

...The Canadian Bee Journal

PUBLISHED MONTHLY.

NEW SERIES
VOL. IX, NO. 12.

BRANTFORD, ONT., JUNE, 1902.

WHOLE NO.
448.

Annual Meeting

BEE-KEEPERS'
ASSOCIATION
OF ONTARIO

SECOND DAY. (MORNING SESSION.)

The President, in the chair, called the convention to order and asked Mr. Frank T. Shutt, M. A., F. C. S., chemist of the Experimental Farms, Ottawa, to deliver his address on experiments he had made with uncapped, partially capped, and fully capped honey, to find the percentage of water in each.

Prof. Shutt addressed the convention as follows:

Mr. President and Gentlemen:—Any of you no doubt will remember when I was present at a convention of this Association some few years ago presenting the results of a series of experiments we conducted at the Experimental Farm in connection with foundation comb, that subsequent to that paper there came up the general discussion the question of adulteration, and the probable appearance upon the market of honey in unripe condition. I was naturally asked whether unripe honey could be detected chemically from honey, it being the general supposition that they differed from one another merely in the presence of a larger percentage of water in the

unripe honey. I said at that time that I was not in a position to say what was the normal amount of water as found in the genuine matured honey; I said we had no Canadian data on the subject, and as far as I was aware the European authorities differed widely, for I found some authorities stated 10 and 15 per cent. of water, whereas I found other chemists gave as much as 25 and 30 per cent. of water; and then on the other hand there were those who endeavored to bring together the two and said the proportion of water in honey might vary very largely, and that we should not be surprised at finding a variation of as much as 10 and 15 per cent. That statement I made on that occasion. I said that as far as adulteration of honey was concerned, that was a matter outside of my province altogether, and I made the suggestion that if it was thought by the members of this Association that there was any quantity of honey which was not genuine matured honey upon the market that the question should be referred to the Inland Revenue Department, another branch of the Government service, and that I had no doubt samples would be secured and analyses conducted upon those samples. That suggestion was acted upon and the Inland Revenue made a very wide collection of samples, 180 in all, of which analyses were made by various

public analysts throughout Canada and the results published very shortly after that in a bulletin issued by that branch of the Government service. I shall have occasion later on to refer to the results in that bulletin. However, I said also at that meeting, as far as I was concerned, I felt it was quite within my province, and I was quite willing to undertake the work to ascertain, if possible, the possible percentage of water as present in honey, provided some members of this Association would undertake to furnish us with undoubtedly genuine samples. That offer has held good ever since that time but I have here to state to-day that those samples have not been forthcoming; and the work upon which we have been engaged during the past few months has been upon samples that have been produced upon the Experimental Farm, and regarding which I shall say something a little later on.

When your Secretary wrote me at the latter end of September asking me to address this convention I thought at the time that I had no special work which would be of interest to you, not having undertaken any work in connection with the chemistry of honey. Consequently, I somewhat demurred, but on talking over the matter with my colleague, Mr. Fixter, who has the management of the apiary upon the Experimental Farm, I found he had conducted a very valuable experiment during the summer and that he had samples of honey which would be available to me for the purpose of determining the water in ripe and unripe honey. I shall tell you more particularly of the character of those experiments and of the nature of the honey resulting therefrom in a few minutes.

These are the samples then upon which we have done the work in the laboratory since the 1st of October and

a very large amount of chemical work, by myself and assistants, has been done. However, I must make this statement at the outset so that there may be no misunderstanding; it is very greatly to my disappointment, gentlemen, that I am not able to tell you to-day what is the normal percentage of water in genuine honey, either ripe or unripe. We have done, as I have said, an exceedingly large amount of most careful, thorough chemical work since the 1st of October, but still I am not in a position to say really what the percentage of water is. Now, the reasons for that I will explain to you as I give these results. You will see it has not been a matter of negligence at all, but the question involved is one relating to the accuracy of the process now in vogue. In fact, I have to make some rather astounding statements to-day or clear the way for future and more successful work, I hope.

Now, to a clearer understanding of the great question, I think we might very profitably spend five or ten minutes in the consideration of the nature and composition generally of honey, because it is intimately connected with that phase of the subject that the great difficulty in the analysis of honey has presented itself.

First of all, I suppose we are fairly well satisfied that honey is not a material simply collected by the bees. Of course, I know nothing personally of the matter, not having conducted any experiments, but I find that the consensus of opinion amongst the best authorities is that the honey in a sense manufactured by the bees, the nectar is collected and then passing through the bees it is acted upon by certain secretions of the bees and in that way its composition altered from what it was as nectar of the plants. This will be very easily understood when you think of our

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digestive action. You know that as food passes through the mouth it is mixed with the saliva, and there is in the saliva a chemical substance, ferment or diastase known as ptyalin which acts upon the starch of the bread or the starch of the potato we may be eating and converts it into sugar, and that sugar then is assimilable and passes into the blood. If it were not for that saliva and the principle it contains that starch would be indigestible and therefore unassimilable. Just in a similar way the saliva of the bees acts upon the nectar they collect and converts the sugar of the nectar into two very closely allied sugars.

Now, I must introduce just a little bit of chemistry, but it shall not be any more technical than I can possibly help. I want to tell you in the first place that there are in chemistry many kinds of alcohol closely related, first cousins and second cousins and so on, similarly there are many kinds of sugar; there are some of them half brothers, and some first cousins and second cousins, so that when we speak of sugars chemically, we may include a great family of closely related substances, but not absolutely identical in character. This fact you must bear in mind when thinking of the composition of honey. Let us consider first ordinary sugar that we see upon the table; that is known chemically as sucrose; that is cane sugar; it is the same material whether we obtain it from the cane or from the sugar beet. If we take starch, which is a sort of second cousin to sugar, and treat it with acid we convert it into a kind of sugar, but it is not cane sugar; it is nevertheless a sugar—and is known as glucose. Now we suppose that sugar in the nectar in the form of cane sugar and the saliva of the bees converts it into a sort of glucose, which on further ex-

amination proves to consist of two closely allied sugars, dextrose and levulose. It is very doubtful to me if there is really any cane sugar in honey at all. There might be under certain circumstances a small proportion, but sugar in honey is not in the form of cane sugar, but rather allied to the sugar of the starch.

