ANNUAL REPORT

OF THE

BEE-KEEPERS' ASSOCIATION

OF THE

PROVINCE OF ONTARIO

1900.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE.)

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO.

TORONTO:
PRINTED AND PUBLISHED BY L. K. CAMERON,
Printer to His Most Excellent Majesty.
1901.

ANNUAL REPORT

OF THE

BEE-KEEPERS' ASSOCIATION

OF THE

PROVINCE OF ONTARIO

1900.

(PUBLISHED BY THE ONTARIO DEPARTMENT OF AGRICULTURE.)

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO.

TORONTO:
PRINTED AND PUBLISHED BY L. K. CAMERON,
Printer to His Most Excellent Majesty.
1901.

WARWICK BRO'S & RUTTER, Printers and Bookbinders,
TORONTO.

OFFICERS FOR 1901.

President, - - - - - - - - JOHN NEWTON, Thamesford.
Vice-President, - - - - - - - - J. D. EVANS, Islington.
2nd Vice-President, - - - - - JAMES ARMSTRONG, Cheapside.

Directors:

District No. 1.....W. J. BROWN, Chard.
District No. 2.....J. K. DARLING, Almonte.
District No. 3.....M. B. HOLMES, Athens.
District No. 4.....C. W. POST, Treaton.
District No. 5.....J. W. SPARLING, Bowmanville.
District No. 6.....J. D EVANS, Islington.
District No. 7.....A. PICKETT, Nassagaweya.
District No. 8.....JAMES ARMSTRONG, Cheapside.
District No. 9.....JOHN NEWTON, Thamesford.
District No. 10.....F A. GEMMELL, Stratford.
District No. 11.....W. A. CHRYSLER, Chatham.
District No. 12.....SAMUEL WOOD, Nottawa.
Ontario Agricultural College .....PROF. F. C. HARRISON.

Auditors, - - - - - - - - J. B. HALL and R H. SMITH.
Revising Committee, - - - - - - J. D. EVANS and D. W. HEISE.
Representative to Western Fair, London - F. J. MILLER, London.
Representative to Industrial Exhibition Toronto, - A. PICKETT, Nassagaweya.
Representative to Canada Central Exhibition, Ottawa, - - - - - - - - J. K. DARLING, Almonte.
Inspector of Apiaries, - - - - - WM. MCEVOY, Woodburn.
Assistant Inspector of Apiaries. - - - F. A. GEMMELL, Stratford

---

DIRECTOR'S MEETING.

At a Directors' meeting following the annual meeting the following business was transacted:

W. Couse was re-appointed secretary, and Mr. Emigh treasurer.

The sum of $200 was appropriated to affiliated societies, but no society was to receive more than $20.

There was a grant of $25, $10, and $10 made to the Toronto Industrial Exhibition Association, the Western Fair Association of London, and the Canada Central Exhibition Association of Ottawa, respectively.

The President, Vice-President and the second Vice-President were appointed an Executive Committee.

The Executive are to arrange the programme for the next annual meeting, and set the dates of meeting.

It was decided to give the *Canadian Bee Journal* as a premium to the members of the current year.

Mr. DARLING and Mr. POST were re-appointed a committee to collect and forward to Professor Shutt of Ottawa different samples of honey to ascertain the percentage of water in them.

The Executive Committee were given full power to arrange and make an exhibit of honey, etc., at the Pan-American Exposition at Buffalo in 1901.

It was moved by Mr. HALL, and seconded by Mr. POST, that our very hearty thanks be tendered the Mayor, citizens and press of Niagara Falls for the very genial way they had treated us while we have been staying in their town. Carried unanimously.

The meeting then adjourned.

LIST OF MEMBERS FOR 1901.

Name.	Address.	Name.	Address.
Armstrong, James ...	Cheapside.	Kendrick, John...	New Dublin.
Beaupre, M. C.	Simcoe.	McLaughlin, H. D.	Vankleek Hill.
Bailey, John.	Bracebridge.	Martin, Wm.	Belmont.
Brenton, F.	Corbyville.	McLaughlin, Alex.....	Cumberland.
Brown, W. J.....	Chard.	McKnight, R.	Owen Sound.
Boomer, A.....	Linwood.	Morrison, J. C..	Painswick.
Black, Alex.....	Sonya.	McEvoy, Wm.....	Woodburn.
Blais, Adolphe.....	Glensandfield.	Miller, F. J	London.
Byer, J. L.....	Markham.	McReas, A. R.....	Bearbrook.
Couse, W..... ..	Streetsville.	Munroe, D. W.....	Martintown.
Craig, W. J	Brantford.	McNaughton, A.....	St. Raphael.
Coggshall, W. L.....	West Groton, N.Y., U.S.	Newton, John.....	Thamesford.
Chrysler, W. A.....	Chatham.	Nolan, Dennis.....	Newton Robinson.
Comire, A. O., M.D....	St. Francois du Lac, Que.	Overholt, Israel	South Cayuga.
Colson, J. T.....	Purbrook.	Post, C. W.....	Trenton.
Calder, J. W.....	Lancaster.	Pickett, Abner	Nassagaweya.
Davidson, J. F..	Unionville.	Pellet, Morley....	Belmont.
Deadman, Geo. A.....	Brussels.	Pirie, John.....	Drumquin.
Dickenson, Edw. E.....	North Glanford.	Reaman, Josiah.....	Carville.
Demars, August.....	Chapeau, Que.	Roach, R. W.	Little Britain.
Darling, J. K.....	Almonte.	Root, E. R.	Medina, Ohio, U.S.
Davidson, B.....	Uxbridge.	Ross, D. D.....	Martintown.
Dickson, Alex.....	Lancaster.	Sheriff, G. G.....	Clarence.
Evans, J. D	Islington.	Switzer, J. F.....	Streetsville.
Edwards, Albert.....	Rockland.	Scott, Warrington	Wooler.
Emigh, Martin.....	Holbrook.	Smith, R. H.....	St. Thomas.
Edmundson, C...	Brantford.	Sparling, J. W.	Bowmanville.
Fixter, John..	Ottawa.	Shaver, J. H.....	Cainsville.
French, Augustine.....	North Glanford.	Sibbald, H. G	Cooksville.
Feather, Alfred	Brantford.	Sleeman, Albert.....	St. Davids.
Gemmell, John.....	Lanark.	Somers, Wesley.....	St. Marys.
Gale, H. E.....	Ormstown, Que.	Salter, Jno. R.....	Wingham.
Gemmell, F. A....	Stratford.	Storer, Jas.....	Lindsay.
Goodfellow, Alex.....	Macville.	Shantz, Aaron	Haysville.
Heise, D. W.....	Bethesda.	Taylor, Alex.....	Paris.
Hershisher, O. L.....	Buffalo, N.Y., U.S.	Timbers, John.....	Scarborough Jct.
Holmes, M. B.....	Athens.	Thomas, Joshua	Dracon.
Hand, E. G	Fenelon Falls.	Taylor, R. M.....	Port Dover.
Johnston, Geo. E.....	Bracebridge.	Wood, Samuel.....	Nottawa.
Jeater, Wm. H.....	Kincardine.	Wood, Geo.....	Erasmus.
Jackson, Sydney J.....	Bowmanville.	Wismer, Isaac G.....	South Cayuga.
Johnston, Henry.....	Craighurst.	Walton, W. S	Scarborough Jct.

ONTARIO BEE-KEEPERS' ASSOCIATION.

ANNUAL MEETING.

The twenty-first annual meeting of the Ontario Bee-keepers' Association was held in the Town Hall, at the Town of Niagara Falls, Ont., on December 4th, 5th and 6th, 1900.

The President, Mr. C. W. Post, took the chair, and called the meeting to order at 2.30 o'clock p. m., and after an address of welcome had been given by Mayor Slater, Mr. Wm. Couse moved, seconded by Mr. John Newton, that a vote of thanks be tendered to his Worship for his kind words of greeting and welcome, which was carried amid applause, to which Mayor Slater replied in a few well-chosen words.

The Secretary, Mr. Wm. Couse, then read the minutes of the last annual meeting which, on motion of Mr. Darling seconded by Mr. Brown, were confirmed as read.

FINANCIAL STATEMENT

Of the Ontario Bee-keepers' Association made to the Department of Agriculture for the year ending December, 1900.

Receipts.		Expenditure.	
Cash on hand from previous year	$116 84	Grants to other Societies	$225 00
Member's Fees	111 00	Expenses of meetings	8 25
Legislative grant	500 00	Officers' salaries	75 00
Affiliated Societies' fees	45 00	Directors' fees and expenses	197 01
For use of stenographer's report	12 00	Printing	10 00
		Postage and stationery	23 40
		Periodicals for members	72 15
		Reporting	35 00
		Executive & revising committee expenses	34 50
		Engrossing resolution of condolence	5 00
		Auditors' fees	4 00
		Total	$689 31
		Balance on hand	$ 95 53
Total	$784 84		$ 784 84

C. W. Post, President.
Martin Emigh, Secretary.

Examined and found correct this 5th day of December, 1900.

E. Dickenson, Jr.,
W. Craig, } Auditors.

THE PRESIDENT'S ADDRESS.

By C. W. Post, Trenton.

It is with pleasure we meet again in annual convention to discuss the topics of most vital importance in our fascinating industry. And why should we not all be imbued with a feeling of admiration, being located during our sessions in one of the most charming localities on the face of the earth. On the one side by the mighty cataract of Niagara, the "thunderer of waters," surrounded by its mystic charms, representing strength which,

if chained, is claimed would run the factories of the world, light every city in the two hemispheres, and turn the wheels of commerce ashore and afloat; all this we have on the one hand, while on the other we are meeting and associating with those who are near to us in the great battle of life. With all this in our favor I can see no reason why there should not be peace and harmony in our ranks during our deliberations at this our annual convention.

The past season has been very unprofitable for the production of honey. While a few localities produced an average yield, whole counties were a total failure. Now, while this is the case, what are the results: honey has again advanced to its old time price, and with a cleared market and paying prices we have good reason to be stimulated and encouraged for some time to come.

I will here mention that your Executive Committee in 1899 saw fit to assist in making an exhibit of honey at the Paris Exposition, expenses of said exhibit to be borne by the Department of Agriculture at Ottawa; therefore, it was arranged as a Dominion exhibit, your committee having no power to act after the honey was contributed for exhibition purposes, although a large portion of the honey was furnished by the members of the Ontario Bee keepers' Association, and, largely to our credit, Canada was awarded a gold medal and diploma.

It will be laid before you for your consideration, the advisability of making an exhibit of honey at the Pan-American Exposition to be held in Buffalo in the season of 1901. In this you will want to find out what assistance can be secured for the undertaking; whether it is going to be a Dominion, Provincial, or an Ontario Bee-keeper's Association exhibit, and last, whether there will be anything in it if an exhibit is made.

I am informed by our Inspector of Apiaries that under his skilled treatment and instructions, that dread pest of the bee-yard, foul-brood, is fast disappearing, and we look forward with every assurance that it will soon be wiped out of this Province.

There will be other minor matters brought up for discussion, and I trust that they will receive your consideration and be dealt with in a business-like manner. There is one subject that has lately occurred to my mind that I would like to see brought up and discussed at this meeting; that is, the advisability of this Association forming some line of defence to protect its members against jealous, ill-natured cranks or blatherskites who think that no person has a right to keep bees. I believe if they were aware of the fact that we stood together in defending our rights, and also knowing that we are fostered by the Government, it would make them think twice before entering their petty so-called grievances.

In conclusion, I thank you for your courtesy in electing me your President for the past year, and I trust that you will assist me in making this annual meeting one of the most profitable in the history of our Association.

Mr. C. W. SPARLING: There was one thing touched upon in the President's address which I could speak feelingly on, and that was in regard to ill-natured neighbors. I have had some unpleasant experience with them. One of my neighbors brought an action against me for maintaining a nuisance on my premises. We threshed it out before the magistrate a couple of times, and he sent the case down to the Assizes, but fortunately I won the case, at considerable expense. The worst of it was that he, making it a Crown case, was at no expense, although losing; whereas I had to bear all the expense of my witnesses, counsel and so on, which seems rather a hardship, but such is the law I believe. If we could organize a defence association I should cordially approve of it; I should be very ready to become a member I live within the town limits, but on the outskirts of the town. The land around me is farm land. Next to me is a 100 acre farm. I have five acres of land where I live; the man across from me has four acres, and he is the man who complained. The man next to him has nine acres. You will see it is not within a thickly peopled part of the town. He complained first of the bees destroying his raspberries, and after that he said the bees were destroying his pears. In the Court he swore the bees came into the garden in large numbers and destroyed his flowers. He said the bees by sucking the juice from the sweet peas caused them to dry up. (Laughter). He got another neighbor, who grows raspberries, to swear that he considered he had lost twenty per cent. of his raspberries from the bees. He said he considered he had lost ten per cent. on his sales through realizing a smaller price, and he considered he lost ten per cent. on the berries that he was not able to ship at all. Another man said that the bees

came around his watering trough, and his horses would not drink on account of the bees. That was about the substance of his complaint, and of the evidence produced.

Mr. McEvoy: I think every man in the Province of Ontario should belong to the Bee-keepers' Union. It only costs a dollar a year, and it is the nicest way to settle up with these men. I have a case in mind where a man brought an action, but as soon as he found out he was up against the Union he dropped it I think it is in every person's interest in every village and town to belong to the Union.

Mr. F. A. Gemmell: We had some trouble in our own town. A party who kept bees came to me and told me he was going to be prosecuted for keeping a nuisance on the place; and, being a member of the Bee-keepers' Union, I sent and got some reading matter concerning the rules and regulations of the Union, and what they would do for anyone who belonged to the Union. I sent these papers to the lawyer who had the case in hand, and we never heard another word about it. I think it is a good thing to belong to the Bee-keepers' Union. Although the Union is nearly all American they defend their members, no matter what country he belongs to, whether Canada or the United States Mr. Post was thinking probably they were rather too good-natured, and we should avail ourselves of an association of our own; but that Union has done good work in the past, and is still willing to do good work for us, providing we are members. Every case they have had in hand has always been won by the Bee-keepers' Union. If the lawyer had been served with those papers no doubt, as in this case, the action would have been withdrawn altogether. There was not another word about it.

Mr. Sparling: There is no need for him to drop the matter unless he wishes. It costs him nothing.

Mr. W. Z. Hutchinson: The Union is for the purpose of defending its members; that is the main purpose, but there is no line drawn as to where those members should live. The members in Ontario are in the same position as the members in the United States.

Mr. Couse: How long would you need to be a member before they defended you?

Mr. Hutchinson: You must be a member at the time that the alleged offence is committed. After a complaint has been made against a man he cannot join the Union and ask them to defend him.

Mr. Couse: If he was afraid there was going to be a complaint he could join.

Mr. Hutchinson: I suppose so, if he saw it coming.

Mr. Gemmell: When I wrote to the other side about this case I have referred to, I told them that I was a member, and that this party was afraid of being prosecuted but had not been as yet. They wrote and told me that of course in his case they would not take any action because they would not accept a dollar from a man who joined the Union when he found he was getting into trouble. But they were willing to send us all the literature bearing on the question, and we could place it in the hands of our lawyer. He forwarded the dollar, and they sent the literature.

Mr. R. H. Smith: I did not think we could get protection from the Bee-keepers' Union. I used to be a member years ago, but when it dissolved I thought the new Union did not accept Canadians.

Mr. Gemmell: That is a mistake. They accept anybody.

Mr. Smith: It is not necessary to be within a city to have trouble with neighbors that like to be unpleasant. There was a farmer in the neighborhood of where I had an apiary. He complained about the bees destroying his pears. I was away from home and he wanted them moved forthwith. I wrote him telling him that I would see him when I came home. He was not satisfied; he interviewed the different lawyers in town, but he could not find a lawyer to take the case up. He was told it was absurd that anyone should complain about keeping bees in country places.

Mr. J. D. Evans: In the case of a prosecution entered in the name of the Crown I think it would be wise if the precedents or decisions that have previously been rendered could be placed before the Crown Attorney. I think in that case possibly the prosecution would cease. If it did not cease I think it would be a proper thing for this Association to complain of any Crown officer who prosecuted in the face of the decisions. The difficulty is that these officials are paid by fees, and the more indictments they can lay before the Grand Jury the better they are paid.

Mr. HEISE: If those decisions were brought before the judges and lawyers, as Mr. Evans said, I think probably the case would go no further. I was somewhat surprised a year ago in looking over the list of members of the United States Bee-keepers' Union to find that there were only four Canadians on that list. Considering the protection it affords it is a dollar well expended to become a member of that association.

Mr. DARLING: I was going to ask Mr. Sparling on what grounds the judge decided in his favor.

Mr. SPARLING: It was purely on the legal aspect. The prosecution stated their case and my counsel, in addressing the judge, maintained that there was no case made. He said they had not established a common nuisance. It seems that to be a common nuisance it must be a nuisance to the community at large. It may be a nuisance to one, two three or four persons and yet not be a common nuisance. It would be in the eyes of the law a private nuisance and a civil action for damages would have to be brought. The case was dismissed on the ground that it was not a common nuisance.

Mr. DARLING: According to that, Mr. Sparling scored half a victory, but not a whole one.

Mr. GEMMELL: I am very glad to see the judge had so much common sense. It is quite different from a case where a man that kept bees was prosecuted for maintaining a nuisance, and had to dispose of the whole lot. It cost that man quite a lot of money. We are more enlightened now. If we had only had the aid of the National Bee-keepers' Union that man at Port Elgin would not have lost anything.

Mr. SPARLING: Was it a magistrate's decision?

Mr. MCEVOY: It was down at Southampton before a jury. The judge charged the jury in that case, in favor of the bee-keeper. But it appears that that bee-keeper was rather cranky; the other man, who was a blacksmith, had a pig-pen. They were not on friendly terms, and the bee-keeper forced the law with the blacksmith to make him move the pigs, and the blacksmith went to law with the bee-keeper to make him move the bees. The more popular man of the two was the blacksmith, and the jury thought if it was right to move one it was right to move the other, although according to law the judge charged the jury in the bee-keeper's favor. The case was appealed and taken to Toronto, but the judge did not like to upset the jury's finding. The man wanted to appeal and go further, but when we found out how it was we let it go. Mr. Deadman, of Brussels, had a case with a lawyer who was bound to move Mr. Deadman, the bees and all. He instructed his lawyer to fight it out, and the result was Mr. Deadman won the case.

Mr. HUTCHINSON: I think we should remember that while bee-keeping in itself is not necessarily a nuisance, it may become a private nuisance. If a man is going to bring a suit against his neighbors he should bring suit for civil damages. If he can prove those bees have damaged him he may get damages. But the trouble in the States has been that people have gone to work to prove that bee-keeping was a nuisance *per se*, in itself, and that is where the point was turned every time.

