \$3 per dozen, by express or freight. When ordered by mail add ten cents each for postage. These Feeders can be re-filled without moving the Feeder, or disturbing the bees. The letting down of food is regulated by a thumb screw. It is easy to regulate—either a quart or a spoonful can be given in a day or an hour, as may be required, and where it is most needed, over the cluster of bees. For rapid feeding two feeders may be placed over the bees at one time, not a drop of food can be lost, and the robber bees cannot get at it. Special rates to dealers. Write for prices. Supply dealers furnished at wholesale prices. An electrotype will be furnished free to dealers wishing to advertise Feeder in their catalogues.



M. E. HASTINGS,

Patentee and sole Manufacturer, New York Mills Oneida Co., N.Y.