Now, I must go one step further, if you will bear with me. How do we distinguish chemically between these sugars? We have various methods, one of which is the action of the sugar upon a certain kind of light which we call polarized light. With a certain kind of sugar placed in the instrument designed and constructed for that purpose, the ray of polarized light is turned to the right, and with another kind of sugar which chemically is closely allied to the first, the ray of polarized light is turned to the left. In honey we find a mixture of both those kinds of sugar. Now, it will help you to remember if you think of dextrose as right handed sugar, and of levulose as left handed; in honey we have dextrose, or right handed sugar, and levulose, or left handed sugar, and it has been found that these exist in about equal proportion.

Now let me read you a brief extract of the composition of honey, having said so much, from an English authority of high reputation. He says: "Chemically, honey is essentially a concentrated aqueous solution of certain sugars, dextrose and levulose being the most important constituents. Occasionally, a small percentage of sucrose appears to be normally present, especially in the new honey from bees fed on cane sugar, but after a time this constituent undergoes inversion." "According to James Bell, (who was the chief analyst of the Inland Revenue Department of the English Government) honey contains

from 5 to 10 per cent. of a substance which undergoes conversion to glucose only by prolonged treatment with acid. (Maltose, gallasin?) Soubeiran and Dubrunfaut also state that honey contains certain undefined sugars, and the same conclusion is deducible from the analytical results of other observers.

Besides the true sugars, honey contains a sensible quantity of the "saccharoid mannite." It is not a pure sugar; it is not chemically a sugar, it is allied to the sugars but it is not chemically speaking a sugar. "Which may be isolated by fermenting a solution of the honey with excess of yeast, filtering, evaporating the filtrate to a low bulk, adding excess of boiling alcohol, evaporating the filtered liquid to dryness, extracting the residue with boiling alcohol, concentrating the resultant solution, and precipitating the mannite therefrom by the adding of ether."

"The other constituents of honey are water, small quantities of wax, pollen, mineral matter, traces of flavoring and bitter substances, organic acid, &c. Formic acid appears usually to be present in honey." The foregoing is an epitome of the results of these chemists. Then he goes on to give the results, on the average, as obtained by various chemists in England and upon the continent. I am just going to read you a few of those results. One authority, J. C. Brown, gives dextrose as 31.77 to 42.02 per cent; and levulose 33.56 to 40.43 per cent. Another authority gives dextrose 22.23 to 44.71; levulose 32.15 to 46.89; water 16.28 to 24.95, and so on. On looking over those results carefully the one thing that will strike you is this, that there appears to be great variability in the analysis in the composition of various honey. I say "appears to be" because I can scarcely believe that there is such a

great variation but nevertheless the results as they appear on record would give that indication, viz., that there is great variability. After adding up all the materials that have been determined and subtracting from 100 we have undetermined matter; one authority states it may be from 4.95 to 11.00 per cent; another from 1.29 to 8.82 per cent; another 8.48 to 19.17 per cent; another 8.67 to 10.79 per cent; and still another authority says the undetermined matter may amount to as much as 13.63 to 19.56 per cent.

Now all these analyses have been made by men of reputation, men endowed with skill and with honesty, but the difficulty has been in connection with the material itself and the process of analyses employed. And now I think I can tell you the reason for this apparent discrepancy. We understand that the two principal sugars of honey are dextrose and levulose. Let us consider their properties. Dextrose crystalizes; this is the material which you see in candied honey. Levulose, on the other hand, does not crystalize; it does not become solid; it assumes the form of a thick syrup; it is the sweetest constituent of honey; it is much sweeter than dextrose; further we find by experiment and analysis that in the artificial drying of honey it is extremely subject to decomposition consequently during the ordinary and usual methods of analyses employed as I hope to show you, decomposition of levulose takes place and its disappearance has been recorded by the analyst as water. Now, in order to allow you to intelligently follow me let me give you a brief idea of how the water in honey has been usually estimated. You see this little glass tube I have in my hand, it contains asbestos, known commonly as mineral wool and used for packing the tube;

Mineral wool after a fluid is thoroughly boiled is an excellent quantity to be thor-

al wool, how what the weight of honey. V honey is i when repla ed for a hat take e tube :

Mineral wool is absorbent in its character and will hold water or other fluid like a sponge. What we do is this, the tube containing the fibre thoroughly dried in a water bath, that is an oven kept at the temperature of boiling water, and then weighed; then we pour upon it a weighed quantity of honey, which in order to be thoroughly absorbed by the min-

carefully back on the chemical balance and the weight over and above that of the tube and fibre will be that of the dry matter in the honey. If we subtract the dry matter from the amount of honey taken we have the water that has been driven off. That is the way in which the water has been estimated by the public analyst, the results of which appear in this



PROF. FRANK T. SHUTT

al wool, is first diluted with water. Now what do we know? We know the weight of the tube and fibre plus honey. We know exactly how much honey is in the tube. The tube is then replaced in this water oven and left for a certain length of time. What takes place? Water disappears. The tube and contents are weighed

bulletin of the Inland Revenue. Now, that is the most common method employed and that is the way that has been used in Canada as far as I am aware by the public analyst for the method of determining water in honey. We have given the method an exhaustive trial in our laboratories and found it faulty, owing to decom-

position of the levulose. The longer the honey is dried in the water oven the greater the loss from this cause and hence larger percentage of water (apparently) shown.

The samples of honey that we have been at work upon were, as I have said, obtained from an experiment instituted to ascertain the differences in quality between honey which had been taken from the comb before capping, taken while being capped, or as we have termed it half capped, and that which remained in the hive until the comb had been fully capped. We have supposed the honey from the uncapped comb to be in an unripe condition, that which was half capped has been considered as approaching maturity or ripeness and that which has been left until the bees had entirely capped it, as ripe or matured honey.

The experiment included further features besides the foregoing. One was to ascertain what difference as regards ripeness and quality would result by keeping the honey in glass stoppered bottles as against keeping the honey in bottles covered merely by two layers of cheese cloth. Under these conditions Mr. Fixter kept uncapped, half capped, whole capped honey. Another feature of Mr. Fixter's experiment was, keeping honey in the honey room (upstairs) as against preserving it in the cellar. So that we have had in the honey room and in the cellar samples of each of these honeys kept in glass stoppered bottles and in cheese cloth covered bottles, uncapped.