Mr. POST: I think we can all agree with what Mr. Hutchinson says in reference to bees being a nuisance. About three years ago I brought my bees home to Trenton a little too early. There was a large canning factory right in front of my place, and the bees made a raid on the pears, and they had to close down business for three days, and they had from two to three hundred hands employed. I never knew of it myself until a year after. I heard of it, and spoke to the proprietor about it. He said it was the case, but, he did not say anything about it because he knew it was not my fault. He said he knew it was the nature of the bees to collect sweets after the honey flow has ceased, and the doors and windows of the factory should have been screened. That man is at one extreme; there are not many like that. I found another man who approached me one day. I had a yard of bees about 30 or 40 miles north. He wanted to know when I was going to take them home. I told him about the first of August, which would be in about ten days. He said they were a terrible nuisance to him and did great damage. I told him that I was sorry to hear it, and if they were I would pay him for it. I asked him what they were doing. He said they were around his watering trough drinking the water out of it. I told him he could place a piece of cotton over the trough. He wouldn't do that; he would rather come down there four or five times a day with a broom to annoy the bees. I got a couple of salt barrels and filled them with water, and they all imediately commenced drinking out of the barrels. It is easy enough for us to guard

against these things. Wherever we have our bees located we should do all in our power to prevent our bees becoming a nuisance to any one.

Mr. JOHN NEWTON: I agree with the facts you have given. Especially when you come to small villages; we must try to live peaceably with our neighbors, and we have to sweeten them up a little. I know when I lived in the centre of our village the lady who lived next to me was complaining that she could not go outside the door without the bees coming after her. I did not know what to do at first. I did not want to move. So I used to hand her a section of honey now and again. Then she could not manage to hoe her potatoes, and I came to the conclusion that I had better get up an hour earlier in the morning and hoe her potatoes. We got on splendidly afterwards. I was not married then. (Laughter). When I was west of St. Thomas on a farm we got along splendidly. They could cultivate their corn in a big field next to where the bees were, and we never heard any complaint whatever. The year after I went away, the gentleman who took care of the bees seemed to be one of these men who are forever rubbing folks the wrong way and ruffling their feathers; and the outcome of it was that the farmer said when he took his binder out, he had to take hold of it and draw it down the lane before he dared hitch his horses to it. Another cause of nuisance is allowing old comb to lie aronnd. I think every bee-keeper ought to take every precaution to prevent the bees, as far as possible, sipping at other things while there is no honey in the fields for them to get. With regard to fruit, I do not think bees will puncture fruit until it is so ripe that it is almost dropping off and wasting; and I think a fruit grower who does not pick his fruit until it is so far gone that the bees touch it, does not know very much about fruit.

Mr. DARLING: I think there was something in the *Canadian Bee Journal* two or three months ago about the fruit question. One man said he thought there ought to be a law framed that nobody should be permitted te keep bees unless he sowed bee food. I had quite an experience some years ago, and that experience has confirmed me in the statement made by Prof. Cook and many others that bees will not destroy fruit unless it is first broken by some other insect, or becomes unfit for use by over-ripeness. I had 150 colonies of bees sitting in one corner of an oblong field of about an acre and three-quarters; and not more than five or ten rods away I had a strip of Shaffer raspberries. They are very soft and unfit for shipping. They became riper than we could pick without crushing, and they ripened so fast that we could not pick them as they ripened. I had somewhere about a thousand plants. My bees went on those raspberries. The honey ceased coming in, but I failed to find them on a berry that had not ripened so much that the juices were between the seed containing parts. If the dew or a little rain or mist would start the juices flowing, then the bees would go at these berries. When once the skin that envelops the bulb that the seed is in becomes broken the bee will suck up everything that is in it. I handled fruit some time ago, and more or less of the damaged fruit I used to bring home, and I have seen bees on damaged pears so thick that you could not tell what kind of fruit they were on, and peaches the same; and yet, until the skin of the fruit was broken the bees would never interfere with it.

Mr. MCEVOY: You will find that a real practical fruit grower picks his berries up close so that they will be in good order for shipment. You will never hear any complaint from that man about the bees. I have four acres of strawberries, and I have no trouble of that kind because I pick them when fit for shipping. These fellows who leave the berries until they are wasting must not blame the bees.

Mr. COUSE: I think people are becoming educated to the fact that bees are a benefit, not a nuisance. I know at the present time I have two applications to take my bees to people's places. One man in particular says the nearer he is to my bees the better clover seed he gets. I know one person that goes in extensively for raising Alsike clover seed. A few years ago he was afraid there was not enough bees to visit his clover in the fields in the vicinity that our friend Pirie's bees were in. He said, "I cut my clover before it bloomed; and then every other person's clover was dead when mine was in bloom, so that his (Pirie's) bees could visit my clover." This man wants me to bring the bees to his field. I think we can go along this line and educate people. It is ignorance to a great extent and ugliness; they are a bad thing together. If you can educate a man to the fact that he is being benefitted you do not have very much trouble on this line.

Mr. GEMMELL: Are we not getting away from the point? Do you think it would be advisable for the Ontario Bee-keepers Association to organize an Association for the

protection of the bee-keepers of Ontario, or do you think it is just as well to let the matter stand the way it is, and let every man join the International Bee-keepers' Union?

Mr. McEvoy: Yes, emphatically.

Mr. Evans: I think it would be inadvisable to establish any other Union. We already have difficulty in getting members to join the present Ontario Bee-keepers' Association. I think the institution on the other side is ample for all our needs. I quite agree with the President, that there are circumstances in which bees become a nuisance.

MOVING BEES TO FALL PASTURAGE.

By R. H. Smith, St. Thomas.

In many of the best honey-producing districts in Ontario, the main crop of light honey is gathered from white and alsike clovers and the lindens, and in my locality the clovers yield from about June the 18th to sometime in July, depending on the state of the weather. About July 12th, if the season is favorable, the linden commences to bloom and bees start to work on it, and in some seasons they gather a lot of honey from this source. Unfortunately, it is very uncertain, as in the season just past it did not yield honey but for a few days, and then very little. Brood chambers are at this time crowded with bees and brood in all stages, with very little honey. What surplus they may have gathered will be in the supers or top stories, and, as is often the case, when all the clover honey is taken off and linden fails, the bees are in a starving condition by August 1st. Of course the wise bee-keeper will have provided for such a contingency by leaving some of the honey; but I have seen apiaries where this has not been done, and the bees have starved to death in August. In some localities, if there is sufficient rainfall, there may be sweet clover, catnip, etc., to keep the bees alive; but for a number of years in succession we have had dry summers, with the result of no bee pasturage in the latter part of July and August. When there is no honey being gathered by the bees the queen stops laying, and consequently all the bees are old when winter commences, and that is one of the main reasons for bees dying in such numbers in winter and early spring. A great deal of this loss may be prevented in some seasons by sowing buckwheat; but where there are many colonies the average bee-keeper may not be able to sow enough to have a succession of bloom at one time, or as it sometimes happens, there may be a large acreage in bloom at one time, and owing to unfavourable weather it may not yield honey.

Some of you may be wondering what all this has to do with moving bees. In my own case there is no buckwheat sown within reach of any of our three apiaries; but about from eighteen to twenty miles east nearly every farmer will have a field of buckwheat—from five to ten acres—and as some farmers sow it early it gives a succession of bloom from about August 1st to September 15th. While every patch may not yield much honey the bees usually get enough to keep up brooding, and when the atmospheric conditions are just right, as they are likely to be at least part of the time, it will yield abundantly, insuring their winter stores with some surplus, and what is quite as important, a fine lot of young bees. However, before we can have this, we may have to transport our bees to this location, unless we can provide for them at home.

To prepare bees for moving the bee-keeper has to be guided by a few simple rules: First, as the moving is usually done in warm weather they must have plenty of ventilation. One writer, when advocating a certain style of brood frame, says it is only necessary to fasten down the cover and put a wire screen at the entrance, and the hives are ready to load. While this may do in cool weather, or for weak colonies, it would never do for strong colonies in warm weather, as they would be sure to become too hot I have usually moved full colonies of bees with the extracting super on, and this has to be fastened down with two strips, one each front and back; a wire cloth screen is fastened on top of the super, with screws so arranged that it presses the frame down on the top bars and prevents them moving sideways, and at the same time provides a space of about two inches above the frames, where the bees may cluster. The bottom board is fastened on with VanDuzen clamps. This preparation can be done through the day, and as soon as the bees stop flying in the evening the entrance screens may be put on with two small

wire nails. It is some trouble to smoke in the bees of thirty or forty colonies on a warm evening, so it is best, if possible, to choose a cool day. They are now ready to load, which is done by placing the hives so that the frames run across the waggon. I find a platform waggon with strong springs the best vehicle; the one we hire will carry thirty two story hives in one tier, with covers, smoker and tools, or when they are light a few single-story hives may be placed on top of the load. Then I have my one-horse waggon that will carry from twelve to fifteen hives. I drive this and let the teamster drive on ahead, so that I can keep an eye on the whole. After some experience with hives that leaked bees, I found it a good plan to have a mosquito net to cover the load (especially when one has a nervous teamster), so that if any bees escape from the hives they are still confined and cannot scare either horses or driver. If possible I try and have everything loaded up over night, so as to make an early start in the morning; the horses are trotted where the road is good, and we usually make the trip of eighteen miles in between three and four hours, so that the bees can be unloaded and released before the sun is very high. I believe some beekeepers move only the lightest or weakest colonies where they do not move all. My plan, if I cannot move all, is to move the strongest or those with the most bees that are fit for work; then if there is only a short flow they are ready to make the most of it. The season of 1899 was very unfavorable for the growth of buckwheat and other fall bloom, and it seemed doubtful if it would pay to move bees, but I thought I would try a few and so took forty colonies. They gathered enough for winter stores and came out in the best condition in the spring. This past summer I took a larger number and they not only gathered their winter stores, but gave an average surplus of about 25 lbs. per colony.

I have come to the conclusion, that, where a beekeeper does not have full pasturage for his bees, it will pay him to move them if it can be found within a reasonable distance.

Mr. GEMMELL: I have had quite an experience in moving bees at different times of the year, but I never, until the present summer, moved them to the buckwheat. Years before, I have moved them in the fall to get the fall flow. I have used different kinds of ventilation, and different kinds of vehicles for conveying them. With regard to ventilation, it all depends upon what time of the year they are moved, and what time of the day. Mr. Smith says he just gives the super with a wire screened rim about two inches deep, and closes up the entrance with wire cloth. That in my case would never have done at all, considering the distance I took mine. I had a wire screen underneath the hive and one on top; the one on top had two inches of a rim; and there was either a full super or a half super on top as well; but I found before I had gone five miles on the road I had to water those bees or I would not have had any bees when I got to my destination. It was a close, murky, warm day. Their tongues were sticking out through the wire netting on top just like so many needles. I had to water them three times in a distance of about 35 to 37 miles. Coming home again we dispensed with so much ventilation. I had Mr. Newton with me to help me. We just had a wire screen on top, two inches deep, and wire cloth at the entrance; and sixty-four hives were put on the waggon; it wasn't a spring waggon, either. I had always used that before. But in this case we had an ordinary farmer's hay-rack filled with straw about a foot above the outside of the rack; on top of this I had laid a platform of boards and thirty-six were put on there, and I think thirty-two on top of that again. We brought them all home, in one load, whereas I took part of them out by single rigs, and part by train. I had four trips in taking them out, and I brought them home in one trip, minus supers. In regard to whether it pays or not, I am not prepared to say very much this year because it is my first year. I am not sure whether it would pay every year to move them, but this year I think probably I was paid well enough for the trouble, but not anything more. I think I secured honey enough to pay for the moving, but I do not include the labor of taking them at all. That will have to go against the bees. I will be better able to tell next spring whether there will be more young bees, and whether they will be in better condition than those I left at home. I know that you can move bees in the fall short distances without any ventilation at all. I have brought bees home five and seven miles about the middle of November when they had a wooden cover on top and a wooden strip right across the entrance, but they were not closed for more than three hours at the most; but you could not take them two miles on a hot day in the same way. The wire

screen in my case was all over the top; the screens I had in the bottom were also used in the summer time.

Mr. J. FIXTER: You first of all put a two-inch frame on the brood chamber and then put a wire screen on top of that.

Mr. POST: Do you move them in August, in the hot weather, without the super?

Mr. GEMMELL: I did not this year. I had a full story or half story on top; but I had to give them water. I started at five o'clock in the morning and we were on the way all day. The frames ran crosswise on the wagon.

Mr. NEWTON: I did not expect to have anything to do with this until my friend Gemmell wrote me. I never thought there was any great task in moving bees if you had the means ready and handy to do the work with. Mr. Gemmell undertook to move quite a long distance, for when you draw bees 38 miles it is quite a long trip. If I were moving bees that distance I would not leave it till the morning to start. I would start between ten and eleven o'clock at night, and draw all night, and I would be near my destination in the morning. At night is the best time to draw bees in the hot weather.

Mr GEMMELL: I agree with you there.

Mr. NEWTON: Mr. Gemmell's experience was they were shut in the first night and all the next day, and on account of a storm they were shut in again the next night. That was a long time for bees to be shut in, in a hot spell of weather. I know in drawing bees at St. Thomas we used to leave about 11 o'clock at night, and we would usually reach our destination between eight and nine the next morning. That would be a distance of about 18 or 19 miles. It used to be twelve o'clock sometimes before we got started. And I think if you had started an hour or so earlier it would have been better. We made fairly good time the second day over the roads. You want your bottom boards fastened; a good-sized entrance on top. I like a two-inch entrance myself, or even more; and I do not think there is anything equal to an old hay rack with lots of straw for drawing bees.

Mr. GEMMELL: I endorse that. That is the reason I got you there. I did not know how to do it myself. I had very little faith in the thing before. I had always used a spring waggon, but I have come to the conclusion that a large well-loaded hay-rack is all right.

Mr. NEWTON: When I went Mr. Gemmell said, "Do you think you can get them all on?" I said "Yes, and a great deal more than you have got here." He said "Probably we had better go down to the hotel and get that light waggon done there." I said "No, we will take them on a hay-rack or nothing." We got them loaded, but we had not gone very far on the road when the horses got a little tired pulling through the hard sand, and the waggon rack began to shift back. Mr. Gemmell said "If we ever get to Eastwood we will ship them." I said "No, we will carry them through if the waggon will hold us up." After we got through Woodstock he began to brighten up, and we got to Stratford in good time. I think he felt satisfiied that the hay-rack was the proper thing to draw bees on. I believe in moving to fall pasture, but if we have got to move the distance that friend Gemmell has, I do not think it is a paying thing. There is only one thing to be gained by it. Even if we do not get as much as much stores as we expected, I believe the bees will be in that much better condition. When I saw Mr. Gemmell's bees and my own bees I felt sure his bees were in better shape than my own for going into winter quarters; there were more young bees in this hive when I saw them last than were in mine, because they were breeding upon the buckwheat, and the chances are that they will winter better on that account. I think next spring he will think he was paid for the moving.

Mr. SMITH: Mr. Newton, what advantage has the hay-rack over the springs?

Mr. NEWTON: The spring waggon has too much of a quick jolt.

Mr. SMITH: Does not that depend upon what kind of springs you use?

Mr. NEWTON: I have seen a good many. Mr. Alpaugh thought his was the best waggon in existence; you could put on probably about 16 or 18 hives; the faster you went the nicer it rode; if you went slowly and struck a stone the motion was so much the quicker. With the straw there is no motion like that at all. The straw forms just a gradual, easy spring. We put it a foot higher than the sides of the rack. Straw does not give the motion that springs give. You cannot get enough on a spring waggon to make it pay.

Mr. SMITH: In our section of the country they use springs such as are found in waggons that are used to draw milk cans on; that is a different kind of spring, but many farmers use them for drawing their loads on. You can get them at different grades, and they do not spring so very much, but still sufficient, and you can get a platform as large as you like and apply it to any waggon. Straw is not very convenient to us, but we find the springs I speak of just the thing.

Mr. NEWTON: I think any farmer is sure to have straw. I know that where Mr. Gemmell and I were we struck any amount of it.

Mr. COGGSHALL: The springs are all right, and there is a waggon such as is used in lumber yards; they are the thing to use. The hay is all right, but the springs are much more convenient; you have not got that bulky hay to contend with, and the extra rack on top, which makes quite a load.

Mr. PICKET: Mr. Coggshall has struck it. I happen to be one of those men who build those waggons, and I find that you can have the springs strong enough. Have them a good length so that they have not got this teetering motion. It is not the Armstrong spring that we want, it is what we term the hog-nose spring; get them heavy enough, so that they will take fifty or sixty hundred, and load up until your wagon will ride easy. I had a case in point. I had a son who was suffering from peritonitis, and some one said, "Can you move him on the democrat waggon?" I said that we could. There were two or three neighbors, and I said, "Just get into the waggon. I want you to get in; we will load the wagon down until it rides easy, and then we can drive as fast as we like." That is the kind of wagon we want, one with heavy springs, so as to take all the team can draw. If you have not bees enough, you can find stones or something. You are not bothered with shifting of the hives or any of those inconveniences; and they are quickly handled; they are within reach, and you can load and unload quickly.

Mr. HOLMES: There is a point that has been passed over by the gentlemen who have had experience in moving bees, or else I did not catch it; that is in reference to an attendant at the place where they left the bees, when such is necessary; and another point is as to the date when the bees were returned.

Mr. SMITH: In my own case I simply leave them with the farmer, and I leave them super room enough so that they are not likely to overflow or get up a swarming fever, and although they are there from the first week in August till the middle of October they do not want any further attention, only to see that the covers that blow off should be replaced.

Mr. DARLING: How late will those bees breed, where they have been taken to fall pasture?

Mr. SMITH: When we brought them home in October they were in all stages of brooding.

Mr. POST: I find when the buckwheat ceases to bloom the cool evenings come on, the brood diminishes very fast, and by the first of October it was out of the hives.

Mr. GEMMELL: That was my case.

Mr. POST: October is too early for me to bring my bees home. I bring them home about the first of November. This year I unloaded them the 7th November. I am determined they shall not be a nuisance to anyone in the town. I bring them home to winter. I do not move on waggons at all; they are all brought home on the train or by boat.

Mr. GEMMELL: That would be almost too late to leave them in case of bad roads.

Mr. HOLMES: In case it should happen that after you bring your bees in from the pasture grounds on the first of November it should continue to be cool and perhaps showery weather until you want to put them in winter quarters, what then?