Those twelve samples you see before you are the honeys I have been speaking of and which we have analysed.

First of all my endeavor was to find out if uncapped or partially capped honeys contained more water than the fully capped honey; and

also if the cheese cloth covered honey was thicker and contained less water than those which had been kept in glass stoppered bottles.

The point which we have to consider of the greatest importance this morning from a chemical standpoint is the readiness with which levulose breaks up or decomposes when honey is subjected to heat. I don't mean heat such as you would think of in connection with a stove, I refer to a temperature below that of boiling water; because, if you remember, this tube containing the honey solution is never subjected in the drying process to a temperature greater than that of boiling water. But we have ascertained from our experiments that we cannot estimate accurately the amount of water in honey just simply from the fact that the levulose breaks up while the honey is being dried. You have heard of caramel, you know what it is; when sugar is browned it denotes that a certain decomposition has taken place; the sugar has been partly carbonized and the result is called caramel. If you were to take honey in such a tube as I have spoken of and shown you and place it for 24 hours in the water oven you would find the honey had turned brown. Then if you poured water on this tube a thin and extremely brown fluid, quite unlike honey, would be obtained showing that caramelization has taken place. When sugar caramelizes it loses weight, it is really subjected to a process of slow combustion. It loses weight. Now, my contention is this, that what we have been supposing to be water and water only as passing off in the drying process is really in part the decomposed products of the honey. The longer you heat it and the higher the temperature the greater the amount of caramelization and decomposition, or, in other words

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loss. We estimate the water by the loss in drying and if part of that loss is due to the decomposition of levulose we get too much moisture.

The longer the honey tube is in the drying oven the greater the loss—and the higher the percentage of water—apparently. If there were no decomposition we should be able to dry to a constant weight but this we find impossible. This in my opinion furnishes the explanation of the results as they appear in this bulletin of the Inland Revenue. Some analysts have dried for 24 or 48 hours and some have been attempting by still longer drying to get a constant weight. If there were no decomposition a constant weight should be obtainable. But the fact of the matter is that our experiments show you can go on drying these tubes for several days and still they lose weight. Day by day we weighed those tubes and put them back in the water oven and there was always a loss. From the first weighings we calculated the percentage of water and got numbers in the neighborhood of 14, 15, 16, after twelve hours more we obtained to 18 and then another 12 hours gave us 20 and 25 per cent., and then continuing the percentages of loss went up to 28, 30 and 32. Evidently there was no stopping place and what we were calculating as water was really in large part due to the decomposition of the honey.

Now in order to corroborate what I have said in regard to this question I will give you very briefly some of the results of the various analysts as they appear in this bulletin:—The analyst for Halifax examined 24 samples of honey and he returns everyone of those honeys as genuine. His percentages of water are in the neighborhood of 17 per cent. An average of them all I find gives approximately 18 per cent. of water. Why are his

results so concordant amongst themselves? Because he dried these honeys into the same bath for the same length of time he consequently gets results which are very concordant, so that according to this analyst we might expect to find about 18 per cent. of water in genuine honey.

Now I turn to the analyst's results for St. John, N. B. I find he has examined 21 samples and he obtains somewhat lower percentages. His results are generally from 14 to 18 per cent. of water and an average of them all gives approximately 15 per cent. of water in the genuine honeys. But there are still greater differences to come. Let us turn to the results of the analyst for Quebec and we shall find a different set of figures. He obtained data showing percentages of water from 21 to 33, and giving an average that is about 27 per cent.

Mr. Gemmell: Are they all treated the same length of time in the water?

Prof. Shutt: That is just it. They are not. The various analysts evidently dry the honey varying lengths of time. The method employed gives results according to the length of time the tube is in the drying bath and further we cannot say what is the correct time of drying. I am of the opinion that decomposition begins before all the water has been driven off. We have here a number of analysts at work and 180 samples here examined; they obtained results varying from 15 per cent. to 30 per cent. of water in what is termed genuine samples. Is this really the case? My contention is that this is purely a question of analytical method borne out by the fact that each analyst's results are closely concordant among themselves, and these differences only appear between the work of the different analysts. I will just give you the average amount as found by one or two of the other

analysts. The analyst at Montreal gets about 22 per cent. of water. His results are as a rule between 20 and 24 per cent. He obtained about 4 per cent. less water than the analyst in Quebec.

If we use the same amount of honey and dry for the same length of time at the same temperature we get uniform results but not necessarily true results. The analyst for the Ottawa district obtained about 26 per cent. The analyst for Toronto obtained from 13 to 16 per cent. of water; all from genuine honeys. Evidently he didn't dry as long as those analysts that got larger percentages. The official analyst of London obtains results varying from 24 to 32 per cent. water, practically; twice the amount of water in honey at London than obtained in Toronto district. Such surely is not the case. The analyst in Winnipeg gets results very similar to those of the Toronto analyst. His results are practically in the neighborhood of 16 per cent. I am inclined to think myself—I am not going to state anything as a fact—that the percentage of water in matured honey is much nearer 15 than it is near 30.

Now for some of our own results: These honeys, samples of which you see here before you, were analyzed in the method I have described to you. Twenty-four hours drying gave us results between 28 and 32 per cent. of water. They seemed a little high but still there was good authority to say that we might expect as much as 35 per cent. So I put the tubes back again in the water oven; the next day we weighed these tubes and found they had lost about 2 per cent more water. Further drying for twelve hours resulted in a further loss, and so on. They kept constantly losing. The longer the dry the larger the apparent per cent of water; I might

have been going on till now and they wouldn't have lost all the water they contained, apparently. So we came to the conclusion, which I have stated to day, that the method of drying at the temperature of boiling water was not of much value.

(Prof. Shutt's address will be continued next issue)

DISTRICT MEETINGS

HALTON.

The Halton District Bee-Keepers' Association met in the Town Hall, Streetsville, on May 20th, 1902, the President, Geo. Lang, in the chair. There being a very good attendance, they soon got down to the business of four hours warm discussion on the latest method of handling bees. There were some very good points brought out regarding managing swarms to get the most honey, especially one by the President, who secured over four hundred pounds from one eight-frame combination hive without any assistance whatever from other hives. The method practiced was as follows: As soon as the hive was ready for a top super in May, give it one and let the queen up in it if she will go. Get it as full of brood as possible, and as soon as the honey harvest is on and they are ready to swarm take and divide the brood chambers, setting one each on a new stand, leaving the queen and what working force on the old stand on empty combs, putting an excluder on each hive. Then add many supers as they may need—two or three. The President thinks that twice as much honey can be secured as if there had been supers put on and not allowed to swarm.