Mr. POST: They are in winter quarters now without getting a fly, and I have never seen a particle of difference. I have brought them home in November, and I did not see a bee outside of the hive until they were moved out in the spring, and they wintered perfectly. This fall the last load I brought home was brought on a steamboat about eight miles, and they were then transferred to a car. It was on November 7th, a wet day, and they were unloaded the next day, and they were placed in the cellar, and I finished them on a Saturday, I think. They had no flight. But the first load did have a flight, and I have marked them to see if there was any difference, but I have never noticed any difference so far. I am speaking of other years.

Mr. BROWN: In that case it would be about as well to put them into the cellar immediately after moving.

Mr. POST: Yes. When I put them in the cellar they are simply out of the elements; they are set in the cellar with the windows and doors open; they are just under shelter you might say; they get the same pure air as though they were outside. They are left in that condition until after the holidays if the weather continues warm; that is, not extreme weather. I allow the place to be light; you can read anything in there.

Mr. GEMMELL: That is until cold, freezing weather?

Mr. POST: Yes. The cellar is as dry as this room.

Mr. BROWN: Do you find you lose any by their not finding their way back to the cellar?

Mr. POST: Do you think they fly? If a bee wanted to fly out and get lost I would be perfectly willing to let him go; it would be an old straggler that would come out before March.

Mr. SMITH: I suppose you would give them all the attention necessary, such as removing supers, etc?

Mr. POST: Certainly. When I extract the last time I have my feeders with me and I extract as I go along. The honey is drawn right from the extractor and put in the feeders, and the whole thing is done up as I go along. When I get through extracting I will guarantee they are all right for the winter.

Mr. DARLING: You feed extracted honey back to the bees?

Mr. POST: I do not want any surplus honey to go in the brood chamber. I feed with a top feeder, and I can feed thirty pounds at one feeding. I just weigh it right out in one bulk, and the next morning it is generally taken off and changed to the others. Sometimes there will be thirty or forty that do not require feeding, and then you will come to one probably that is quite light. You all know how it is; they will not be all alike.

Mr. DICKENSON: In moving bees does Mr. Newton set the hives right on the straw?

Mr. NEWTON: I make a flat platform of boards, and on that I put the first tier of hives. I put down some ordinary carpet tacks here and there so that the heads will sink both ways, into the platform or bottom of the hives, so that there is no shifting in any way.

Mr. CRAIG: The question before us is not so much whether moving bees pays or not. We have had some experience along the line of moving, and it has paid so far as the amount of honey is concerned, and the feeding up for the fall, but I think some of us have found, when the spring comes and the lighter honey is being stored, we have had trouble with the bees bringing up the dark fall honey from the brood chamber and mixing it with the light. That, I believe, is a great drawback to fall pasturing.

Mr. POST: They can be manipulated so that there will be nothing of that kind. I have a sample I can show you. My first extracting and my last extracting is water white, and they wintered on dark honey.

Mr. CRAIG: There is no doubt, as far as results are concerned; we have been satisfied that moving bees pays well. There was one season I remember we had pretty nearly one hundred pounds per colony of surplus after giving our bees plenty to winter on. We are in the city and we have the city drays and it gives us an advantage there. We can load on about fifty or sixty colonies, and the covering used, of course, is the wire screen as described. We have also used a portico screen in the front, which, I believe, is a decided advantage. This portico is the full width of the hive and, I believe, has a decided advantage in allowing the bees freedom that they would not have if the entrance had been closed by a mere strip of wire cloth.

Mr. NEWTON: I would say that the portico in front was a disadvantage for the simple reason that when you get to your destination if the bees are on the outside, as they are in a good many cases, when you take off the portico the bees are liberated and thus are lost. They will never find home; they have never had a chance of marking their location and they are gone forever. I think all bees should be kept inside until they are put out, and they will mark their location.

Mr. POST: The porticos also take up too much room in a car. If you want to put 160 or 170 in a car you do not want any porticos. Besides, in liberating, they are all right there in a bunch, and as quick as you let them out they are in the air at once. I

liberate my bees by the screen at the top. If the entrance is moved out and the sun cap is put on and the honey board, they do not come out with such a rush. I can put 160 or 170 in one yard, and they can go to work at once in gathering pollen. I have never seen them get mixed up and a lot go to one hive.

Mr. COGGSHALL: If you put on supers for extracting honey, just before the white honey comes, until they have got some of that which is below up there, you will have that dark honey in the extracting combs. Take them off and put on your boxes, and you will not only retard swarming but pretty nearly stop it by that way.

Mr. CRAIG: Have none of the members found this has been continued during the season; that is the matter of bringing up the dark honey from the brood chamber or is it merely in the first rush in the season?

Mr. POST: I convert my dark honey into bees. I do not put my surplus boxes on until the clover is yielding honey, and the buckwheat honey is all consumed before that. I keep uncapping and putting frames of honey in the centre, and I have a perfect brood nest from one side to the other.

Mr. DICKENSON: As to carrying dark honey up into the super, I think the difficulty could be overcome just in the way mentioned in the first place. Mr. Craig wished to know whether there was any member who had had experience in connection with the bees continuing to carry up this dark honey. The working up of this dark honey into brood I think is the right idea. Uncapping it right in your hive before the clover blossoms have come out at all, before you put on your supers for your good clover honey.

Mr. GEMMELL: I am willing to take all the risk of getting the dark honey; if I can get it I will take good care it does not go up stairs. What I cannot turn into brood I will have in such a shape that I can take it off, and that it can not get into the white.

Mr. SPARLING: I am in a locality where I usually get some buckwheat honey, and I can assure Mr. Craig that he need not be alarmed about the bees taking up the buckwheat honey into the clover honey. In fact I would not worry at all if the bees did take up a little in the sections to start with.

Mr. DARLING: A number of gentlemen here, yourself amongst the number, Mr. President, have intimated that we do not need to know whether there is much or little of dark honey in the hives—that there will be just enough and none to spare of this dark honey when the white clover honey starts to come in.

Mr. POST: I think if you get a powerful brood that they will consume the whole of it before the clover blossoms. There is enough to carry them through. If there is not give them something just before the clover comes in. Do not let them run out. I try to have my nine-frame Langstroth hives, without sun-caps on, weigh 75 pounds when they are put in the cellar; and I never have any too much honey.

QUESTION BOX.

Q. What are we going to do for bee pasture, seeing the foliage of the basswood is being destroyed by worms?

Mr. FIXTER: The attack began this year again by the caterpillar, but there is a parasite that is killing it so that our trees came out all right this year.

Mr. DARLING: There two classes of worms destroying the basswoods. We had a terrible pest in our section a year ago this last summer, in the nature of what is called the forest tree tent caterpillar. It made our basswoods look as if they had been riddled by hail. Instead of building a tent in the fork of the trees they have their web right along the limb, and as soon as they get a little larger they are found in clusters on the trees, but never in webs. I presume it is for this reason the term tent caterpillar has been applied.

Mr. BROWN: I noticed two years ago this tent caterpillar was very destructive on nearly all kinds of green foliage, but this last season very few of them could be found.

Mr. DARLING: There was a parasite around our section. I do not know whether others were troubled with it or not; it was a little larger than the one that has been referred to. A year ago this last fall, just when the tent caterpillars were in the helpless state of the cocoon, we had a large flock of blackbirds visit us for about half a day; they

made a terrible chatter, but they hunted in every nook and corner and destroyed every cocoon they could get. It is what is termed the crow blackbird.

Q. Which kind of bees is the best?

Mr. NEWTON: That is a pretty hard question to answer. I suppose we all think we have got the best kind of bees. For my own part I have had the cross with the Italian and the Black and they seem to be satisfactory to me.

Mr. POST: That would not answer in my case. I want the Carniolans crossed with the Italians, and a very small proportion of Italian at that. In my experience this season with two apiaries, one having 110 Carniolans and the other 108 Italians, the Carniolans through the whole season doubled the amount of honey gathered by the Italians. Besides, I got no increase from the Italians, and I got 65 from the Carniolans.

Mr. HUTCHINSON: How about the locality?

Mr. POST: I couldn't see any difference. They were five miles apart. When they were taken to the Murray Canal for Golden Rod and buckwheat there was no difference at all, I am sure, because they were within a distance that they could reach each other.

Mr. HUTCHINSON: You prefer the pure?

Mr. POST: No, I like them crossed. I began with pure queens, and I let them cross with the Italians first, and then I raised queens from those and they would mate them with what we call pure Carniolan drones.

Mr. HUTCHINSON: There would be a preponderance of Carniolan.

Mr. POST: Yes; they build up better in the spring. That is my experience from 1897.

Mr. GEMMELL: There is a great difference in Carniolan blood. I find there is quite a difference in the working qualities of bees from different Carniolan queens, just as there is from different Italian queens. Mr. Hall would tell you the same thing if he were here. He was at first greatly tickled with the Carniolans, and I don't think he cares anything about them now.

Mr. POST: I could see no difference.

Mr. GEMMELL: You probably got a good strain first.

Mr. HUTCHINSON: Where did you get yours, if it is a fair question?

Mr. POST: From Mr. Holtermann. He was at my place, and we went hunting one day, and the wind blew very hard and we were disappointed, and he told me if I would send him a little string of game some day he would make me a present of half a dozen Carniolan queens. I sent him along some ducks, and he wrote me the next summer, about the middle of June, asking if I was ready for the queens and I told him yes, I was; and he sent them along and I introduced them. I do not know where they came from. I have kept bees as a specialty since before the organization of this Ontario Bee-keepers' Association, and I have tested all kinds of bees, and they are the only bee for me to-day.

Mr. PETTIT, jr.: Do you find any difficulty in hiving the swarms?

Mr. POST: We do not have any swarms to hive. When the basswood is in bloom or about half over, I make a two frame nucleus and give them a young queen, and then I move them to buckwheat, and I go through them after they are moved and give them two more frames from the old colony, and just let them go and they make the very best colonies I know of.

Mr. HUTCHINSON: Carniolans have been called great swarmers.

Mr. POST: I do not find it so. It was a case of superseding queens that caused any swarms I had.

Mr. GEMMELL: I do not think there is another man here who could handle the bees Mr. Post does and have so few swarms.

Mr. POST: My neighbors do it.

Mr. HUTCHINSON: What is your surplus from?

Mr. POST: Clover, basswood, and buckwheat.

Mr. CRAIG: I have of course been connected with the same bee yards as Mr. Holtermann for some years, and I perhaps know a little of the Carniolans to which you refer. I believe we have had the same breeds in our own yard, and yet my experience is different from Mr. Post's. It is strange. It may be locality, or it may be in the line of management. My own opinion is that it is more, perhaps, in the line of management than in locality. Ours is the eight-frame Langstroth hive.

Mr. POST: I don't think there is any good in them. I use a larger hive and give them plenty of ventilation.

Mr. NEWTON: I have always followed the same practice as Mr. Hall in breeding queens. I have always bred from honey-producing stock. If I find a good queen I have kept her and bred from her; and that is the way I think it should be done in every yard to get good queens for honey production.

Q.—Which is the best size for hives? eight, nine or ten frame?

Mr. NEWTON: I heard Mr. Craig say that his was an eight, and Mr. Post said his was larger. It is the same as the last question; we all have our own. I run a nine frame, and I think mine are the best.

Mr. POST: I use a nine. If I were going to change to a different kind I would have a ten-frame.

Mr. DICKENSON: I run a nine, which is between an eight and a ten, so I think I must be right.

Mr. SMITH: We have nine-framed hives. I think a ten-frame hive would be heavier than most of us would want to handle. I find mine satisfactory.

Mr. COGGSHALL: Mine are principally ten-frame hives. I have some eight-frame, but I prefer a ten-frame Langstroth for extracting honey. I have got Kidder's, and there are some eight frame hives that are equal to a ten frame hive; mostly all of them are.

Mr. NEWTON: I remember working in one yard where I think there were somewhere about ten different sized frames, and I think there are a good many that way.

Mr. HOLMES: Before that question is dropped would it not be helpful if the house were divided for a show of hands, so that we might really know which hive was received with the greatest amount of favor, the eight, nine or ten frame.

Mr. COUSE: That is a difficult matter to decide. When you mention a hive, what do you mean?

Mr. EVANS: Most bee-keepers think they have the best. I am an exception. I have the eight-frame Langstroth hive, and I do not like them at all and, only for the expense, I would change. It is all right for the summer time. I happened on a few of those old Jones hives, and they wintered the best last winter, and I had the most surplus honey out of them of any hives I had.

Mr. FIXTER We have been trying to test them and to prove which is the best, the eight frame or the old Jones, and two other hives. Of course the last two seasons have been so very poor we have not drawn any conclusion. So far the Jones frame gives us as good results as any.

Mr. NEWTON: I am afraid if our friend Hall were here he would be apt to get up and say Quinby.

Mr. GEMMELL: Or Hedden.

Mr. HEISE: I will take Mr. Hall's place. (Laughter)

Mr. NEWTON: If the members wish to take a vote on the question I am perfectly willing, but I do not think it would do any good.

Mr. HEISE: This is a question that has been discussed in the journals and at meetings all over. It is a matter that will have to be decided by every bee-keeper according to the locality in which he lives, and according to his particular management.

Mr. HOLMES: I will then withdraw my request for fear of getting further and further in the haze. (Laughter.)

Q.—Are propolis quilts an advantage or disadvantage on either supers for section or extracting frames?

Mr. NEWTON: I think the question might be answered by both "Yes" and "No".

Mr. GEMMELL: It is a disadvantage all around.

Mr. NEWTON: I do not know that there is any particular disadvantage in it when it comes to extracting honey, but in the case of comb honey it spoils the sections and makes them unsaleable. I read an account in one of the journals not long ago where propolis was becoming in great demand. If so we will have to try and get it on our quilts and scrape it off and sell it to the doctors.

Mr. DARLING: I thought the question might be quilt or no quilt.

Mr. GEMMELL: I should say no quilt at all.

Mr. SMITH: Would you use a cover instead of a quilt?

Mr. GEMMELL: Yes, every time. What is the use of the quilt? You cannot use it on top of the sections; it is of no use except to soil the sections.

Mr. SMITH: Not necessarily. If you use a proper bee space you will not get propolis on it at all.

Mr. McEVOY: Wouldn't it be better to have the proper man?

Mr. SMITH: Use an oilcloth.

Mr. NEWTON: That is a quilt all the same.

Mr. POST: I think a quilt is a perfect nuisance for either extracted or combed honey—a dauby, messy thing. A honey board is away ahead of that. In using the quilt for extracted honey the bees will build up propolis right along each edge of the top bar to the quilt if it does not lie down perfectly, and when you go to put the frame in the extractor there is a great lot of propolis to scrape down. It is always in the way, mussing up everything; whereas your top bars will be perfectly clean without a quilt. I never use a quilt, and I really think, from what I have seen of them in other yards, they are a great nuisance. There is five-sixteenths of an inch space between the honey boards and the top of the frames.

Mr. DARLING: You do not live in my section.

Mr. SMITH: We use the quilt that gives that proper space, too, without having any propolis on it, and if the quilt is made as we make them, of half inch bevelled slats and the cloth glued upon them and then painted, it will last for many years. It gives the proper bee space and we have no surplus propolis at all where the space is right. I would be afraid in a location where it was not shady that it might be too hot without a quilt. The slats afford a certain amount of ventilation.

Mr. POST: It is quite cool, too, in cold weather. I should think the board would be the best, take it all round.

Mr. GEMMELL: I never had any comb melt down on account of the heat. A shade board is laid on top of my cover.

Mr. SMITH: We do not find anything of that kind necessary. We use a quilt in stead of a shade board.

Mr. GEMMELL: I want a shade board every time unless I am under trees.

Mr. SMITH: Mr. Coggshall tells me he uses oil-cloth. Does he use it on sections?

Mr. COGGSHALL: Yes, on top of the sections, and then a Brussels carpet on top of that.

Mr. SMITH: Do not you find a certain amount of propolis along the edge of the sections?

Mr. COGGSHALL: Yes, some.

Mr. NEWTON: I feel sure that the proper way is to have quilts as Mr. Smith mentions. I find a great advantage in using a quilt. For instance, take it in the fall or in the spring when you want to look to see how full they are underneath, you have got to put your knife in and break open the whole top when you have the board. With the quilt you have simply to double it back and peep in; and then there is that great cracking sound with the board.

Mr. GEMMELL: It is not necessary to have any cracking sound at all.

Mr. DARLING: Mr. Hall one time said he had a strain of bees that gathered no propolis and very kindly gave me a queen. I told him the strain of bees or the locality might have something to do with it. The queen did not do any better than my own, although she was a fine bird when I got her; but her bees gathered in propolis as well as any others.

Mr. NEWTON: Mr. Post uses a quilt in the shape of a honey board. Mr. Smith's and mine is a board, and yet there is cotton under it and it can be easily rolled up and easily laid down, and every section is perfectly clean without any scraping. The same in extracting. They don't build that up; they are just as clean as the sections are on the top of the top bar.

Mr. HEISE: Another advantage of the quilt in examining a hive is that you can loosen a quilt at one corner, and you can put a little smoke in there and drive it right down to the brood chamber, and you can not do it with a board.

Mr. NEWTON: We will ask all those in favor of quilts to rise to their feet. (Eighteen rose).

Mr. NEWTON: All in favor of no quilt rise. (Twelve rose).

Q.—Is golden rod a good honey plant?

Mr. BROWN: My experience goes to show that it is. A year ago, in 1899, I had a number of bees from different colonies situated where there was a good growth of golden rod, and I found they went far ahead of those at the home apiaries where there was none.

Mr. NEWTON: All the experience I have had in late years is in connection with moving bees to fall pasture, to swamps where there was golden rod I know that that is the plant that gave me the greatest yields of the season, and I can only say from my experience that I think it is a good honey plant.

Q.—How to run out-yards for section honey without an attendant?

Mr. NEWTON: This is a question, I have no doubt, that would be a puzzle to every one of us present, because I feel myself that an out-yard for section honey cannot be run to an advantage without having some man in attendance, especially at times, in the fore part of the season at least. I do not believe it is an advantage to run an out yard for comb honey without an attendant.

Q.—Does any person present know if there is much or any of the disease known as black brood anywhere in the Province?

Mr. McEVOY: There has been more or less of that in this Province for over ten years.

WINTERING BEES—IN AND OUT.

By H. G. SIBBALD, COOKSVILLE.

Bees, to be wintered successfully, in or out, must be properly prepared, and although preparing bees for winter might more correctly come under the heading of fall management, still, on account of its vital importance and influence on the wintering problem, I cannot pass it without notice. By September our hives ought to contain a well populated colony and a good queen, young if possible; and before the 1st of October they should each contain not only bees and a queen, but twenty-five to thirty-five pounds of well ripened, well capped stores, in not more than six or seven average sized combs, with a division board alongside to keep all cosy, warm and dry.

Then if we are to winter outside, pack them up any time in October, placing two or three inches of sawdust, corkdust, chaff or leaves all around, and on top four or five inches. Provide a good water-proof cover, raise the hive about a foot from the ground, contract the entrance, and very little if any more attention will be required until spring.

But if we decide to winter indoors, which I prefer if a suitable cellar can be obtained, they must be left on their summer stands until about November 20th to December 1st, when a suitable day must be chosen, after they have had a fly if possible, and before sufficient frost has come to freeze the moisture inside the hives. Have your cellar ready, clean and sweet, stands arranged a foot or two from the floor and away from the outside walls if space will allow. Then a day or two before moving in the bees, loosen the bottom boards, place a new quilt or cover over any that have chewed holes in the cover, and you are ready.

Commence to carry them in by taking the one nearest the cellar, placing it to the further end of the cellar. Keep on down that row, up the next, &c., until they are all in. You will then have no difficulty in placing them back on their old stands in the spring.

But, to go back a little, the stands in the cellar ought to be two or three inches higher behind than in front so that our hives will sit slanting toward the front when in. Then raise the back of the hive off the bottom board and block it up width $\frac{3}{8}$ inch blocks, thus providing for perfect ventilation, the fresh air going in behind, passing up and through the cluster where it becomes damp and heavy, causing it to fall again and pass out the front entrance.

After placing one row on the stands and blocking them up, take off all covers except the propolized quilt, place two 1-inch strips on top, and you are ready for another row—repeat this until you have them as high as your cellar will permit, then start another row leaving room between to get in and sweep up the bees that die through the winter, which is all the attention they require until spring.

About the last of March or April 1st, they ought to be moved out. Preparatory to doing this go into the cellar with a candle and take a peep into each hive through the opening behind where the hive is blocked up, if the bottom board is clean and dry, the bees clustering quietly, etc., mark the hive O.K. It will not need any attention after setting out, unless when carrying it out you find it very light and possibly short of stores, in which case you will have to attend to it. You will find this a splendid plan, saving labour and fussing with the bees when they are better left alone.

Next gently take out the blocks and you are ready to set them out next suitable day. Commence taking them out orderly. The first to come out will be the last you put in and will go to the far end of the yard where it came from ; follow this right along and you will soon have them on their own stands, with few vacant stands and all in splendid shape for a harvest of honey.

Mr. HALL : Mr. Sibbald is a very excellent bee-keeper. He commences very orderly in taking the hives from the yard into the cellar by taking first the stock of bees nearest to the cellar door and continues thus to the end. Supposing two of those stocks of bees dies, following Mr. Sibbald's system, that will put the balance of the hives on to the wrong stands and if you have any special hive of bees that have done good work for you, or which are cross, or whatever characteristic they may have, you have lost track of that stock of bees because it is on a new stand.

Mr. SIBBALD : If you lose one—which you should not do if you winter them rightly —you can leave the old hive there until you get them all out, or skip that one.

Mr HALL : We generally listen to them when we put them on the hand barrow ; if the stock is dead we do not take it out. Your plan is very nice for taking them out, but allow me to tell you how we take them out. Our stocks of bees stand four in a clump ; these clumps are all marked alphabetically, and instead of commencing near the cellar door we commence generally at the far end of the apiary and we take off one from each clump and take it in, and that leaves only three on a stand ; we commence again and that leaves only two, and so on, and we take them out in the order in which they are put in. We do not take them out at the one time ; if we do they spoil themselves. We have taken them out of the cellar all at one time, and they have created a great furore, and all try to get into two or three hives in one corner of the apairy, and those hives are of no use afterwards, and we have lost all those fine bees in the spring. In putting them into the cellar we take them from all over the apiary. They are in clumps of four, and we take one, and that leaves three ; and commence again, and when there are two we commence again and leave one. They can never fail to go out in the same place again, and there is no rushing all into the one hive. As to the cloths, we do not like the cloths because they are dirty, and they blow away in the summer season when you are working and you have to get a boy to pick them up and fetch them back. If you have a good board it does not run away.

Mr. HOLMES : I would like to ask Mr. Sibbald if his paper said that the form for placing the hives on in the cellar should be so arranged that the front of the hive should be about three inches lower than the rear ?

Mr. SIBBALD : Yes.

Mr. HOLMES : Then you said to put an inch block under the rear of the hive, between the hive and the bottom board ?

Mr. SIBBALD : Three-eighths of an inch.

Mr. HOLMES : And when the next tier goes on top of that put on another three inches for the next row.

Mr. SIBBALD : Yes.

Mr. HOLMES : It occurs to me that by the time you would have put on three or four rows of hives you would have them pretty well tilted up. Would they not be in danger of slipping off ?

Mr. SIBBALD : The top one would only have about three-quarters of an inch more slant than the bottom. Three times three-eighths—count that up ?

Mr. SPARLING : Nine-eighths.

Mr. MCEVOY : We have a gentleman here from the United States who has some sixteen hundred and forty colonies,—Mr. Coggshall. We would like to hear from him.

Mr. COGGSHALL : I winter in sawdust outdoors. I never winter any in the cellar. I tried it once but did not succeed ; the cellar was not right. I have always wintered

outdoors in sawdust. It would be a good deal of work to draw them home in the winter, I think. I use packed hives altogether, or large boxes that I pack them in.

Mr. SPARLING: How much packing do you use?

Mr. COGGSHALL: Two or three inches; some of them would have four inches. I prefer the sawdust because the mice won't work in it.

Mr. MCEVOY: About how far below zero does it go in your locality?

Mr. COGGSHALL: Down to thirty.

Mr. HALL: Did you ever try forest leaves?

Mr. COGGSHALL: I had one or two apiaries that had them in. They are an excellent thing; there is nothing better, I can assure you of that.

Mr. DICKENSON: I winter in the cellar. I do not know anything about outdoor wintering. Our friend, Mr. Coggshall, is an outdoor man altogether. I should judge he would be, because of the number of colonies he has. It would take a good many cellars, and pretty large ones at that, to hold all the colonies he has to winter; but I have been of the opinion for a number of years that bees can be wintered successfully outdoors or in cellars; it is all in knowing the two different systems. It is just as possible to winter in the cellar as it is out of the cellar. In numbering colonies, or having the colonies so that they will all go on the same stands again, I find a good way to do is just to number the hives so that there will be no mistake, because I think it is important that the colonies should go back on their own stands. I take a shingle or piece of board, or anything that is handy, and draw a few lines and mark the numbers so that I will understand thoroughly. If there is a blank there will be a blank marked on the plan. I find by having this piece of board marked in that way there is no trouble about getting the colonies back onto the same stands they formerly were on.

Mr. HALL: I will improve on Mr. Dickenson's plan. We put ours four on a stand, and in the fall when we are putting them in we mark on them, for instance, B North-west, B South-west, B North-east, B South-east; they are marked right on the front of the hive, and when we take them out of the cellar we run over them and put each hive where it belongs. I find it very essential to put them on their old stands for various reasons; there are some of them which are cross, others good tempered, others pretty, others are not, others good honey gatherers, others are not. We get acquainted with these individual stocks of bees through the summer, and if they get mixed up with others in the spring, we do not know where to find them, and the summer goes by before we find the characteristics of each stock of bees in the apiary, but by putting them on the same summer stand we have no trouble that way. We winter one of our apiaries in the country out of doors packed with leaves. If Mr. Coggshall will try leaves he will never go back to sawdust. I find sometimes my boxes leak, and if the sawdust gets wet the moisture won't dry out of it; it is different with the leaves and they last for years. I think packing with forest leaves is superior to sawdust and chaff. I prefer wintering them inside whether the quantity is large or small; it is much easier to carry them in and out again than it is to pack them. We winter 130 stocks of bees in a small cellar 12 x 12; we have a very nice cellar.

Mr. POST: I usually winter both indoors and out. This year I am not wintering outdoors on account of not getting my bees home in time to transfer them to the chaff hives. In the last three or four years in wintering forty-five stocks outside I do not think I have lost half a dozen colonies. My hives are filled in with sawdust four inches all round and two inches in the bottom, and permanently packed to remain winter and summer, and I have a cushion of about three inches of forest leaves that goes on top, and they are put in with a press so that there is a large quantity put in each one and a cloth over the top and bottom. That cushion goes over the top of the hive, and the sun-cap behind is raised up and rests on the top of that rim. That is the only way I can winter bees outside, and I have tried every other way. The sun-cap is a four inch sun-cap, and it telescopes down over the hive three-quarters of an inch, resting on cleats. I do not allow the cover to go down; I raise it up behind. About the first of March I shut it down; it is painted red, and it forms a regular hot-house.

Mr. HALL: We do not live in such a cold country as you. We have a large entrance; it is one-half an inch deep and five inches wide, so that gives a pretty large entrance and that entrance is four and a half inches down from the front of the box.

Mr. POST: My entrance is three-eighths of an inch by the whole width of the hive, and it is left open during the whole of the winter. I can not winter with a small entrance on the outside. Inside they are just piled in the cellar the way you all pile them; I raise them on blocks behind, similar to Mr. Sibbald. They are carried into the cellar now and the cellar doors and windows are open, and they remain open until cold weather sets in; they are just the same as if they were under a shade or cover outside. When extremely cold weather sets in the doors are closed and they are left to remain for the winter.

Mr. HOLMES: Do you remove the propolis cloth for wintering?

Mr. POST: I do not have a propolis cloth; couldn't be hired to have one.

Mr. HALL: It is a dirty thing.

Mr. GEMMEL: I am glad you have come to our rescue. I was defending the plain board for a cover and they voted it down.

Mr. HALL: They have not tried it or they would not have voted it down.

Mr. GEMMELL: The only difference between us is in the way of doing it. I want to thank Mr. McEvoy for telling us about the leaves.

Mr. MILLER: I wintered in doors successfully for a number of years by removing my hive from the bottom board when I put it in and I placed one hive on the top of two covers. Of late I have been wintering out doors with shavings; I like it much better than the forest leaves.

Mr. GEMMELL: What is your entrance?

Mr. MILLER: I leave the full width of the hive, one-half an inch, with a block at the front of the breach, leaving about an inch actual entrance.

Mr. POST: In wintering outside do you elevate the back end of the hive much?

Mr. MILLER: I do, by putting packing under it.

Mr. POST: But the hive proper is raised behind?

Mr. MILLER: Yes; I elevate it probably three inches; sometimes I remove the cover and sometimes I do not.

Mr. SMITH: Do I understand that you use the cushion and put leaves right on top of the frame?

Mr. POST: There is a cloth laid over the top of the frames, although it is lined with cloth over the bottom, but I do that to prevent the bees in the early spring putting propolis on the cushion.

Mr. SMITH: I was under the impression you didn't use a cloth. (Laughter.)

Mr. HEISE: Mr. Sibbald in his paper mentioned four different kinds of packing; sawdust, chaff, cork shavings and leaves. I would like to know, in using those leaves, whether they are compressed or only put in loosely?

Mr. MCEVOY: There is another thing, keeping the snow away from the entrance.

Mr. POST: I place a small piece of board in front of the entrance to keep the snow from drifting in and to keep the cold wind out.

Mr. MCKNIGHT: We have heard a good deal about the material used for packing. Chaff has been spoken of here. If chaff is ever put as packing on top of the hive no greater mistake could be committed, because it will absorb the moisture. What is up there should not be an absorbent; it should be a transmitter to allow the air to pass through, and not to confine it. Chaff will mildew at the sides. If it is kept perfectly dry it is right enough, but if the least dampness gets in it will do the same thing around the sides. I quite agree with Mr. Coggshall as to the utility of the sawdust. I question very much if forest leaves are any better than sawdust of the right kind. It answers the purpose and answers it admirably, but it is not every kind of sawdust that ought to be used. No green sawdust should be used in packing. The sawdust that should be used is the sawdust you get in the planing mill from dry boards. Cork dust had been spoken of; that is better than any other material that has been mentioned yet, but it is a little difficult to be got. I think I was the first to use that. It is not to be had easily except in the neighborhood of towns, and then it is only to be had from grocers who bring in these Malaga grapes during the season, and quite a quantity can be collected in that way. As to Mr. Sibbald's reason for tilting up his hives in the rear and blocking them there to the extent of three-eighths of an inch, I am not sure as to the validity of his reason for doing that. If I understand him aright it is for the admission of fresh air, which he says passes up through the cluster and gets heavy and falls to the bottom and

paases out at the front entrance. I do not think that is just the fact. I believe the air that passes up through an empty surface becomes rarefied and lighter, and does not become heavier and descend to the bottom. And here comes in one drawback in the propolised quilt: it will not permit of the rarefied air that has been de-oxygenized or the oxygen absorbed out of it, to filter through the quilt. It is almost as impervious to either air or water as the board is. I think these forest leaves so packed is a capital thing for that; I believe they have a tendency to keep the interior of the hive dry and in good condition. Years ago I experimented on all kinds of packing, and latterly I became somewhat indifferent as to some of the methods that were advertised and largely advocated. A great many of the fads have passed out of practice altogether in bee-keeping, and I think a more common sense plan has been adopted largely from experience.

Mr. EVANS: I would like to know if any of the bee-keepers present have had experience in keeping bees in long clamps, eight or nine in a clamp, outside, packed in sawdust. I have kept mine for a number of years, and I have found some difficulty with some of them coming out very strong and some very weak. I believe there is that difficulty in keeping them in that way. I would like to know if any of the other bee-keepers have had any experience in that line.

Mr. MCKNIGHT: I have had sufficient experience never to try it again. With regard to a house specially constructed for housing bees, sawdust was then largely advocated for packing when above ground, but it does not do below ground. I would advise any man that was thinking of that kind of thing to never use sawdust. The reason is, no matter how dry it is it will dry-rot the posts that form the frame of the building. That kind of house was a great fad one time. I put up a house of that character, and I believe it was one of the best of its kind, but to-day it is pretty nearly ready to come to the ground.

Mr. HUTCHINSON: My experience of clamps was not such clamps as Mr. Evans had reference to. He had reference to the packing of bees above the ground where they would have an opportunity to fly. My experience has been in wintering bees in clamps under the ground, burying them like potatoes—pitting. I have had no experience in putting them in long rows and clamps in that way. The only object I can see is if a man is in a locality where he must protect them and he has no cellar, that is a makeshift that can be done, but that is all the advantage.

Mr. HEISE: I think Mr. Sibbald spoke about using four inches of top packing. Is that compressed or thrown in loosely? My reason for asking the question is that I think Mr. Newton referred to the top packing as ten inches and Mr. Sibbald four inches.

Mr. SIBBALD: Mine was sawdust. I never used leaves at all, although I believe the leaves are all right. I have wintered more in the cellar than outside, and I prefer cellar wintering. I would like to ask Mr. McKnight if he ever tried the system of blocking the hives up?

Mr. MCKNIGHT: No, I never did.

Mr. SIBBALD: I have tried both, and I am in a position to know, and I know from actual experience the air does pass in the back, up through the cluster and out the front, because at the front of the entrance you will often see drops of moisture, and at the back you will find it quite dry, and I thought from that that the air was surely passing from the back up through the cluster and out. Whether the air would be heavier after passing through the cluster or not, I do not know. But I have always thought when the oxygen was taken out of the air it was heavier and passed down. I may be wrong. At all events, the fresh air coming in the back would force the foul air out the front entrance.

Mr. GEMMELL: It carried the moisture down to the entrance?

Mr. SIBBALD: Yes.

Mr. SMITH: I think if Mr. Sibbald's temperature was high enough in his cellar he would see no drops of water.

Mr. HALL: It makes no difference about the scientific question as to oxygen or nitrogen. I raise mine in front because it is more convenient. We raise them from one half an inch to two inches. The reason we do it is the combs come out sweet and clean in the spring instead of being mouldy; we do not give a rap whether the moisture goes in or comes out.

Mr. SMITH: I think if Mr. Hall would loosen the quilt a little at the top it would answer just as well.

Mr. HALL: I could not do it, sir. You could not loosen my quilt. We look a little ahead. We do not meddle with our stocks of bees when we put them out until it is warm enough for them to fly. If we want to look at them we look at the bottom, not at the top. I do not care anything about where the oxygen goes out or the nitrogen comes in. I know it keeps the combs from moulding. I have a board cover. As the bees leave it, we prefer it that way.

Mr. SMITH: If Mr. Hall would loosen the cover the least bit, with the temperature right, the bees would all leave the bottom board; anyway that is a little on the slope.

Mr. HALL: My bees are hanging down below the bottom. The temperature in my place is 50, and as quiet as it is in this room. The temperature does not make so much difference if the atmosphere is pure. We have a door and window with a dark screen in it, and if you put your hand to the chimney you will find a tremendous draught of air; it is pure. If you go up to 50 degrees they do not mind it; if you keep them down to 44 they want to get out, they want to fly.

Mr. MCKNIGHT: I once saw a bee hive in a garden of the State of New York, and it had no bottom, and the combs were hanging down below the edge of the hive proper.

Mr. HALL: I went to a friend of my wife's—I didn't know the old gentleman till I got there. He was seventy-eight years of age. He had a row of bees—there might have been twenty or thirty. The fence formed the back of the shed, and then there was a roof to it, and he had the hives two deep in it. He had four poles running from end to end of this shed, and his box hives were set on these poles and the combs were hanging down fourteen, sixteen and seventeen inches. His reason was on account of the moth, and in that way the moths did not destroy his bees.

Mr. ARMSTRONG: I was going to ask Mr. McKnight why it was he did not succeed with chaff. I have wintered bees this last eighteen or twenty years, what I call successfully, with only from one to ten per cent. loss in the winter, and I use wheat chaff, oat chaff and sawdust, and I cannot see a particle of difference. I generally pack from four to six or eight inches of packing on top, pressed down with my hands. I leave a small space under the cover between it and the packing. I never let the packing, if I can avoid it, come up tight against the outer cover, otherwise the moisture will strike there, and the chaff will get damp and rot. If you leave a small space there there is never any trouble with the chaff getting damp or rotten. My entrance is five inches by three-eighths of an inch. I was also going to ask Mr. Hall if it was really necessary to have the entrance the full width?

Mr. HALL: If I had my choice in making packing cases again I think I would have it the full width of the hive. My entrance is one-half an inch by five inches.

Mr. POST: My experience is identical with Mr. McKnight's with using chaff. Forest leaves are the best.

Mr. HEISE: Was the chaff in the form of a cushion?