Reports as to wintering and condition of bees was that they had wintered good and in fair condition and a large number of swarms to date.

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Some of the members were uneasy about foul brood being in their neighbor's bees and because the Inspector had not put in an appearance before this. That they had themselves no authority to examine the bees, although they had visited the neighbor they were not allowed to see the bees.

The Association was favored with a visit from the President of the O. B. K. A., Mr. J. D. Evans, who gave us a good history of the O. B. K. A., showing what the association has done for the bee-keepers in Ontario and yet it has only about 125 members, which is not one-tenth what it should have for the province. Mr. Evans asks the bee-keepers of Ontario to send along their dollar to W. Couse, Secretary, Streetsville, and let him enroll you as a member, as the premium, the Canadian Bee Journal, along with the annual report, is worth twice your dollar if you do not attend the annual meeting at all, but you miss greater things by not attending the O. B. K. meetings.

G. E. SAUNDERS,
Sec'y H.D.B.K.A.

Agerton, Ont.

YORK

One of the most interesting meetings in the history of the York Bee-keepers' Association was held in Markham on Friday, May 23rd. Among others present were Messrs. Whiteside and Webster of Victoria County, D. W. Heise, Bethesda; John Timbers, Cherrywood; L. Baker, Ringwood; John Steeper, Mt. Albert; W. H. Harper, Thornhill; Arthur Quantz, Langstaff; H. Meyer, Caskel; Peter Byer, Markham, Mr. Freeman, Cedar Grove, and W. S. Walton, Scarboro Jct.

An interesting and instructive programme had been arranged, comprising papers on "Co-operation

among Bee-keepers," "Advanced Methods of Comb Honey Production," "Spring Management," and "Stimulative Feeding."

After the routine of business had been transacted the delegate to the O. B. K. A. gave his report, which, on motion, was adopted. Mr. R. F. Whiteside read a paper on "Spring Management," which was well received and elicited a large amount of discussion. Mr. D. W. Heise asked for a show of hands as to how the members regarded manipulations of the hive previous to fruit bloom. Those who favored leaving them alone till that time carried the day by a small majority, although it was laughingly pointed out that some who voted that way had this past spring opened their hives for fear of starvation.

Mr. Walton, of Scarboro Junction, opened the discussion on "Stimulative Feeding," and was followed by others, the general opinion of the meeting was that in this locality the only safe and profitable time to stimulate by feeding was during the interval between fruit bloom and clover.

Mr. Sibbald who was to have given us a paper on "Co-operation among Bee-keepers," and Mr. J. F. Davison a paper on "Comb Honey Production," were unavoidably absent. However, a profitable discussion was carried on re. the advisability of producing more comb honey. A number of questions were answered by Messrs. Whiteside and Heise, after which the meeting adjourned.

All the members seemed enthusiastic and hopeful of a good honey crop, some have had swarms already, and almost without exception all reported exceptionally good wintering. Time and place of next meeting subject to ruling of President A. H. Crosby, Markham, Ont.

J. L. BYER, Secretary.

THE
CANADIAN BEE JOURNAL

Devoted to the Interests of Bee-Keepers,

Published Monthly by

GOOLD, SHAPLEY & MUIR CO.
(LIMITED)

BRANTFORD - CANADA.

Editor, W. J. Craig.

JUNE, 1902.

EDITORIAL NOTES.

Trouble about untimely spraying of fruit trees still continues, notwithstanding the law, the lectures and the notices. We have had more than the usual number of letters asking advice this season. All say that the fine is no preventative, it is too small, etc. But why not try it and see? Not one of those people who have complained have tried to enforce the law.

Our representative to the Industrial Exhibition, Toronto, Mr. A. Pickett, Nassagaweya, writes:—

"Have just been down to Toronto to see about accommodation of honey exhibit. We are likely to get room in the Little World Building, which is to have twenty feet added to back and moved to where the Natural History building now stands. Two aisles will run the entire length. Two doors at each end and also more windows on each side. Space for exhibits of supplies has also been provided for. As Director, I would like to hear of a large number applying for space early so as to hurry them up. I gave them to understand that a greater amount of space than usual

would be required this season."

It has been a very difficult matter to secure proper accommodation for exhibits at the Industrial for some years back. Mr. Pickett has had a good deal of discouragement but we believe that Toronto's liberality of \$133,000 for new buildings will bring relief, and that a permanent and definite place will be arranged for the apiarian displays. We hope to see a large number of honey exhibits at Toronto Exhibition this season.

Weather has been very cool and unsettled and bees have suffered greatly, especially where feeding has not been attended to. Mr. R. F. Whiteside, of Little Britain, writes:

"Your timely warning in April number saved many colonies from starving. The next morning after reading it I visited one out-yard. One colony that was starving was saved that day, and many more would have starved had I not read the timely warning and gone over all my hives the next few days. Well, one good turn deserves another. I should like to warn bee-keepers again to examine their hives and save them from starving, as brood-rearing has gone on vigorously, and the feed given them a month ago is, in some cases, completely exhausted, as the weather has been so unfavorable for spring honey gathering and many may starve even yet before clover begins to yield. The modus operandi is to place on the supers now and any found minus stores can be fed by placing a ten-pound pail of syrup (made from two

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pails of white sugar and one of water boiled a little till melted), invert the pail on an ordinary tea-plate and the bees will empty it in a day or less if hungry and strong. However, it is not a sign that that particular hive is starving because we see dead and premature drones hauled out of the entrance, but it is a warning to look after all in the yard that may lack stores."

The Ottawa Journal a short time ago had the following:

"Mr. John Hodgins, barrister, wants a by-law enacted to prohibit bee hives within the city limits. Mr. Hodgins is acting for a client who complains strongly of the sixteen bee hives kept by Robert Yetts, of 42 Centre street. He says his client can't go out into her back yard or open her windows without having bees buzzing around her head. She wants bee hives prohibited."