Mr. POST: No, thrown in loosely.

Mr. MCKNIGHT: It is worse in the cushion.

Mr. POST: The chaff was placed in the top story with a cloth underneath, but it got wet and mouldy; there was over 60 per cent. of the bees that were dead and the combs were blue moulded.

Mr. MCEVOY: One of the greatest drawbacks in the use of a cushion filled with chaff is that the bottoms of the hives get choked with snow; the steam rises and goes up into that cushion of chaff which will hold it, and then zero weather sets in and the chaff in the cushion gets frozen. With green saw-dust packing such as Mr. McKnight spoke of, if you use much of that, it is like a little refrigerator. If the saw-dust is perfectly dry and not too thick, all right. Mr. Armstrong said he threw the packing on loosely. He lives away in southern Ontario and Mr. McKnight lives north. It makes a difference where you live; you may be both right.

Mr. ARMSMRONG: We never have it go much lower than 10° below zero, and it will not remain for more than two days.

Mr. POST: We get it from 10° to 14° below zero for ten days.

Mr. FIXTER: Has any one ever tested outside as against inside wintering in reference to the amount of honey consumed? Also, has any one kept track of the time consumed in packing as against carrying them into the cellar? I might as well tell you my

experience. I think there is more honey consumed than will pay for building a proper cellar. And in the time consumed and the trouble in packing one hive you will carry six into the cellar.

Mr. McEvoy : In the winter of 1888 I put one-half of my bees in the cellar, and the other half I packed and left on the summer stand. In both cases they had sealed stores. Where I had a very strong stock outside I brought it inside. They wintered pretty well in the cellar, I thought, and when I set them outside, as far as consuming the stores is concerned, they used rather more in the cellar in that case.

Mr. Fixter : Did you weigh them ?

Mr. McEvoy : No, but they did not have quite enough. They seemed to breed more in the cellar than they did outside.

Mr. McKnight : I think yours is an extraordinary experience in that connection.

Mr. Darling : There are several matters touched upon here and perhaps I could give a little experience along the same line. With regard to packing I have tried saw-dust and cork dust. I have not tried wintering outside at all ; I live where it is cold—too near the north pole. But for years I took off the propolised sheet and put on a cotton cushion filled with saw dust and cork-dust—I brought the saw-dust from the saw mill and sash factory—and I fail to see very much difference in their effect, only I thought the saw-dust from the saw mill was not quite as warm, and the cork dust a little dryer. There is that much evaporation from bees that if you take a little piece of lath and leave it lying on top of the cushion, without any cover on at all, if you lift that piece of lath up any time after it had been there a few hours there will be a wet spot on that cushion the size of that piece of lath. If nothing touches that cushion it is dry all winter long and the saw-dust is dry. Lift the cushion and put your hand under, and it is warm and cosy on top of the sheet, if there is a sheet underneath. I had formerly tight bottom boards, and that is the reason I took off the propolised sheet. Lately I have taken off the bottom board, leaving the propolised sheet on, and putting the cushion on ; that allows no moisture to get through ; but I raise up my hive at the front, I do not like going to the back to let them down, and I find that they winter just as well and better than they did without the propolised sheet and with the bottom board tight, and there is no danger of there being any dampness above and my combs and bees are not as damp as they were when the boards were tight. Somebody has said if the temperature were right there would be no moisture in the hives. That has been a matter that I never satisfactorily solved in my locality. Some of the hives, and not the strongest ones either, will be nice and dry while others will be so wet that the water will drop out of the entrance when the bottom boards are tight. I find a difference, and I cannot tell the reason why.

Mr. McKnight : How do you tier them up ?

Mr. Darling : I made trestles of 2x4, and I tier them up three tiers, one on top of the other.

Mr. McKnight : Have you experienced any difference as to the bees coming out of the top row as compared with the bottom ?

Mr. Darling : I cannot find much difference. I find sometimes if it happens to be a little warmer the top row do not winter quite as well as the bottom. I find about 45° is the best temperature to winter in. You can see my bees, and there is not a bee flying out. They seem to be very much satisfied with what they have now. My cellar is dry enough to sweep it every day of the year, and it is built in clay ; there is no rock or sand. The heat of the house above keeps any frost from coming in from the outside. The house is never banked. The cellar window on the south-west side of the cellar frequently has neither glass nor wire screen in it but perhaps some boards thrown over the outside and the snow will sometimes blow in on them, and I have noticed when the sun comes out a little there will be an air hole through the snow, in February. With regard to the amount of stores consumed inside and out, I used to weigh my bees in the cellar and weigh them out again and I found they varied a good deal. Some colonies would weigh only about five pounds less when going out than they did when coming in, and some would vary from ten to twelve pounds.

Mr. Post : I never thought there was nearly the amount of difference that a great many imagine. I find mine that winter in the chaff hives have just as much honey in the spring as those in the cellar and hold out just as long in the season—their honey holds out just as well after the spring sets in.

Mr. McEvoy: Mr. McKnight said that mine was an exception to the rule, consuming more inside than out. As a general rule it is. It all depends upon the constitution of the colonies, and how they are prepared for wintering. I want them to go into winter with sealed stores. Outside they do not begin to brood up until towards spring, but if the cellar is rather warm brooding sets in and they consume on that account; and I have just as much brood and in fact more outside than I would have had in the cellar. Just shut off the brooding and it saves the stores.

Mr. Gemmell: Have you found this brooding up in the cellar an advantage?

Mr. McEvoy: Positively no.

Mr. Miller: I fancy there is a point in regard to the consumption of stores that we are losing sight of. I find that bees wintered in the cellar, after being set out, waste their stores, as it were. They are breeding up and fly more continuously, independently of the weather, than bees that have wintered out on the stands, and at that time they are consuming stores more rapidly. I find the difference between the two rather in favor of out-door wintering, by the time my bees are in condition for the honey flow.

Mr. Darling: There is another point there. I am not prepared to say how much moisture the hives contained when they were set in and when they were put out. It might be that had considerable to do with the lesser or greater variation.

Mr. Pettit: You have that cushion on each hive?

Mr. Darling: On each hive.

Mr. Pettit: There is not so much moisture in the hive as though there were no cushion?

Mr. Darling: No, it does not condense there. Mr. Pettit's father gave me the idea first of setting my bees in. I set my bees in, and there is an inch more under the back of the board than there is at the front; then I put another inch under the hive front; that brings the hive up level again; then I put on a short block right on the front corner and another on the back corner, and an inch piece across that so that it leaves a space big enough to put my fist right in between the tier of hives. It is a long strip we used to get when we bought edgings from the saw mill. I put a two-inch piece behind and double that piece, and that gives my rise at the back of the board, and then I shove the block under the front corner again, and that brings it up and it makes the tops of my hives level again.

Mr. Post: By projecting up the rear of the hives would it not be handier for the bees to throw out their dead bees?

Mr. Darling: The bottom boards slant and that allows the dead bees to drop out themselves.

Mr. Hall: I think if Mr. Darling had noticed those hives covered with the cushions, and those simply covered with the board, and raised either the front or rear he would find no difference so far as the dryness of the hive is concerned. If the hive is raised an inch or an inch and a half in front it gives ventilation to two sides and the front. Nothing touches the bottom board but theback of the hive. There are no boards left on the bottom board. Speaking of how much to raise your hives, we use no strips; we want each tier of hives to be independent of its neighbors, and we pack ours four deep, and when we disturb one four we do not disturb their neighbors. I would advise those of the gentlemen who are afraid of the bees flying very much to simply use a wet towel; they fit tightly, and they won't blow off and won't shift. That is the nicest way to carry them out.

Mr. McKnight: How do you get up to the fourth tier in putting in and taking out?

Mr. Hall: One takes hold of the front and another the back part of the bottom board, and we set them on to a hand barrow. I have a clamp on all of my hive bottoms, and we fasten the hive to the bottom board by a clamp.

Mr. McKnight: I have found difficulty with three tiers.

Mr. Hall: We put ours up four tiers, and we would put them up five only the cellar is not high enough.

Mr. Post: Mine are six inches from the cellar bottom.

Mr. McKnight: I would not like to lift bees four tiers high in putting them into the cellar.

Mr. Hall: Ours are within two inches of the joists under our dwelling room, and if it was a foot higher we could put on five instead of four.

Mr. DICKENSON: You would not advise that if you had the room.

Mr. HALL: I fill up one corner of the cellar and leave the rest of the cellar for some other use.

Mr. DICKENSON: You would still put them up?

Mr. HALL: Certainly. Then you have got the other part of your cellar for other uses.

THE PRODUCTION OF EXTRACTED HONEY.

BY ALEX. DICKSON, LANCASTER.

In the first place, what is extracted honey? It is an article of food gathered by the bees from different plants, which they carry to their home, and deposit in combs made by themselves. When filled, they are taken out by the apiarist and placed in the extractor, and the honey is thrown out, after which we call it extracted honey. There are two grades of extracted honey,—good and bad. But you say how can we have good and bad honey? We get the poor honey when the beginner is too enthusiastic, and eager to get a large quantity, or for the want of experience, or having it canned before it is cured, which is a great mistake. The question would naturally arise in the mind of the beginner, "What must I do to secure a large crop and a good saleable quality?" Previous to the first of June see that your colonies are in good shape, supplied with young queens the fall before. June has now arrived. Watch close if the bees are beginning to whiten their combs. If so, put on the upper combs at once with perforated metal between upper and lower set; here is the secret of good honey and no loss of time with the bees. The first story being filled, raise it up, put another between the lower and the one you have just raised. But you say, "Why not leave it till the bees are done with the first, and then extract it?" Not so, for while the bees are capping the raised story, they are filling the second set. When the first set is capped from one half to three-quarters, it is ready to take off and to be carried to your extracting-room. The above is what we call the tiering system. In the first place, there is no loss of time with the bees in capping; then, you have a better crop of honey so far as the bees can ripen it, and further, your bees are not over-crowded. You see it is quite evident if you extract your combs before they are capped over, you have a grade of honey just as the bees brought it in from the blossoms. If so, you will only sell that grade of honey to your customers once.

Now a word or two about our honey-room which contains our tanks. It only requires to be large enough to hold the number of tanks you require to use, with the roof partly glass and one large window facing the south. This room must be bee proof. The tanks should be sixteen inches deep, eight feet long and four feet wide, lined with the best of tin plate. As you extract your honey, have your tank covered over with cheese cloth, and a strainer set in made of wire, and cheese cloth under the wire. Strain your honey and let it stand to further ripen, for the temperature will run up to about 120 degrees in your honey room which is a good deal higher temperature than in the hive. While extracting is going on you need to be very careful not to leave combs lying around, for it may cause robbing. We will presume the clover and basswood are to a close. You need to go over all the hives and extract clean, before the buckwheat and fall flowers come on. When the season's flow is over, begin to take off combs at once.

I use the bee escape. I put it on in the evening and leave it on till next night, and so on. You will find the bees are all out by that time. I would not like to be without the escape at the close of the season; it avoids all robbing. The last honey you have taken off is dark; extract those combs that are not capped, over and those that are capped keep for feeding for the winter. When your combs are extracted put eight in a box, and place them no nearer than 150 feet from the yard and have the bees clean them out. Put them out late in the evening and leave out till next evening. Begin with three or four boxes the first evening till the bees find their way; afterwards you may put any number of boxes out. After all are cleaned up they are ready to be stowed away for the winter; you are now ready to tin and crate your honey. Have your tins thoroughly dusted, and label all honey intended for market. Have the tins put up in attractive crates, and not in rough boxes as many do. Put dressed lumber in the crates—it is very important to

have your honey nicely put up. There are many things that might be said on the production of extracted honey, but I would say in conclusion that you cannot have any cast iron rules to go by in the production of extracted honey.

Mr. NEWTON: Mr. Dickson mentions good and bad honey. I think that is a question we should never deal with, because we should always have a No. 1 article on the market if we desire to have our reputation preserved, and by putting this honey on the market unripe, as Mr. Dickson mentions in his paper, we will only supply our customers once. I cannot quite understand Mr. Dickson. He mentions in the first part of his paper about having it canned. I suppose he meant sealed; and later on in his paper he said that he took off the top story when they were one-half to two-thirds capped, and at that time they were ready for extracting. I could not agree with the writer of this paper on that subject, because I believe if we want No. 1 extracted honey, we must leave it till every cell is capped in the extracted supers, and by the tiering-up system there is no doubt but that he could have the same and give the same quality as is produced with comb honey. I noticed particularly in the discussion this afternoon when they were asking about the extracting of quantities of honey, that they asked for comb honey, or else they asked for extracted honey from combs that had been completely sealed so as to get the right proportion of water in the grades of honey. I know that as far as the beginner is concerned, he does sometimes make a mistake in putting out thin honey, but we who know better ought to try and inform the novice in the business, and try to get him to leave his honey until it is in better shape. I do not agree with the writer with regard to the honey-room. I remember at our last convention we listened to a paper, I think by Mr Holmes, upon the production of extracted honey. He wanted a very large room; in fact he wanted a reception room in connection with it. Of course, the majority of us did not agree with that. We did not want too many visitors. We like to have visitors to see that we do our work cleanly and neatly, but we did not want a reception room where we had to entertain our visitors all the time. We want a place with lots of room to work in. We do not want a ripening tank, because we want that process to be done on the hive before the honey leaves there, and then we can safely can it as we take it away from the extractor and have no danger of it spoiling. I do not agree with the use of the bee escape. I think I can take off the comb by the use of the bee tent much more quickly than by the use of the bee escape. Among bee-keepers there are not many bee tents used in the apiaries. If there were more used there would be less robbing, and the work would be finished up in a better shape both in the spring and in the fall. With regard to cleaning out the combs, I cannot agree with the writer of the paper. He just wants to put a few combs out to entice the bees, then gradually keep coaxing them on. There is no trouble about that part of it. He will find if he puts them out on a nice bright morning he can take them in the same night, and he will find his combs are all clean without any coaxing about it; at least my bees will find them. I do not know whether other people's bees will or not. I quite agree with the writer that we should put our honey on the market in as attractive a form as we can. I believe what pleases the eye goes quite a long way, and when a rough article goes on the market it does not seem to sell as well as though it had a neat appearance. Whatever we do, whether in our yard or honey house, let us try to do it with neatness, and let us put our product on the market in the same shape, and I think we will succeed and get better profits on our returns.

Mr. HUTCHINSON: Would you mind telling us briefly how you worked with your bee tent in getting the bees off the combs?

Mr. NEWTON: My bee tent is about 5 x 3, and I think about 5 feet 4 inches in height. I just go and shake the combs, and take them away in the comb box, and shut down my hive. Is I were using bee escapes, I would put them on in the morning; I think they will go down better when they are active.

Mr. HUTCHINSON: How about the honey being of the right consistency to extract?

Mr. NEWTON: I believe, if my memory serves me right, it was Mr. Dickson and I who had some discussion along that line a few years ago. He claimed he could set them off on the ground here and there, and then gather them up and take them in. I told him I could not extract my honey that way; my honey would never flow after getting cool. I am sure that you could not cleanly extract honey that is sealed over and has stood all night, with a bee escape on, without warming up.

Mr. GEMMELL: If the night was cold?

Mr. NEWTON: It would have to be a pretty warm night.

Mr. HEISE: Is there any provision made at the top for bees to escape from the tents?

Mr. NEWTON: The whole top flies open when you want it and throws everything out. I use the tent considerably in the case of swarming. If I have two or three swarms and I do not wish them to go together, I use two or three tents. I just set one tent over the hive where the swarm is issuing, and then go to another, and so on in that way.

Mr. EVANS: How far are your hives apart?

Mr. NEWTON: My hives, I suppose, are four or five feet apart.

Mr. HUTCHINSON: You spoke about shaking the bees. Do you shake them off inside of that tent?

Mr. NEWTON: Yes

Mr. HUTCHINSON: If you used the bee escape you would not have to shake them at all?

Mr. NEWTON: No.

Mr. HUTCHINSON: Couldn't you put on bee escapes, and be busy extracting while the bees were getting off?

Mr. NEWTON: I meant at the close of the season when some combs would have some honey in and some had none.

Mr. HUTCHINSON: You have reference to the last time you would go to an apiary?

Mr. NEWTON: Just in the fall. The other time when the honey is coming in it is not necessary; then robbers do not bother any. In the fall when it gets cold weather a bee escape might work pretty slowly.

Mr GEMMELL: Do you really object to a bee escape in warm weather?

Mr. NEWTON: I must say I do.

Mr. GEMMELL: If you used one I do not think you would say that.

Mr. NEWTON: I have a dozen lying around. I will sell them cheaply.

Mr. SMITH: They are the wrong kind.

Mr. NEWTON: They are the best Porter escape; that is about as good as any made, unless Mr. Smith has something of his own invention.

Mr. HALL: We have forty-one escapes, and in extracting honey we do not use them except on the Hedden hive.

Mr. DICKENSON: I think we threshed this question out once before in regard to taking off honey after it was ripe. I do not want the escapes until the last taking off; that is, when we are finishing up when there is danger of robbing, for when the flow is on there is no robbing. It is simply a matter of taking off the crates eight or ten or twenty, if you like, at a time. Let the bees go out themselves. I have tried it over and over again, and I know how it works well and I have no difficulty in getting the honey out of those combs that I take off in that manner when I carry them to my honey-house. I endeavor to have my honey ripe. I think I can prove that, when I get the price my honey commands in the markets of the world. I do not know where the difficulty would come in with regard to not getting the honey out of the combs by simply placing them just at the back part of the hive, just in a place convenient, and let the bees go out themselves. There are very few bees that you have to shake at all, simply the few that cannot fly—the small young bees that have never been out of the hive before. You have to take those, perhaps, and brush them off the combs, but there are so few of them you frequently can take them out and carry them right away.

Mr. HALL: I think I can give you a pointer on extracting honey in large quantities. I got it from my friend Pettit. It is the quickest way to get the nicest honey and the most of it. He goes to the hive, and so do I, in the honey flow with a wheel barrow, and when we find any frame that is capped over, give them a good smoking at the top, pick them up and give them a shake and set them right on. Shove the unfinished ones to one side, and fill the balance up with new or empty combs. Then you can pick these combs up, and you need not shake them any more for they will brush off and they will not sting. You only need to take the ripe honey, and you can take it very nicely by that process, and you will get it without interfering with the bees at all. I want to say something about the honey-room. We do not want a honey-room in the boney flow. If you

put it off till after the honey flow you must have a bee escape or have a tent. I could not use a tent because my hives are under the trees, and there is no room for a tent.

Mr. COGGSHALL: With reference to the cleaning of combs, I let the bees all go in at once. I just throw the doors open, and let them go in, and they just clean it out in no time. After we have finished emptying the yard, sometimes forty rods away from any house, if we have to lock up the house we pull down the screen a little bit and pry open the door so they can get in there, we have all the honey secured so that they cannot get at it except what is in the comb, and they just clean that out at their leisure. In taking off honey, I just go and take it off and put it on the wheel barrow or cart. We go out with comb enough to fill the hives and take back full ones. We do that until we get the yard entirely empty. Three hands will take off an apiary of one-hundred colonies in a day.

Mr. HALL: Do you recommend the ripening cans?

Mr. COGGSHALLL: No.

Mr. HALL: I put them immediately into the packages they are to be shipped in.

Mr. COGGSHALL: We do not strain any; we have a honey extractor that has plenty of room below.

Mr. FIXTER: How do you get the bees off?

Mr. COGGSHALL: We lift the quilt a little, we put a little smoke in, and they are pretty nearly all gone in a minute or so, and then we give a little shake. We shake every frame.

Mr. MCEVOY: Mr. Dickenson uses two supers on top, and when you come back the bees have taken up the thin nectar, and you shake them off like dry sand from a board. It is the most ready way; with less smoke and feathers than any other. It is the best way.

Mr. DICKENSON: I come along after half an hour. The crate of honey will stand there till the fighting bees go out. That can be done without using smoke. Use a little smoke just to put your hands under. When you come back to get your crates of honey you certainly have to disturb the combs sometimes, but if there are any bees that are left you put them into a fresh hive.

Mr. HALL: You brush the young bees off?

Mr. DICKENSON: Certainly, occasionally.

Mr. MCEVOY: Give his plan a trial.

Mr. NEWTON: He does the same as we do, only he leaves his there waiting for a while, and we do ours up more quickly.

Mr. PETTIT: You just have one super?

Mr. DICKENSON: I always use two supers. I would not think of taking off a super of honey unless there is another super under it. I must have two supers.

Mr. HOLMES: There is one point in the paper with regard to which it seems to me either the writer has made a mistake or a slip has been made in some way. 120 degrees of heat in our work shop or reception room, if you please. If that is actually necessary to success then I must confess that I am not in it; I could not work in that heat. Another point is as to the manner in which he gets his comb cleaned up. If he but once put all his combs out on a nice afternoon, and saw what a beautiful picnic the bees made of cleaning them up, and then find the bees perfectly quiet the next morning, he would discard the notion of putting out a few at a time.

Mr. CHRYSLER: The question was mentioned to me of every fall supplying every colony with a young queen. I do not think I would care to do that, or destroy some of my good queens and re-queen my apiary every fall.

Mr. NEWTON: That was a question that came up at our Oxford Society during our spring meeting and we had quite a discussion on the same point, and I think we came to a conclusion by vote that we would not discard the queens.

DIRECTORS' REPORT.

The Directors of the Ontario Bee-keepers Association have again to report a very poor season generally throughout the Province. The honey crop has been light, and often of a poor quality; in many instances no crop of any kind. We are pleased, however,

to report no inroads by disease or accident upon the officers of the association for the current year.

The usual sum of $200 was set apart for Affiliated Societies, of which $180 have been paid according to by-law.

The usual grants of $25, $10, and $10 were paid to the Toronto Industrial, Western, and Central Canada Fair Associations respectively.

About $10 was expended in sending circulars regarding spraying fruit trees to bee-keepers for distribution in their respective localities.

The financial condition of the Association is very satisfactory, there being nearly $150 in the hands of the Treasurer, which is quite an advance on last year.

The *Canadian Bee Journal* and a copy of the annual report have been sent to each member of the Association. All of which is respectfully submitted.

Mr. DARLING moved, seconded by Mr. GEMMELL, that the directors' report be received and adopted, which, on a vote having been taken was declared carried.

AFFILIATED SOCIETIES' REPORT.

There have been nine county societies in affiliation during the present year as follows: Glengarry, York, Brant, Simcoe, Halton District, Haldimand, Russell, Oxford, and Norfolk. Each society received a grant of twelve dollars and these grants have been largely expended as required by the by-laws.

The reports are not as full as desired in showing the amount of honey produced and the increase or decrease of bees, but the reason is perhaps that it has been such a poor season that many had little to report but failure and that is not pleasant to do.

The reports indicate this to have been one of the poorest years in the history of the Association.

W. COUSE,
Secretary.

Mr. PICKETT moved, seconded by Mr. BROWN, that those reports be received and adopted which, on a vote having been taken was declared carried.

INSPECTOR OF APIARIES' REPORT.

During 1900 I visited bee yards in the Counties of Lincoln, Wentworth, Brant, Huron, Perth, Waterloo, Wellington, Halton, York, Ontario, Simcoe, Lanark, and Russell.

I inspected one hundred apiaries, and found foul brood in thirty-three of them, and dead brood of other kinds in many others, which had been mistaken for foul brood. The first thing I did when I entered a locality was to pick out the best beekeeper in it, and get him to take me from place to place so that he could see how I managed the business, and, if required, he would make a valuable witness. I did this for the last ten years, and kept up a correspondence with the most of them, and by this means I always knew pretty well how all were getting on at the curing. At this work I burned a good deal of midnight oil, and sometimes I wrote all night and part of the next morning. Sometimes death and sickness in families delayed the curing, and in all places where I found this to be the case I went and did the curing myself. The following is a list of some of the men that went the rounds with me during the last ten years: Messrs. F. A. Gemmell, Stratford; J. B. Hall, Woodstock: C. W. Post, Trenton; Wm. Wells, Phillipston; Charles Mitchell, Molesworth; Martin Emigh, Holbrook; D. W. Heise, Bethesda; Abner Pickett, Nassagaweya; R. L. Patterson, Lynden; James Armstrong, Cheapside; W. A. Chrysler, Chatham; J. McPherson, Norval; E. Donnelly, Windsor; Sam'l Wood, Nottawa; J. K. Darling, Almonte; Peter Byer, Markham; James Nolan, Newton Robinson; John Fixter, Experimental Farm, Ottawa; John Calvert, Walsh; Alexander Taylor, Paris; H. E. Hoshal, Beamsville; Moses Vernon, Newmarket; Wm. Holden, Port Dover; A. Boomer, Linwood; J. Ward, Claremont, and Henry Couse, Cookstown.

I have here furnished you with a list of some of the men that I picked out "to pad the road with me," and taking them as a whole for good bee-keepers they will rank among the best, if not the very best, in the world, and I will leave it to them to say if I did not manage the whole business justly, very fairly and successfully all along the line.

Since I was first appointed Inspector I have had thousands of diseased colonies cured of foul brood, and very many apiaries that were once in a bad state with foul brood have not only been cured but have given some of the largest average yields of honey of any ever taken in the Province of Ontario. One of the treated apiaries gave an average of 200 pounds of clover and basswood honey per colony and fifty per cent. increase in bees, and had plenty of clover and basswood honey left in the hives to winter the bees. This yield was taken in a locality where no buckwheat was grown.

Every beekeeper I visited during the past season treated me in the most courteous way, and to them and the kind friends I mot everywhere who took me from place to place I return my most heartfelt thanks.

I also thank the editors of every *Bee Journal* for the valuable help they gave us.

My time, car fare and livery hire were $686.55.

WM. MCEVOY,
Inspector of Apiaries.

Woodburn, December 3rd, 1900.

Mr. HALL: I move that we accept Mr. Evoy's report. I think he is just the right man in the right place. I think he has done very well in the past and I think we should give him a vote of thanks and recommend him for the future. (Applause.)

Mr. FIXTER: I would second that. I think we have had very valuable service from Mr. McEvoy, not only in the inspection of foul brood, but in other ways. At the different apiaries which I have visited, every one speaks in the very highest terms of his work. We get valuable pointers from him that we cannot get from any other person, because he travels the country from one end to the other and meets with all classes of bee-keepers and all kinds of troubles, and he is not one who likes to hide his light under a bushel; he will let it out. In fact I would like myself to see his field extended further than it is, and if we could appoint him as instructor while he is going around I think it would be very valuable.

Mr. DARLING: I would take pleasure in supporting this motion. I have known Mr. McEvoy for quite a long while, and I am mentioned as one of those who have gone around with him. I can say that his work as Inspector is not all that he does. He is a valuable man to bee-keepers outside of all he has to do in connection with foul brood. He has a practical experience, and is one of our best honey producers, and generally takes the largest crops. I believe there are very few who equal him, and none are better. I certainly have great pleasure in supporting this motion.

Mr. HEISE: I, too, am glad to support the motion.

The President then put the following motion, which was carried with applause: "Moved by Mr. Hall, seconded by Mr. Fixter, and supported by Messrs. Darling and Heise, that Mr. McEvoy's report be received and adopted; that it is recommended that he be the Inspector of Apiaries in this Province for the future, and that he be tendered a vote of thanks for the valuable services rendered by him to this Province."

Mr. MCEVOY: I give you my heartfelt thanks for the good feeling which is expressed in this motion. I always did the best I could. I sometimes had the thought that some of the members were of the opinion that I did not do what I might have done. I have done all I could; and I am thankful to you for the vote which is now given.

QUESTION BOX.

Q. What is the best method of marketing comb and extracted honey?

Mr. HALL: The best method of marketing anything is to find a customer who desires the article. If you find a man that wants it he will pay you the best price. If you cannot find him you had better retain your article. I find the best way to retain your customers is to put your article up in a marketable shape, so that it will not give them any trouble. I will give you an illustration. Last fall, or in the early winter, a firm from Rat Portage wanted me to place their order for three hundred crates of comb

honey and some extracted, and one reason, they said, that we want to secure your honey is because we like the way you put up your goods. It is not the quality of the goods at all. That did not give them any trouble, but the goods they had got from other parties were broken down, messy and sticky, and our goods were clean. They could handle them with satisfaction, therefore they wanted to place the order. I told them I was thankful for their kindness, but I could not accept their order. They wrote me again this season for comb honey, and I had to tell them it was too late. Therefore, the best way to market any goods is to find your customers, and give them something that they cannot, no matter how they try, find fault with.

Mr. SMITH: It is the practice with many bee-keepers in running extracted honey to run it into pails when it is newly extracted, and just store it and market it as the market calls for it. I find that the pails which have been filled and which lie around for some time are not in as nice a looking condition to supply to a customer as they are when the honey is freshly put into them. What is your experience?

Mr. HALL: I sell but precious little honey in small quantities except to those who come to the house. My favorite plan is to let the honey ripen in the hive before taking it, put it through my extractor, and the same day put it into the sixty pound tins and screw them down tightly and not let the atmosphere in; it will then retain the aroma as well as the sweetness of the honey. They come to me and want some of my choicest clover honey, and sometimes I haven't any. I give them a taste of the honey I have, and they say, "That is the nicest clover honey I ever tasted." I let them take it, and think as they please. Do not be too particular explaining what it is. Everyone wants thistle honey, and all pronounce it beautiful clover honey. If I told them it was thistle honey they would begin to cavil, and I could not supply them, and, therefore, I do not say anything about it.

Q: What is the best form of hive stand?

Mr. HALL: I would not like to answer that question; if I did I would have somebody shying a brick at me. I can tell you the hive stand I use. I use four half bricks. I have in the apiary some of the Hedden hive stands, but if I was making them I wouldn't use that kind. I use four half bricks. They don't rot themselves and do not rot your hives. I wouldn't like to say that it is the best form of stand; but that is the stand I prefer. They stay there all winter, and do not crack much. If they stand one winter, they will stand fifty.

Mr. DARLING: If you get those that are next the flue inside and which have become somewhat vitrified they will not take in the water.

Mr. HALL: They are the cheapest stand you can get. When I sit down to work at the hive my toes will go underneath, and if I stand up, my toes will go underneath; and the air will go in.

Mr. FIXTER: Do the toads get under them?

Mr. HALL: Yes. We used to try to kill them, but I think it is better to let the poor creatures alone now.

Mr. SIBBALD: I was out one night with a lantern, and a large toad came along. The lantern attracted the bees, and I saw them perform. The toad just seemed to open its mouth, and I saw him consume about seventeen bees in a few minutes.

Mr. SMITH: Do you find the bottom board warp at all with the bricks?

Mr. HALL: It is the best preservative you can find.

Mr. EVANS: Wouldn't a stand with a sloping board of some kind that the bees could crawl up when they fall to the ground be better so that they will not get lost in the grass?

Mr. HALL: They do not want to crawl up. If they do they can crawl up the brick. Once a week at least we cut the grass. Our bees are in clumps of four. We do not have to use a sickle where the bees are setting; we just put down a little salt and that kills everything, and we have no trouble. We just run the lawn mower crosswise, and with the bricks you can go right up to the hives.

Mr. FIXTER: I might explain the stand we use. It is made with inch and a half strips the length of the hive, and we nail an inch strip across there about four inches off the ground for a lighting board; it is made on a slant and it comes right to the entrance of the hive; it is very neat in appearance and nothing can get under the hive. We mow our grass, but we cannot get close to the hive, so we put salt around or cut it short with the shears.

Mr. Post: My strips are nailed on top of the side pieces behind; that gives a ventilation at the sides as well as behind.

Mr. Fixter: The cleat that is on the bottom behind gives that ventilation, and it sets it up and gives it half an inch space and makes a very good bottom board. There is about a six inch lighting board in front of the hive; that is nailed on the stand.

Mr. Post: Mine is square in front. I cannot see much object in it, but the slanting board may have some advantage; it is an advantage for toads to get up on, but in shipping or handling in large quantities, as I do, they do not pack together so well.

Mr. Newton: I use the stand I use for winter packing. I never lift it from the stand during the summer. I use it for the summer stand then leave the rim there in the winter. I find the square point does not make any difference. I do not see much object in having the bevel because the bees can light on the front and run in.

QUEENS.

By M. B. Holmes, Athens.

The practical man contemplating the advisability of entering upon any line of work or business carefully studies the situation from every point of view, and, when fully convinced of its desirability as a lucrative venture, complies most assiduously with all the conditions necessary to the complete success of the undertaking.

That all business men are not thus thorough in calculation and execution goes without saying; and it is also perhaps safe to infer that bee-keepers as a class are not without their failings as well. But every bee-keeper knows, or thinks he knows, all about queens, and yet it would seem as though some, perhaps too many, bee-keepers as satisfied by merely knowing that *a queen* is in the hive without any consideration as to her qualifications or ability for the duty which she is to perform. The splendid hives and foundations of the day are certainly a boon which every true bee-keeper appreciates, but the great centre on which success most largely depends, that centre at which no master bee-keeper can err, is in securing "the good queen" for every colony.

What do I mean by "the good queen?" By the use of that term I mean the queen that will do the largest amount of work in a given time.

The late Lorenzo L. Langstroth, who has been justly styled the father of American apiculture, describes a good queen in that marvellous work of his on "The Honey Bee," as one who will lay three thousand five hundred eggs per day for several weeks in succession during the breeding season.

What bee-keeper of any considerable experience has not had occasion to note the difference between good, medium and poor queens? The colony with but a handful of bees, so to speak, will gain so rapidly in numerical strength as in some cases to exceed the more populous colony in the next hive in the actual amount of surplus honey stored; thus demonstrating that the good queen was in the colony which had wintered poorly, whereas the well-favored colony had only a medium or poor queen.

Dzierzon, the great German bee-keeper and scientist, says that queens differ much as the degree of their fertility.

Mr. Langstroth notes an observation made while transferring bees, by counting the eggs dropped on a black cloth in forty minutes by the queens of four different colonies. The first queen dropped but one egg, the second twelve, the third eighteen, and the fourth twenty eggs in the stated time. This observation was made in the middle of April, and on the fifteenth of July the colony of the first queen was very poor, the second was of average strength, and both the others were very strong.

Now, let us apply the result of this observation to practice and see how it would figure out. Take for instance an apiary of one hundred colonies, the avarage annual yield of which is, say, eighty pounds of extracted honey per colony. Let us suppose that twenty-five of the one hundred colonies are poor, fifty average and twenty-five strong; and then try and solve the problem as to how the average yield of eighty pounds per colony is obtained. The poor colonies will gather about half as much surplus honey as the fifty of average strength, or say forty pounds each, then, in order to get the average

of eighty pounds per colony for the whole apiary, the twenty-five strong colonies must gather one hundred and twenty pounds of surplus honey each.

Now, if in accordance with the observation and deduction of Mr. Langstroth as already noted, the difference between the poor, average, and strong colonies is attributable solely to the difference of queens, then we are forced to admit that the mere act of tolerating the twenty-five poor queens has incurred an expense of one thousand pounds of honey when compared with the average colonies, and three thousand pounds short when compared with the strong colonies, either of the items being sufficient to pay for all the *good queens* required and have a considerable balance to the good.

You may change the figures as you desire and the result will always show that the poor queens are heavy debtors with no prospect of paying, and should under no circumstances be tolerated. Keep the best and only the best, the *very best* are the cheapest in the end ; and the economy that prohibits the employing of the best queens is certainly a false economy.

The owners of Ayrshire, Jersey, Holstein or other stock do not stop at merely knowing that their animals are thoroughbred. Their ambition is that each individual member of their herds shall be the very best of its kind. And should not bee-keepers study their own interests by copying the example of the stockmen in this regard ? Yes, by all means, yes ! And one point more in this connection, and one which many bee-keepers scattered over the Province will do well to study and ponder carefully, and that is the fact that the stock-men find that it pays to be a member of the Provincial Association which is studying and advancing their interests.

Bee-keepers in the remote parts of the Province into whose hands the Government report may fall, will please make a note of this, and remember at the same time, that the Ontario Bee-keepers' Association is studying to advance your interests ; and like the stockmen you will study your own interest by communicating with the Secretary, Mr. Wm. Couse of Streetsville and secure membership in the Association which is trying to do you good.

And, now, I have already taken up too much time, and in conclusion I would say to those who have come expecting to hear a flowery dissertation on scientific queen-rearing, and to those who may have wished that their favorite kind or race of queens would get an advance in the address, that if such has been your anticipation I can only tender you my sympathy in your disappointment. I said at the outset we had met for practical purposes. I have endeavored to give you a plain, practical talk on the topic assigned to me, and I hope my address and the discussion which will follow may prove a practical benefit, not only to those gathered in convention here, but to many of our fellows who are not privileged to be with us.

Mr. McEvoy : That is the best paper on that subject ever written, in my opinion.

Mr. Post : I agree with you.

Mr. Fixter : Do you advise raising your own queens, or buying them ?

Mr. Holmes : Answering that I should say that I buy largely. I, of course raise a few queens but I buy the most of them.