Friend Yetts gives us rather an interesting explanation of the above. He says:

"This cranky old, lady who lives who lives next door to me, is apparently unable to distinguish the difference between a bee and a wasp. Two years ago a shed out in her back yard contained a fine nest of wasp, and she came to me in a great state and said, 'Mr. Yetts, a swarm of your bees has swarmed in my shed and you must get them out right away.' I said, 'Why, Mrs. C—, I haven't lost any bees, they cannot be yours.' 'Oh, yes they are yours, for they are perfectly yellow, and I never saw yellow bees until I saw yours.' I went in to have a look at them and

found them to be yellow wasps. I told her how to get rid of them and she was all O.K. again. Last year she had a large nest under the eave of her house, but she had no complaints to make, at least I never heard any until this spring when I saw the above cutting in the papers. I never took any notice of the impending trouble, I felt things would turn out all right, as you will see by the second cutting, they have:

'Some time ago Mr. John Hodgins asked the city to pass a by-law prohibit the keeping of bees in the city. The city solicitor has, however, given the opinion that the city has no power to do so.'

I interviewed all the rest of my neighbors and none of them have any complaints to make."

Questions and Answers

QUESTION.—I have 20 colonies of bees, can I increase faster by buying queens, or natural swarming? If so, how would I do it, and how many more would I have from one way than the other?
R. L. T.

ANSWER.—You can increase faster by buying queens and dividing the colonies as they can stand it. "How many more"—Well, that would depend on the swarming in the one system, and on the number of divisions and sub-divisions in the other.

JACOB ALPAUGH.

[Be careful though and don't carry this out too far. Give your bees a chance to build up thoroughly before winter.—ED.]

Reports from the Districts



DISTRICT NO. 1.

The worst season so far for many years. Bees have suffered heavily since they were set out on summer stands from high winds, cold nights and heavy frosts. Clover appears to have escaped the winter-killing which often occurs in this district, yet prospects are not encouraging for the season.

W. J. BROWN.

Prescott, May 20th.

DISTRICT NO. 3.

From reports received from bee-keepers whom I have met and others with whom I have corresponded I have learned that winter losses were very slight and losses from spring dwindling have also been comparatively slight. The spring has been a peculiar one, about four days of cloudy, showery weather to one day of sunshine in which bees could fly. May 10th brought a most destructive frost, which, with the long-continued heavy winds, gave the bees quite a set-back. Present prospects are bright but it might not be safe to attempt to give a forecast.

M. B. HOLMES.

Leeds Co., May 20th.

DISTRICT NO. 4.

Bees wintered well in this district but the cold, backward spring has been very unfavorable for brood rearing. Prospects for clover were never better but the bees are not up to the average in strength for the last four or five years.

Hastings Co.

C. W. POST.

DISTRICT NO. 5.

Bees wintered well here but the spring has been the worst I ever saw for them. They could only fly about one day in ten until about a week ago. The soft maples bloomed and the blossoms dried up while the bees were prisoners. The result is heavy spring losses among the small bee-keepers who are not experts. Many hives of bees have starved, I think fully one half of the bees owned by these bee-keepers are dead. The prospect for clover is good, the White Dutch is abundant, not much Alsike grown here.

J. D. EVANS.

York Co., May 20.

DISTRICT NO. 6.

Bees have wintered very well in this county and the clover is the most promising for years and at present the bees are gathering from dandelions and fruit bloom, which they are storing a little surplus from where stocks are strong.

W. COUSE.

Peel Co.

DISTRICT NO. 7.

Bees have wintered well, with from 2 to 5 per cent loss, and are in good condition with every prospect of a successful season.

A. PICKETT.

Halton Co., May 22.

DISTRICT NO. 9.

Bees wintered well but were back on account of cold and

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weather, but at present time are in pretty good shape. The prospects are very bright for this season; abundance of clover, and, at writing, never looked better.

JOHN NEWTON.

Oxford Co., May 20.

DISTRICT NO. IO.

Bees wintered well in this locality. Lost one out of 107 colonies, owing to queenlessness. The fine weather in March was, however, a detriment to those not well supplied with stocks in fall, owing to too frequent flights and no honey coming in. The prospects at present appear bright for a good season.

F. A. GAMMILL.

Perth Co., May 21.

DISTRICT NO. II.

Fruit bloom is over. The first and second weeks of fruit bloom weather were very unfavorable a greater part of the time. Bees managed to get about one good day in three. The last week of the bloom every day was a work day and hives are crowded full of honey and I hear of a great many bees swarming. All kinds of fruit trees were full of bloom. Don't think frost did any damage. Fruit crop promises real good. The clover looks splendid. Cannot see any reason why we will not have an extra good honey season.

W. A. CHRYSLER.

Kent Co., May 23.

How they Wintered.

Editor C. B. J.

Some weeks ago there were circulars sent to all members of the Ontario Beekeepers' Association requesting them to report on a slip the number of

colonies they had last fall, the number this spring, the number strong and weak, and how the bees wintered, the prospects for the season and any remarks. About fifty-five members have reported and below you will find a general report made out of the reports I received from all parts of province:

	Fa'l 1901	Spring 1902	Strong	Weak	Av'r'ge Winter Loss
Cellar	1837	1704	1597	197	7.2
Packed out-side	1262	1169	1071	98	7.3
Bee House.....	262	241	215	26	3.9
Pit	30	29	26	3	3.3
Dug-out	128	112	80	32	12.5
Total.....	4303	4018	3592	426	6.6

The majority report for a good season. Clover wintered well with few exceptions.

W. COUSE, Secretary.

Streetsville, May 23.

The Coming Convention at Denver.

Of course, we naturally expected, that if the National Convention went out to Denver that those Western people would do the handsome thing, but the present indications are that they are going away ahead of anything that any of us have dreamed of!

Some things have come to me in private letters, giving hints of what may be expected, but all of their plans are not yet sufficiently completed to be given to the public; however, I have a letter from Secretary Working, that I have permission to publish, and here it is:—

DENVER, Colo., Apr. 26, 1902.

Mr. W. Z. Hutchinson,
Flint, Michigan.

Dear Sir:

We have put both feet into it! Yesterday and the day before our Executive Committee (Harris, Gill, Rauchfuss, and Working) made

the preliminary arrangements for the big meeting in September. Following are the chief points decided upon:

The Colorado Association will meet on Tuesday morning, September 2, and the following days taking part in the general sessions of the National Association. Our program Committee will work with yours.