Mr. Hall : Mr. Langstroth and many other men go in for prolificness ; Mr. Holmes has got the same fad. Fad I would call it ; fad it is. All those of you who have taken honey, and have taken notice of the stock of bees you have received it from, will notice sometimes two stocks of bees equally strong in proportion. The one will gather three times as much honey as the other. The one queen is as profilic as the other. Is it the queen that does that ? I do not want the prolific queen except those coming from that queen are workers, gatherers in of honey. I have been so unfortunate as to have stocks of bees in my yard that will fill every corner of the hive with brood and consumes every ounce of honey for that purpose, and there is none for the apiarist.

Mr. McEvoy : Provided the queen that furnished a small quantity of bees, and the queen which furnished the largest quantity of bees, were equal, as far as workers were concerned, would not you rather have the one which produces the greatest quantity of bees ?

Mr. Hall : I have had stocks of bees in my yard that apparently were only medium. I have had stocks in the same yard, perhaps alongside of the other, with three times the quantity of worker bees, and from all appearances supposed to be the same ; but at the end of the honey harvest the one which gave me the smaller quantity of bees would give

me the larger quantity of honey in the best marketable shape. Therefore, I want not the queen which raises the greatest number of bees, but the industrious bees, the bees which give us the honey. The honey is the only thing we are in bee-keeping for; if we are in it for anything else, I am not aware of it. The beautiful queen does not supply our wants. We do not sell a bee, or a queen, or anything but honey; therefore it is honey we want, and the honey bee we want. Mr. Hutchinson has honey bees. and if his bees are as he says they are, I think I would like to have some of them; but we do not want those prolific bees that fill everything you can give them with brood, and when they come to go into quarters they have not given you anything for their summer keep, and they have not got enough for themselves.

Mr. McEvoy: Mr. Hall did not answer my question yet. Supposing these are good working bees that you want, and you are going in for a crop of honey, and you say it is dollars and cents you are after, do you not want a queen that will produce three times as many of that race of bees if you can get it?

Mr. Hall: I want longevity in my bees. I want that both first and foremost. That is why I do not want to replace my queens every year, because if I do, I kill them and I do not know what I kill. If I keep them three years or four years, and they have done work for four years, wintered well, given us comb honey and in good shape, that is the queen I want to raise from, whether she raises few or many bees. It is honey we want, and we do not want short-lived bees. If you have a very large family, you may have a lot of puny ones that do not amount to anything; but if you have three or four sturdy boys and girls, they are worth something, and the results will be much more than from fifteen or sixteen weaklings. We want longevity as well as energy.

Mr. Post: I think Mr. Hall will admit that he will find more difference in the bees in the clover flow than he does in the fall flow. We all notice with colonies of bees of the same strain that one colony will gather double the quantity another will, and that is more likely to take place in the summer flow than it is in the fall, for the simple reason that some colonies become very strong in the spring, and the bees are the right age to gather honey, while others do not get strong until the honey season is on. They are full of bees; the bees are too young to gather. If you continue the experiment right through until the buckwheat and golden rod honey comes you do not see half of that difference; you do not see much difference.

Mr. Hall: I have kept bees for twenty-five years, and it is only in the last three or four years we have had any fall flow. Our honey crop shuts down about the 22nd July, and the bees that get ready for the harvest are the bees that give us the honey, and we select those bees to breed from because of their ability to be prepared for that harvest. The bees in the fall are of no use to us in my past bee experience. I told one man they were not worth twenty-five cents a bushel. We have our bees that come out of winter quarters, but they brood up on dandelion and fruit blossoms and are ready to swarm in the last week of May, which we do not want. We very often have swarms we do not want. We want those bees that are long-lived, so that they will be ready, as soon as the honey harvest begins, to gather the honey. The more bees you raise the more honey it takes to feed the babies. If those babies do not live long enough to gather that amount of honey we come short in the end of the season.

Mr. Post: I notice there is a great difference in the white clover season, that some colonies do so much better than the others; but I take them to the buckwheat fields in the fall, and I declare to you I can't see any difference. I think it is in the age of the bees.

Mr. Hall: If you only had an early season upon you, you would soon weed out those fellows that do not get ready for the early flow.

Mr. McEvoy: I will agree with Mr. Hall as far as he has gone on this class of bees—that it is a business bee. I will admit that there can be a large quantity of bees that are worthless in a hive, and that they do not gather honey—and Mr. Hall has got a good strain—but if he has a queen in that hive that will produce just twice as many of that good strain, is not that a better queen? Because double the number of bees will give double the quantity of honey, and double the quantity of honey will give double the quantity of money.

Mr. Holmes: Answering Mr. Hall's objection and criticism, I think he brought out a good point there, that we sometimes have very populous colonies, and one colony here will be a good honey producer while the other there will not. It seems to me at least a

mystery. As to whether or not they are holding a council of war in there, and deciding as to whether they shall establish a new home somewhere, I do not know. However, I think if Mr. Hall will look a little further down in the paper, he will find a paragraph which will cover the ground which he has criticised. I say that our aim should be to get the best and keep the best. Of course, if we keep the best that is with a view to the best honey gatherers.

Mr. HALL: Your paper does not say so. You say those that are the most prolific. Langstroth was not a honey producer. He raised bees for sale; he wanted those that looked nice and laid a lot of eggs.

Mr. HOLMES: In my paper my intention was to refer to the stock producers, and not being satisfied with knowing that every one was thoroughbred, but to know that each individual of the herd was of the very best kind. I think if you read between the lines you will catch it.

Mr. MCKNIGHT: The paper just read by our friend Holmes is perhaps one of the best of its kind that I have listened to in connection with this subject during the long years I have been connected with this Association. It is a very peculiar subject that was assigned to him, and he has treated it well. The queen bee is a most remarkable creature. To use a paradoxical phrase, she is the mother and she is the father as well. The queen bee is one of the most remarkable in all history—in all nature in fact. He told us she will lay three thousand five hundred eggs in a day. What does that mean? It means about three times the weight of the creature which deposits them. Is there any other creature in creation that performs such an extraordinary feat as this? I remember once, I think it was in Brantford, that I said a few words on the queen bee, and I incidentally referred to just what Mr. Holmes has referred to now. The Dairymen's Association met in Brantford a few years ago, and one of the questions discussed at that meeting was the proper rations for a cow; that is, the daily food that would enable her to produce the greatest quantity of milk. I think I said then, and I will repeat it now, that the dairyman might take a lesson from the bee-keepers. If they could produce the rations that would enable a cow to produce three times her own weight of milk in a day, they would do something for their country. Will any of you tell me how it is possible, how it is that a creature like a queen bee can work up out of her system three times her own weight in a day? I have not the slightest doubt but that the queen bee has a good deal to do with her progeny, with the bees she produces, with the three thousand five hundred she produces every day for a certain length of time, but how our bee keepers can so handle it that the highest quality of the man will come from the mother, I do not know; I am sure I cannot tell.

Mr. HALL: They can only do it by selection. They cannot guide their ways; that is why I do not kill the queens.

Mr. MCEVOY: How do you know the best queen you have in your hive?

Mr. HALL: From the work she has done in the previous years, and from the work her babies have done in previous years.

Mr. MCKNIGHT: My own impression is that there is not so very much after all in the queen as people imagine.

Mr. HALL: It is her offspring.

Mr. MCKNIGHT: But the offspring is the product of the producer. Has the male bee nothing to do with that?

Mr. HALL: Yes, he has.

Mr. MCEVOY: You are both right.

Mr. BROWN: The subject has been so fully covered in the paper that I could see no point to contradict or even to raise a question upon. I can only indorse what Mr. Holmes has written. The paper has been a very valuable one indeed. I would fully agree with the writer that the selection of our bees is as necessary to a bee-keeper as the selection of his cow is to the dairyman. In the bee yard I have noticed that very often in the spring of the year there are some very weak colonies, and I find in letting them take their course that some of them will go the whole season through, and not come up with those that have got a good prolific queen. There must be something the matter with that queen; consequently I would discard her, if possible, because I think such queens are only a nuisance in the yard. It takes the greater part of the season for them to build up, and at the same time there is the consumption of stores; whereas, if they were out of the

way altogether I believe it would be much better for the yard. I am not a queen raiser. I never went into it, but I know that when there is an inferior queen in the yard it is better for the apiarist and for the yard for that queen to be taken out of it.

Mr. FIXTER: I think there is a great deal in what Mr. McKnight said about selecting the drones or taking good care of them. In stock raising the sire is looked to a great deal, and too little attention has been paid in that line by those who have been raising bees.

The Treasurer's statement, duly certified to by the auditors, was then read, and upon motion of Mr. Pickett, seconded by Mr. Smith, it was adopted.

THE USES AND ABUSES OF BEE LITERATURE.

BY W. J. CRAIG, BRANTFORD.

I do not take up this subject by way of criticism of the matter and methods, or management of the present day bee literature, nor would I for a moment presume to teach or instruct its leaders. My object is to place before you, as clearly as I can, the fact of its importance, and of your responsibility in relation to it as individuals, and as an Association.

We live in an age of literature, and, whether in the form of newspaper, magazine, book or pamphlet, it wields a mighty influence over the individual and community in the moulding of opinion, the formation of character, the disposition of lives and the regulation of action; helping or hindering, making or marring, all with whom it comes in contact. This is true of all literature, whatever may be the purpose of its issue.

Bee literature in its various forms has taken its place amongst the literatures of the world, and, like the others which have preceded it, will help or hinder the cause it represents. By means of convention reports your debates and discussions are being put into permanent and indelible form to be circulated; hence, the necessity of your careful consideration of every new theory, scheme and invention, before being stamped with your approval. The opinion or ruling of one man is a dangerous thing, and so a question arises here: Should an editor edit? Spurious and misleading statements should not go unchallenged, for, like every evil thing they add to themselves as they pass along. Crop and market reports are important, and should be honestly, conscientiously represented, giving way to neither over-enthusiasm nor depression.

Hobbies are usually undesirable. They become tiresome in time; so also, does the pushing of the views and opinions of cliques, parties and influentials to the exclusion of those from whom they differ. The bee-keeping public look to the bee press for reliable information; they expect it to come from the very best and highest authorities in beedom. Unfortunately many of our intelligent and successful bee men are inclined, whether from modesty or policy, to be very reserved in expression of opinion and giving information. Let us rather believe it is from modesty. Bee-keepers are surely too broad-minded for us to attribute this failing to a meaner reason.

Is it politic to suppress the business of bee-keeping or to encourage it? This question, I believe, comes within our sphere of consideration in such a paper as this. A pamphlet has recently been issued by C. C. James, Deputy Minister of the Ontario Department of Agriculture, entitled, "The Teaching of Agriculture In Our Public Schools." He recommends strongly such an introduction. If this feature is favorably considered by the Educational Department, the science of bee keeping will no doubt follow and become part of our national instruction. Some of our people fear the result of such an introduction, but why should we in bee-keeping more than in farming or any other industry? If the production of honey is to become a source of business, commerce and wealth, it must be through the efforts of an intelligent and educated public.

In conclusion, we cannot recommend too highly such standard works as "Langstroth on the Honey Bee" and the "A.B.C. of Bee Culture," and no beginner should start out without having studied one, or both of these. They form an excellent foundation for a successful bee-keeper.

Mr. EVANS: I am very much pleased with the paper; there is a great deal of common sense in it, and I think it is fairly set forth. I think it is a very good thing for all

bee-keepers to get all the bee literature they can, read all the books they can, and get all the information possible. There are a couple of points to which I take exception. Probably I am a hobbyist in one direction—in opposing anything which promotes or tends to increase the number of bee-keepers. The principle of having bee-keeping taught in the public schools is one to which I take strong exception. I have not any use for teaching agriculture there, either. I think a boy raised on a farm knows more about agriculture than he can learn by all the cramming you can give him in the public school. I think the tendency is to over-work the children; their lives are made miserable when they should be developing muscle. I think instead of encouraging the teaching of these subjects in the public school we ought to try and discourage them and give childhood back to children. I do not think it would be a good thing to have apiarian knowledge taught in the public school. I do not feel under any obligation to do anything to spread the knowledge of bee-keeping abroad in the world. I do not think it is our duty, and I do not think that it is any of our business, or that any person should expect us to do anything to promote competition in our own line of business. I do not find any other profession does that. The lawyer does not ask to have law taught in the public schools. The doctor does not ask to have medical science so taught. They do not ask for the dissemination of knowledge with regard to any of those things by which they make their living, or that they should be made common and taught in general. There is another point I object to, and that is in connection with the production of honey. It is not on the same basis as other agricultural products. It is a luxury and not a necessary of life. It is not generally used like butter and meat and bread and those kind of things; there are only a few people in the world that are fond of honey. We have not the sale for it; it has no standard value like grain. It does not matter how much meat or beef or pork we produce in Ontario or how much we increase the knowledge of the production of it, we are not going to affect the price, consequently, it does not matter. We can encourage our neighbors and give them all possible information, and it does not affect us at all, because the price is made in a foreign land. It is not so with honey; we can easily overstock the market for honey in Ontario; there are bee-keepers enough in Ontario to produce more than the country can utilize; and, when we seek in any way to increase the number of bee-keepers, we are doing ourselves a great deal of harm. I think we ought to emulate the example of the other professions. For instance, take the journal which is devoted to medicine; you do not find there any reports as to the money the doctors are making. You do not find any advice given to young men to study medicine; you do not find anything at all that would tend in any way to increase the number of doctors. If a journal did that it would immediately be boycotted. Every doctor would try if possible to kill that magazine, by discouraging the circulation of it. A short time ago in the *American Bee Journal*, I saw a notice requesting bee-keepers to report the largest crops they had had, and I think they were a couple of pages taken up with reports of crops of honey showing what they had got. I think that is an abuse of bee journalism, and that is a thing bee-keepers should put their foot upon; we ought to keep quiet on those things. I do not say we should discourage any man from becoming a bee keeper, but on the other hand, we should not try to boom up the business and increase the number of our opponents in business. We have our interests to look after, first and last. I think the test of a bee journalist is to publish those things, and those things only, that are of interest to the men who produce the honey. I think the bee producers should know something about the crops each year. I do not think that would be difficult to get at in Ontario. We have a number of directors spread over the whole Province. I think if they were communicated with, they would give a fair idea of what the production was in each section. The difficulty has been in Ontario when there would be a good crop in one section, the bee-keepers did not know but that it was universal all over the Province, and consequently they got rid of their crops a little too soon. There are some fearful combinations in bee journals. When you get a bee journalist who is a supply man, in the spring the first head of clover he sees he cackles over it like a hen over a newly-laid egg. Honey is going to be rolling in and he advises everybody to buy supplies. There is another awful combination. If you get a bee journalist who buys honey, he carefully keeps back any failures anywhere, and he publishes good reports always; and after your honey is all gone, you come to find, when it is a little too late, that there was a failure in a good many places. I think the paper is an excellent one. I think the lines which I have mentioned

are the lines upon which a journal should be run, and if it is not run on those lines we should boycott the paper.

Mr. McKNIGHT: I admire my friend because he honestly expresses his opinion. I admire a man who does that, whether he agrees with me or whether he does not. I have known the gentleman's opinion on this point for some years past, and he has always honestly expressed his opinion, and he does it to-day. His opinion is, as I understand it, that we bee-keepers should keep our secrets to ourselves, and not disseminate them to the world. That is all right if we were private people. But as an Association, we get $500 a year from the Government—from the people. What do we get it for? Why do the people of Ontario pay this Association $500 a year? It is simply that this Association should disseminate a knowledge of bee-keeping throughout the country and thus increase the resources of the country. That is the reason why a grant is given to every industrial association in this Province, and that is the only reason. It is not that the few individuals should get that $500 and confine it to themselves and profit by it. Our duty here as an Association is, as long as we take public money from the people, from the public of the country, to give to the public some return for the money they give us, and we can only give them that return by disseminating the knowledge of bee-keeping throughout the Province, and thus increase one of the products of this Province and in that way enrich the country. Mr. Evans' opinion is all right if you confine it to a few people; but why should that gentleman or any other person connected with this Association expect the people of this country to give this Association $500 a year for their own particular and special and personal advantage? That is not the idea at all. If you want to confine your knowledge of bee-keeping to yourselves then refuse to accept from the country the $500 that you receive every year, and have received for many years. I say the duty of this Association as an association is to propagate the knowledge of bee-keeping and so increase the products of our country. I have no sympathy at all with my friend in his ideas as to what bee-keepers should do, and what this Association should do as an association. We were a private Association for some years—I know a good deal more about it than most of you do here. Most of those who were associated with me then are dead and gone. We worked this Association when we had no Government grant for a good many years, and I do not know but that it was just as successfully worked then as it is now. But we became an incorporated Association and we accepted a grant from the Government. What did they give it to us for? Was it to enrich ourselves individually? Not at all. Why should a man who has never been a bee-keeper and knows nothing about it contribute to the success of this Association his tax, unless it is that we should use our influence and our knowledge to develop the resources of the country? That is what this Association and every other industrial association of this country is organized for; at least, as far as the Government grant goes. I have no sympathy at all with a man who would take money from the country and put it in his pocket and give the country no return for it. I think that is just what my friend's theory would result in. (Applause).

Mr. DARLING: Mr. McKnight has intimated that Mr. Evans' idea is we should get this money and keep it and not give the country any return for it. I do not think Mr. Evans has that idea, but I will tell you what Mr. Evans did not make plain, and that is that there are other ways of spending this money for the good of the country that would be far better for the members of the Association, and for those who are not members and for those who keep bees and for those who do not keep bees, than it would be by teaching everybody to keep bees. I am with Mr. Evans there; but I do not think it would be the best thing for the men who are bee-keepers and those who are not to have all men go into bee-keeping. It was only yesterday a member said he had had applications to move his bees to their localities for their benefit, and the sooner we can get such educational items as that before the public, and get them to see the matter in that light, the sooner we are going to do the best we can for ourselves and for the others. I am thoroughly in sympathy with Mr. Evans' idea. To be honest to ourselves and our families we have no right to foster things in others which are going to take the bread out of our families' mouths; but we certainly have no right to claim for ourselves the privilege of all the secrets of bee-keeping, and keep the benefit to ourselves.

Mr. McKNIGHT: I know something about the efforts of the men who are promoting or trying to promote the industry of bee-keeping not only in Canada but in the British Isles. I had the honor of being the guest of the British Bee-keepers' Association once

in the Albert Hall. The British Bee-keepers' Association is composed of men quite different from what we are. They are men who do not live by bee keeping ; men who are independent ; in fact, titled men very many of them. That organization is composed of a class of men who are endeavoring to promote bee-keeping throughout the British Isles, England especially, and they are endeavoring to induce what are called the cottagers, the poor people who are living in little houses, to keep bees in order that they may increase their income. I do not know a single member of that Association who is depending upon bee-keeping himself. They are disinterested men and doing what they can to promote the industry of bee-keeping in England, and to encourage the poor people to make something more than they have been making out of their regular vocation. I think that is the true principle of any organization. Develop the resources of the country if you can. But if you want to be a close corporation, stick to it, and do not accept public money to enable you to do that. I say as long as we accept a public grant from the people of this Province we are bound to disseminate amongst the people of this country all the knowledge we have, and I do not think that is Mr. Evans' view.