We will give a complimentary banquet to members of the National Association coming from other States than Colorado and a "Seeing Denver" trolley ride to all the attractive places in the city to the same people. Our members and those of your Association who have the good fortune to live in Colorado will have the pleasure of sharing in these pleasures for a fixed price — to be fixed later.

We will plan for special excursions at low rates to places of interest in various parts of the State.

We gave our committee on Exhibits fifty dollars and the authority to beg a thousand for the purpose of making a great exhibition.

We decided to "spread" ourselves in such a way as to make the visiting bee-keepers forever proud of having attended the Denver meeting, and those who don't come, everlastingly ashamed of themselves. And we have persuaded the Mayor of the City and the Governor of the state to do their utmost to make the occasion memorable; and the men who hold the purse-strings of the city are interested. Promises later. Then, too, the Secretary of the Denver Chamber of Commerce, who is a past master in such matters has become an enthusiastic member of our banquet committee—a committee that is not too big to do things.

That ought to be enough to tell you now. You are to tell us when we may give the banquet. You are to name us three men, including

yourself, who will respond briefly and thankfully to addresses of welcome by President Harris, Governor Orman and Mayor Wright. As for the banquet, you are to prepare for it and nothing more—to be in good humor, in good appetite, and in large numbers.

As for our people? With the kind co-operation of the railroads, we'll bring them to Denver in crowds. There'll be as many of our folks as of yours, if you dare! And before we are done with you, you'll be ours and we'll be yours.

Scatter the news! Tell it in Gath and Askalon. We'll tell it wherever Denver papers circulate.

Yours truly,

D. W. WORKING,
Secretary Colo. State Assn.

It is very evident to me that the man who misses the coming convention at Denver will miss the treat of his lifetime. I expect to see it outstrip its predecessors in every possible manner—and that is saying a great deal. But look at the conditions: In the heart of the great West and for the first time. Bee-keepers of both high and low degree, all over the West, will flock to it. The local arrangements, upon which the success of a convention is so largely dependent, are in the hands of very capable men. The rates on railroads will be low. It is at the best time of the year — before the cold weather and after the work and heat of the season are over. The sights to be seen in and around Denver are equal to any on earth. Go to Denver, meet the boys, have one grand holiday, and home loaded with enthusiasm and new ideas — the two things on which all successes have been builded.

W. Z. HUTCHINSON,
President



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Notes by the Way

By G. A. DEADMAN.

OUR HONEY SHOULD BE CLEAN.

I omitted saying in my last notes in connection with home market that when the honey which the grocers may buy be mostly, if not all, taken out in trade during the year, a 10 per cent profit should be satisfactory, especially when the retail price is so low that a bee-keeper could not be expected to give more.

I have been misunderstood in notes in what I consider the best containers for honey. I mentioned the 10 lb. slip cover pail as the kind I prefer after the honey has granulated. It is easily taken out whether candied or liquid, but it is after it is granulated that it is particularly preferable. The objection to them is that they are hardly safe to ship before the honey is granulated. A better pail for shipping while in the liquid form is the self-sealing pail holding the same quantity. Either, when empty, are very useful and worth all they cost.

This issue I wish to write of cleanliness in connection with our honey. I was reading the other day of a large dairy farm of over one thousand Jerseys, employing some three hundred helpers and a motto on the wall was "Wash ye, be ye clean." We know there is a difference between the effect of cleanliness with milk and with honey, nevertheless, we should be scrupulously clean in all that concerns it. I was travelling for a brief time with a party who had been to British Columbia and had visited some of the salmon canneries there. He remarked that if you once visited one of these places you would

never again eat canned salmon. I questioned him as to why one would not. From what I could learn, it was the dead and decaying fish that were around about the place, and his idea was that the fish when being canned would be affected by the odor of the place. Now, while many of us cannot have all we would like in the form of beautiful honey houses, with a sitting room, as some have suggested, and most of us do not want, yet we should have all at least clean, and, if possible, orderly. In the first place our honey should be strained as it comes from the extractor, and then kept closely covered. This is not so expensive or difficult that we need to neglect it. If the storing cans are at least two feet in diameter I think I can strain as fast as any four frame reversible extractor can throw it out. I find a very cheap factory cotton or fine cheese cloth costing 5c. per yard is good, the latter not so strong but very satisfactory. It is a common practice to keep this in its place with a string going around the can, and no doubt few of us but what have had the thing slip and go down with a suddenness that surprises one. Our friend Alpaugh, of Galt, endeavors to overcome the necessity of taking this strainer off to wash by having it double, the upper one being only laid over the other and is the one that is removed for cleansing. I saw this in operation of Mr. Boomer's last year, but the objection there was that it would not work fast enough. There is no need, however, for this double strainer arrangement. If you have one cloth and instead of being kept in its place by a string you do it with a strap. Now do not say that you cannot afford such luxuries, because the cheapest strap with a buckle is all that is required; those such as school children use and costing 10c. each do the work as well as heavier ones. If

you once use a strap you will not only have your strainer can fitted with it but every other can also. With a strap you need never fear that your strainer cloth will slip or the trouble you will have to clean and replace, because it never slips and is so easily replaced. Now, we must not only be careful to strain our honey, but when putting it in containers for shipping we require to watch lest dust or something worse get into it. It is an exceptional thing in my experience to buy honey that is entirely free from objections of this kind. We might lose a good customer by some carelessness in allowing insects other than bees to get into it, and when one is buying in quantities it is next to impossible to examine every can separately. At the Buffalo convention Mr. Miner, I think, was giving his plan of selling honey from house to house. He went on to say that he carried a pail of the beloved sweet with him and invited all the family to try some, but, he said, they never used his spoon. It was inferred that no spoon but his own ever went into that honey, and it was right enough, provided the other spoons had been used once. We make it a rule that spoon or knife or whatever it might be, must be clean before using, and we never consider them clean unless washed after entering a person's mouth; yet how many you will find who will dip in the same spoon again and again into that which others partake of. A friend of mine had his appetite for sugar, for one meal at least, taken away because a colored brother licked his spoon and plunged it into the sugar basin. On its return journey many crystals of sugar vainly endeavored to cling to it but fell back into the basin. I was in a store one day where there was some honey granulated but still soft. The merchant lifted the ladle and took a bite,

the balance, with the marks of his teeth, going back into the can. I had honey of my own, but I don't quite think I would have bought if I had not. Another thing I don't like is a person chewing cappings and throwing the refuse back into the uncapping can. Of course this is not allowed at our house, but I have been wondering if this was a common practice. I called on a bachelor bee-keeper (not Rambler) one day and after seeing him do this I asked him what he did with the cappings. Oh, he melted them up and sold the honey. Last year two dirty-faced urchins were indulging very freely at the uncapping can, or rather crock, and tossing back the wax. I asked the father what he did with the cappings. I was a little relieved when he said he melted them up into wax. To his credit he did not leave much honey in them, so there was not much loss.

I think people are giving more thought to these things and that it will be no longer considered proper to drink from the same cup that others drink from, unless first cleaned, whether in the home or at the communion table.

The Story of the President's Mother

When Martha Bulloch, the fair daughter of a wealthy Georgia planter married Theodore Roosevelt half a century ago she little dreamed that her name would be handed down as the mother of a President. The romance of her meeting with the New York man, their courtship and marriage, and the long honeymoon journey in a stagecoach, forms a new and interesting chapter in connection with the life of the present Theodore Roosevelt. In the June number of the *Ladies Home Journal* this romance and many unknown facts concerning the President's mother are told by a cousin, Martha Bulloch.

Editor:

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Communications

Islington, May 25, 1902.

Editor C. B. J.:

Dear Sir,—I am disappointed that so little notice has been taken of Prof. Fletcher's discovery of the use of Formalin in curing foul brood. It seems to me to be one of the greatest discoveries in bee-keeping of recent date and I hoped to see the necessary utensils for its use offered for sale in Goold, Shapley & Muir Co.'s price list. Most bee-keepers have a large stock of empty combs when the honey season is over and it would be a fine thing to have them disinfected, for none of us can be quite sure that every comb is free from disease. Again, most of us lose some bees each winter and although we may make a search for the stain mark of foul brood, some may be missed. Last year I hived thirty swarms on old combs and I intend to hive more this season, but I don't feel quite safe in doing so and if I had them treated with Formaline I would.

I sold two hives last fall to be put in hot houses to a gardner who raises tomatoes in these houses. He put one in each of two houses last January and, contrary to my expectation, they both did well. I thought they would fly to the glass and perish, but they did not. They flew all through his houses and fertilized his tomatoes and he is well-pleased. Now, it strikes me here is a solution to the wintering of queens in confinement. There are any number of hot houses that after this date are not used. Would it not be well for someone to test the matter in one of them? The bees, of course, would have to be fed and kept in good condition and the glass white

washed to keep the houses from getting too warm.

Reverting to the Formalin question, I notice in "Gleanings" that even the Editor does not know how to use it, but in a foot note to one of Dr. Miller's Straws asks the Dr. to tell him how to administer it. Surely so well posted a Bee Journalist as Mr. Root should have read Prof. Fletcher's address. Yours truly,

J. D. EVANS.

Multum in Parvo.

(By a York County Bee keeper.)

The "Review," for April, comes to hand, full, as usual, with good things. Editor Hutchinson is progressive and enthusiastic, if anything, and, what's more, seems to have the knack of imparting these qualities, in some subtle way, to the columns of the "Review" from time to time. About every issue contains some advice, in the editorial department, agricultural or otherwise, that is bound to waken up even the most taciturn.

In this "hurry up" age, when the most of us are too busy to pay attention to anything that is not associated with dollars and cents, words like the following taken from April "Review" are wholesome to say the least:—"Enjoy the little pleasures of life as they come along day by day. Don't put them aside as beneath your notice, keeping your eye on great pleasures that MAY come in the future, when you have accomplished this or that. In each life there may be a few times when joy comes in a great flood, but, as the years come and go, the great bulk of our happiness comes in little every day happenings and occurrences." And, after telling us about the different occupations he has engaged in, queen rearing, comb honey production, etc., always enjoying the work as he went along, concludes with: "Once more,

friends, get all of the comfort out of the little simple pleasures that come to you day by day. In the first place fall in love with your business. If that isn't possible then go into some where it is possible. No man ever made any great success of a business that he did not like." If all would strive to inculcate that kind of sentiment into their daily lives, there would be a great deal more real happiness in the world than what there is to-day.

"March is here—and now is the time to make a critical examination of every colony." Such is the advice given by Mr. M. A. Gill in the "Review," page 101. However, we Canucks will feel relieved when we note the address to be Longmont, Col. All going to show that advice seasonal and profitable in one section is not applicable to localities two or three thousand miles away. Two months from date mentioned (March 1st) would be soon enough to give that "critical examination," in this part of the country.

Would-be seekers of paradise had better keep away from Texas, especially if they think of taking bees there that might have foul brood. See what Mr. W. H. Hyde says in "Gleanings," page 292. "I have heard them (resident bee-keepers) say that should a man bring it (foul brood) here, his bees would be burned and himself drummed out of the country." Surely it must be somewhere near there that Judge Lynch is domiciled. One feels easier on having the assurance given by Mr. Davidson, also of Texas, in a letter to the Ed. of "Gleanings," page 368, "that they are not going to hang the man that does it." However, a word to the wise is sufficient.

That inveterate "Rambler," Mr. J. H. Martin, is at present touring Cuba and is giving an account of his

travels, through the columns of "Gleanings." Undoubtedly Cuba is a great place for honey, but just think of the price they receive for it—34 cents a gallon, to say nothing of the high cost of living, coupled with bad roads, and unlimited quantities of fleas, mosquitoes, jiggers and other vermin. At present, I am not hankering for Cuba, think I will content myself with less than half the yield they get there, provided I can get three times as much per lb. for the product.

Dr. Miller, in a "Stray Straw," comments on the danger of Cuban honey deluging the markets of the United States, in part as follows. "But we ought not to be selfish. It would be a great blessing to the country if honey were so cheap that it would take the place of half the 65 lbs. of sugar annually used per capita, even if it drove us all into some other business." That may be alright for an unselfish man like the Dr., but I just wonder how many of us selfish fellows would like to be driven into some other business by foreign honey at less than 3 cents per lb.

"The bees have nothing to do with it," American Bee Journal, page 280. And the worst of all is, that it is one of our Ontario brethren that makes the astounding statement, in the course of a lengthy article combatting the established fact that bees are an aid to the pollenization of fruit. While all due respect to Mr. Smith and his opinions, must say that I believe he is mistaken, certainly if Mr. Smith is correct, a great number of up-to-date fruit men are deluded more than the 20th century should warrant. He has not time or ability to argue the question from a scientific standpoint, and it is not necessary anyway, for the bulk of scientific opinion says that the bees ARE an aid to successful fruit production. Why is it that

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most of our extensive fruit raisers want the bees in their orchards, even buying bees for the purpose themselves, when more are near them; and why is it that growers of early cucumbers and other vegetables under glass, procure bees for their green houses so as to avoid having to pollinize by hand? And why is it?—but perhaps I hadn't better ask any more questions, for fear I might get into trouble.

Before dropping this subject, will give an account of an experiment conducted just lately at the Oregon Experimental Station, as taken from report. "At the Oregon Station, experimenters forced a number of peach trees into bloom under glass last November, and introduced a colony of bees into the house, first protecting one tree so that the bees could not get to it. From that tree all the fruit dropped when the stones began to form. From the others no fruit dropped and it was abundant."

So Mr. Alpaugh thinks that a perfectly dry cellar is not an ideal place to winter bees in? There are others who hold the same opinion. Just a short time ago a bee-keeper friend was telling me that this past winter he had part of his bees in his cellar, which is very dry. The bees were quite noisy and restless, temp. 44, till along towards spring, during a heavy rain water contrived somehow to fill up the drain around the cellar, when the bees at once quieted down and remained quiet as long as the water was there. Looks as though Doolittle's idea, that bees need moisture more than fresh air, is about right after all. While experience is often a hard teacher, it is generally a pretty thorough one, and with so many different opinions on this question, the only convincing plan will be for each one to "Prove all things, hold fast to that which is good."

Gleanings From Foreign Bee Journals.

"Leipziger Bienen Zeitung."—Propolis a remedy for corns.—Spread the propolis thick on a piece of linen. After a fortnight's application the corn will have disappeared.

From the same.—The War Office in Belgium has advertised for 1,200 lbs. of honey, white or pale in color. A guarantee of 700 fr. is required with the offer. What does the war office want it for? is an interesting question. Can any Belgian bee-keeper gratify our curiosity?

From the same.—The question is raised whether bees can see, the writer maintaining that they cannot, but that they do everything by the other senses of feeling and smell. Another correspondent, however, has a very different view of the case; he says that if a bee is brought outside the hive at night (even by moonlight) it will flutter round and cannot find the entrance. Why this if not from want of light. A bee taken into a room will at once fly to the window, but if its eyes be painted over and darkened it will remain quite still, or if forced to move flies anyhow upwards and hangs to anything in its way, or falls helplessly to the ground. One sees that it is blind. It is also evident that the senses of touch and smell do not help the bee outside the hive. The conduct of a drone deprived of his feelers will prove this, and also that within the hive these senses are quite indispensable. A bee deprived of its feelers is not capable of continuing its existence, as it can no longer even find its own nourishment.

Praktischer Wegweiser. — Among the exported products of the Japanese islands is the fruit of the wax-tree, much used there in the manufacture of candles. The tree resembles the

crab-apple, and grows on the edges of cultivated land, especially in the province of Kinchin. The tree loses its foliage in autumn, but in October it is covered with berry-like fruits. These are gathered, dried in the sun, and then sent to a factory where the wax is extracted; but before this can be done the berries have to be kept at least two years. The longer they are kept the better wax they produce. This wax is much used to adulterate bees-wax in the manufacture of wax-candles, comb-foundation, &c.

Bienenwirtschaftliches Central Blatt (Germany).—Under what conditions the bees work red clover.—A bee-keeper of thirty years' experience draws attention to the fact that last summer (being hot and dry) the bees worked a large field of red clover with great success. What reason can be assigned for this unusual conduct, unless, the season being so dry, the clover may have been much shorter than at other times? The tube of the corolla of red clover has a length of from 9 to 10 millimeters, and the bee's tongue only measures about 6 mill. So the bee can only reach the nectar when it fills the tube to a height of 3 or 4 mill. In rich pastures this occurs when warm fine days succeed heavy showers of rain. The same may be said of the blossom of the common lilac. When small beetles have perforated the corolla tube of the red clover the bees can work the honey it contains. In examining the flower closely, it may often be observed that

a very small beetle has bored a tiny hole in the tube to emerge from it. The humble bee also bores holes in in the clover tubes and in other plants, thus showing herself to be the true pioneer of the honey bee. It may be remarked that the same family of plants does not yield the same amount of honey every season, and this may account for the fact that bees are not found every year to be working the red clover.

Among the changing months, June stands confessed
The sweetest, and the fairest colors dressed.

BEE-KEEPERS' EXCHANGE COLUMN

Exchange advertisements for this column will be received at the rate of 25 cents for 25 words, each additional word one cent. Payments strictly in advance as the amounts are too small to permit of book-keeping. Write copy of ad. on a separate sheet from any other matter and on one side of the paper only. Say plainly how many times ad. is to be inserted. Matter must reach us not later than the 23rd of each month.

HAVE a Barnes Combined Foot Power Saw. Would exchange for small power lathe or offers. F. J. Miller, 223 Dundas St. London.

WOULD exchange well bred White Wyandotte Eggs for a good strain of Barred Rock Eggs or for a few colonies of bees. Wm. Bayless, Grand St., Brantford

HAVE a Gents' Bicycle (Brantford Red Bird) in good shape. Would like to trade it for bee Langstroth frames preferred. Frank Adams, Bee Park, Brantford.

WANTED to Exchange—Bees for a Hay Thought range, light market wagon, rifle comb foundation mill. James Armstrong, Chesham side.

WOULD exchange bee-keepers' supplies bees' wax or light extracted honey. Geo. Shapley & Muir Co., Ltd., Brantford, Ont.



This is the Page Standard II Bar Fence, made of "Page" wire which is twice as strong as common wire. The continuous coil, note wavy appearance, allows for expansion and contraction which is important owing to Canadian climate. Our upright wires are in one piece and have strength of about 800 pounds. If made of pieces spliced at each horizontal, they would have a strength of only about 300 pounds. We also make gates, ornamental fences, poultry netting, nails and staples. The Page Wire Fence Co., Limited, Walkerville, Ont.