Mr. J. F. BEAM : I think there are great possibilities in the honey line as well as in the dairy line. I attended some of the conventions of the first organization of the cheese men. The possibilities were marvellous ; the results have been marvellous ; farmers have been changing from less paying occupations to the dairy business. We have shipped some twenty-four millions of dollars worth of butter and cheese within the last few years besides consuming perhaps half that much. The idea is to get people to use honey. Let us not be afraid of competition. We can find a market for all the honey we can produce. The idea is that we are disseminating knowledge which will result in the production of better honey. I was in Woodstock and viewed my friend Mr. Hall's apiary once, and I was very much interested. I got many good ideas. We meet here to disseminate knowledge, and it is only the man who gets at the head of his business who will make the most money out of it. My good friend here has some splendid ideas, and perhaps he was misunderstood by Mr. McKnight. I think it is wrong for us to think that it is money to our pockets not to disseminate knowledge. We should rather get new ideas, improve on the ideas, and get people to consume honey. It is healthful for children ; why shouldn't they have the sweets? Then as this gentleman expressed the idea, it is beneficial to agriculture and to every other line of business. We must have rain to carry on the dairy business We need bees to fertilize. We need all these things together, and I would like to see the honey business develop and grow, and your association do wonderful work the same as the Dairymen's Association and the other associations, such as the cattlemen, the sheepmen and swinemen. A few years ago, they reported three million dollars worth of bacon ; last year, twelve millions of dollars worth. (Applause).

Mr. HUTCHINSON : I agree with Mr. Craig in what he says. I heartily believe in not putting our light under a bushel, and in simply looking to ourselves alone, but with the object of doing the greatest good to the greatest number.

Prof FLETCHER : Our friend spoke in rather derogatory terms of a man that had a hobby. I have no use for a man that hasn't a hobby. I believe in cranks, because it is the crank that turns the wheel that makes everything go. (Applause.) And because a few poeple or many people call another man a crank it does not prove that he does not do some good in the world. The men who have done any big thing in the world, have been men who have been sneered at by other people who did not think it would pay. Every one of you should be men that have got the hobby of bee-keeping, and all doing it in the very best way. I am afraid of people who do not believe in hobbies.

Mr. DICKENSON : I have always felt when I was running the bee industry that I had that as a hobby, but I had this also in view, to make it pay. I think if any person has a hobby that pays it helps to make him more satisfied, but I do think in any event it is necessary to have some hobby, and all the better if you can have a paying one.

Mr. MCKNIGHT : The gentleman who has defended the continuance of hobbies is a hobbyist himself, and he is a hobbyist who is doing good service to the country.

Prof. FLETCHER : What is a hobbyist ? It is a man that has just paid a little more attention to the question which he is studying than any one else ; and why is he a nuisance to other people ? Because people do not like to be told about what they cannot understand and do not know. (Laughter).

Mr. EVANS: The gentleman who has criticised my criticism has entirely misapprehended what I said. I did not utter one sentence in favor of suppressing any information in connection with bee-keepers, but I still oppose the teaching of this knowledge in the public schools. We disseminate knowledge; we have our doors open and everybody can come in here. We have our township conventions; we patronize and assist our *Bee Journal* and we give every member a copy of it and do everything in that way to disseminate knowledge. That is a different thing to what I object to. What I object to is the booming of bee-keeping, and trying to persuade the public that there is millions in it. We are not at all in the position of aristocrats, or of those people in England which Mr. McKnight has spoken of. We are in it to make something out of it; we are in this business to make some money. The English aristocrat is in it simply to help the poor, and as a philanthropist. We cannot afford that. If my friend is an aristocrat, and can afford to go into that business and spread the blessings to the poor, all right; but I am not rich enough to do that, and I do not know whether the rest of the gentlemen here are or not. The question has been raised as to cheese, but everybody knows honey is not in the same position as cheese. Objection has been made to the fact that we receive a grant from the Ontario Government. Well, if it is in our way let us do without the grant. We find other institutions receive a grant, and are not expected to disseminate the peculiar knowledge of their particular profession. Colleges are built and maintained and assisted by the Province where doctors and lawyers are educated, but they are not expected to go out and disseminate their information to everybody. A lawyer is not expected to give legal opinions without being paid for it; the doctor is not expected to go out and hold meetings in school houses and tell the people how to keep their health; and yet the Province helps these institutions.

Mr. CRAIG: I of course do not object to a man having his hobby and riding it all he wants to. There is a great difference in riding a hobby in journalism; you do not want to ride your hobby over every one else, and that is what I refer to in my paper. Just another thing, in regard to suppressing information as to the bee industry. The question is, is it going to pay? What is the use of us talking about an export trade, or what is the use of us making an effort in that direction if our aim is to suppress and keep in one little corner our own business?

Mr. DICKENSON: I cannot let that remark of Mr. Evans'—with regard to honey as a product of this country not being the same as cheese and butter—go without having something to say. I simply stand in this position. If I had twenty thousand pounds of honey to-day I have got a man that will buy it; and every time I have made a shipment to England, I have got a letter back saying, "Repeat the order and double it if you can." I think that ought to be satisfactory to any bee-keeper in Ontario who is in danger of getting an over-supply of good first class clover honey.

A PAN-AMERICAN HONEY EXHIBIT.

Mr. OREL L. HERSHISER of Buffalo, N.Y., was introduced, and after describing the plan and scope of the exhibition thus referred to the proposed honey exhibit: What bee-keepers will get at the Pan-American depends almost altogether upon what they want. The management of the Pan-American are willing to do almost anything that the bee-keepers want; so you must not be modest in your demands. I think it would be well for this Association to appoint a committee at this meeting to look into the matter thoroughly, and if possible come up to Buffalo and look over the situation, and see just what you may expect if you make an exhibit there.

Now, it was intended some time ago to place this apiarian exhibit in the agricultural building, but the demand for space in that building became so great that it is now contemplated to construct a building especially for apiarian products, and it is quite important to know, just as soon as possible, what the demands of the bee-keepers will be in order to know how large to construct this building. There are plans being made to have an exhibit of bees, to have bees working there just as they do in your apiaries at home, in order to show the public just how honey is produced.

Some remarks made by a gentleman in this room a few minutes ago brought out the idea with me that he was not in favor of people knowing very much about bees and

honey. I think it is a good thing to let everybody know about bees. There is no danger of too many people engaging in it, because there are too many people afraid of bee stings. Once in a while a person thinks he has ability to keep bees; he goes into it with a rush, but he soon goes out of it again; and so I am not afraid of that at all. I am in favor of somebody going into the public schools of our large cities and teaching the children where honey comes from; teaching them something about bees so that they know there is no such thing as a "king bee," and things of that kind; so that when they know it is impossible to duplicate comb honey, and that when they buy comb honey they know they are getting comb honey and are not being fed on sugar.

In New York State the Board of General Management have been very liberal and have come forward without any coaxing at all and have done all that could be reasonably asked for the exhibit of the State of New York. And in what little I have had to do with these exhibits I have never been modest about asking for what I thought we ought to have, and I never got less than I asked for, and I do not believe you will, if you go to your Government and ask for a good liberal allotment I do not believe you will fail to get it, because the bee-keeping industry is much more important then people generally and even bee-keepers believe.

Some time ago, I read an article, I think by Mr. Converse, in which he quoted somebody as proving that the English nation would become extinct if it were not for cats, because cats destroyed the mice, and left a place for the bees to nest, and that fertilized the clover, and hence the production of those dairy products that are so necessary to our existence. I think it could be reasonably contended that if it were not for the honey bees the English people and the American would become extinct, for if it were not for the honey bees we would not have the fruit we need so much to ward off the dangers of dyspepsia and other diseases that would soon make the race extinct. But, while the dairy industry has become very important, and there are millions of dollars invested in it, there are not nearly so many dollars invested in the dairy industry as there are in connection with the fruit industry. One could not very well survive without the other.

That is about all I can say about the Pan-American. Just come up there and look it over and make up your minds that whatever you want you will get as to space and the people of the United States will be very glad to entertain you, and we will do the very best we can by you. We want you to come there with the determination to put an exhibit to excel any of the exhibits that are made by the states of the United States; and the others, especially the State of New York, will make just as big an effort to see that your expectations are not quite realized; so that there will be friendly rivalry. We will come together as friends and depart as friends, and we will be all the better for it. (Applause)

EXPERIMENTS WITH FOUL BROOD GERMS IN HONEY.

By Prof. F. C. Harrison, Ontario Agricultural College, Guelph.

During the last year I have been in Europe, and whilst there I made the acquaintance of a famous apiculturist, Monsieur E. Bertrand, of Nyon, in Switzerland, with whom I had many talks over the subject I am speaking on to-day, and I was astonished both at the time and subsequently at the different treatment used for curing foul brood practiced in Europe and practiced here. I may say in a word that both in the United States and in Canada starvation methods are much used for the treatment of this disease. In Europe we do not find these methods used to any extent. Monsieur Bertrand told me he would not recommend in his journal *La Revue Internationale D'Apiculture*, the methods as practiced here, but rather those which may be termed chemical or drug treatments. About three or four years ago your then president, Mr. Holtermann, asked me to conduct some experiments in this line of work. I did so, and I read a short paper on my results at your Toronto meeting. Since then I have prosecuted my studies in this direction at various odd times, and have written and published in French a paper on this subject which will shortly appear as a bulletin, from the Ontario Department of Agriculture; and what I am about to give you this afternoon is taken from that which I

have written in Switzerland, and I trust that you will patiently wait for the rest of the report, which is far too lengthy to give you now. I might also state that I had thought it expedient on account of the meagre and small amount of literature accessible to the ordinary reader to practically monograph what has been written about foul brood, but in doing so I have not attempted to give the opinion of every bee keeper. The number of bee journals is, in itself, appalling, and I could not commence to collect all of them, although I have had access both here, in the United States, and in Europe to many of the best, and if I have omitted any good paper or any paper which has been shown to be the result of experimental work I must express now my regret for the omission, and if I had such a copy I am sure I would include it in a subsequent issue.

What I intend doing this afternoon more particularly is to run over briefly a few of the facts which others in the past have found, leaving the discussion and the experiments which I have made for you to read at your leisure. I would sooner do that than introduce a more controversial part of the subject at this time, and probably at a subsequent meeting of this Association I could then explain a little more fully any of the points which you might wish. I shall confine my remarks largely to an historical resumé of the subject, the geographical distribution of the disease, and some of the economical aspects of it, and although this may be rather fragmentary, I may mention something about the symptoms as the outcome of the historical resumé. [Prof. Harrison then read portions of Bulletin 112 since issued by the Ontaric Department of Agriculture.]

I trust these facts will be helpful in causing a little more thought. I have been criticised several times by people saying, "Oh, what do you know about this? You are not a practical bee-keeper, and your results are worth very little" Still, at the same time, I will say this, I have had an opportunity, since being away for over a year, of having very practical advice and also the use of several apiaries put at my disposal. It has been my misfortune to be unable, in conducting experiments on foul brood in this Province, to infect bees on account of the foul brood law; and being a member of the Ontario Agricultural College and in an official position I am even more unable to transgress the law by having foul brood colonies in my possession. In fact, I did attempt it, and I was promptly brought to time, and was ordered to burn all my colonies at once. I have been handicapped in that way; otherwise I would have done far more. I want to be able to experiment with infected bees and follow up certain lines of work which I have been unable to do in this Province. I had hopes of going to Quebec sometime to do it. I was able to do a little of it when I was away last year, and you will also see those results as given.

Mr. GEMMELL: I would like to ask Prof. Harrison if he thinks there is really any danger of infection by the bees visiting flowers?

Prof. HARRISON: I cannot actually give you any experiment on it. I have tried it. I have walked bees across cultures containing spores, and then have made them walk across sterilized food material and have had baccilli develop from those places, and I think from that fact that they can drop these germs. As we know, flies very often cause a very large number of diseases and other infections, for instance, in cheese factories from walking over curds, dropping in the milk and so on. We often have had trouble, and have had things to analyze which we know have come simply from that cause. As to this disease, when the bees visit a flower there is nearly always some sticky substance on top of the flower that may cause those germs to be held in place; they are so light, probably sixteen or seventeen millions of them would be required to make about a twenty-eighth of a gramme, which is a very small amount indeed. I did not put any emphasis upon my statement, I simply pointed out that it might be so.

Mr. HERSHISER: I would like to ask Prof. Harrison if he has obtained any knowledge as to how long the spores of foul brood will live or stay in that condition from which they may become active afterwards? For instance, if foul brood has been prevalent in a locality, and it has been stamped out for say twenty years, is it likely to break out from any spores existing in that locality in old bee trees? I know of a locality in New York State where foul brood some twenty-five or thirty years ago killed all the bees, and I have some bees from that locality, and a year or two ago I thought I had a colony of foul brood, which fortunately turned out not to be so, but it gave rise to that question in my mind.

Prof. HARRISON : In answer to that question I may say that I have an experiment going on at this time which has been in progress four years, and which I cannot say at present when it will finish. If I live eighteen years longer I may be able to tell you if they will or will not live that length of time. The experiment is as follows : Four years ago I spread some spores on a large number of small pieces of glass, and every three or four or six months I take one of these pieces of glass from the places where I keep them —I have them in two places ; in darkness in the ordinary drawer of a table in my laboratory, and in a cupboard where there is a little light, just about the same amount that would enter a hive—I take these out from time to time and make cultures therefrom to see if these spores are alive. When I last examined them they were still living. They are four years old ; they have been lying in this way without any food, perfectly dry, for the last four years, and we can probably say they will live through the same length of time as anthrax spores, which are known to live ten years without food at all. I hope after a time not only to try these again to see if they are still capable of growing, but also to see if they are still capable of producing disease. Therefore I cannot now answer your question more definitely.

Mr. MCEVOY : I can answer that question in part. No. The reason is that there have been no bees to defend it, and the tree has been exposed to other bees in the neighborhood, and they would come and rob or clean the honey all out of it, and there would be, therefore, no honey containing foul brood for the bees to go back to get.

Mr. HERSHISER : Supposing a colony of bees goes into a neglected tree ?

Mr. HALL : Have you got any bee moth in your vicinity ?

Mr. HERSHISER : Lots of them.

Mr. MCEVOY : Now you have got the answer. Allow me to thank our bee king, Mr. Hall, for helping me out.

ELECTION OF OFFICERS.

The election of officers then took place, and resulted as given on page 3.

WOODSTOCK FOR NEXT MEETING PLACE.

Mr. NEWTON moved, seconded by Mr. MCEVOY, that the next annual meeting of the Ontario Bee-keepers Association be held at the town of Woodstock, Ont., which, on a vote having been taken, was declared carried.

PREMIUM.

Mr. MCEVOY moved, seconded by Mr. DARLING, that the *Canadian Bee Journal* be recommended to the Board of Directors as the premium for the coming year, which, on a vote having been taken, was declared carried.

HOW LITTLE NEGLECTS AFFECT THE PROFIT OF THE APIARY.

BY W. Z. HUTCHINSON, FLINT, MICH.

For want of a nail the shoe was lost ;
For want of a shoe the horse was lost ;
For want of a horse the rider was lost ;
Being overtaken by the enemy and slain ;
And all for want of a horseshoe nail.

How well this old ditty illustrates the losses that occur in the apiary from little neglects. For want of a pound of feed in the spring the colony may be lost ; and for want of the colony the harvest is lost, as there are no bees to gather it. For want of

care in disposing of the cage and accompanying bees when a queen is bought, foul brood may be introduced into the apiary, and the end thereof no one knows.

Most emphatically is bee-keeping a business of details. Of course there are certain broad principles that must be observed before success can even be hoped for. The apiary must be located where there are honey producing plants, and there must be bees in sufficient quantity to gather the nectar. The bee-keeper must understand his locality; know when to expect the harvest, and have everything in readiness for it. If in a northern climate the bees must be protected in the winter, either by some kind of packing, or by putting them in a cellar. If comb honey is to be produced, some system must be adopted that will keep the working force together instead of having it divided up into two or three colonies. But after a man has mastered all the basic principles of bee-keeping, yes, after he has become conversant with the details, he may lose a large share of his profits simply from out and out neglect. The bees are in the cellar. He does not go near them. He does not know what the temperature is. It may be too low; and, if so, it might be possible to add to the protection afforded by the walls. Boards might be set up around the walls, held in place by strips of wood tacked to the sides of the house and the space filled with sawdust. This little care alone might, in some instances secure the safe wintering of bees that would otherwise perish or come through the winter in poor condition. If the bees are in the cellar under the home of the bee-keeper he might employ artificial heat at those times when it is needed. A large oil stove having a hood over it, connected by means of a pipe with the stove pipe in the room above, will answer every purpose. A cellar may become infested with rats or mice that will gnaw combs and do much damage if not got rid of. Equal parts of flour, sugar and arsenic placed in dishes in the cellar will make quick work with the rodents. Mice will play sad havoc with colonies left out of doors if the entrances are neglected. The bee-keeper should *know* how his bees are wintering. He should not neglect them. A perfect wintering of the apiary lays the foundation for a successful season.

After the bees are placed upon their summer stands do not neglect them. As soon as the conditions are favorably look them over. Here and there will be a queenless colony. Here and there will be a weak one. United such colonies may prove as good as there are in the apiary. Neglected, they will be of little value—the queenless ones will certainly perish, perhaps become a prey to robbers; thus stirring up bad blood in the apairy at the time of the year when all should be peace and happiness. Some colonies will be found with a great abundance of stores, others on the verge of starvation. Neglect here means the loss of all colonies that are short of stores.

As the harvest comes on, do not neglect to have the hives, sections, frames, etc., all in readiness. Some of you may be ready to shout "Chestnuts." Well, if only those shout who have never been caught, I think none of us will need to cover up our ears. Nothing will quicker change the mood, and disposition, and intention of a colony, cause it to turn its energies into a different channel, than the neglect to furnish it surplus room when it is needed. The disposition to store honey is laid aside for that of swarming. A colony with the swarming fever will do little work until that fever is abated. If a colony first turns its energies in the direction of storing up surplus, it will often continue on in this way the entire season with no thoughts of swarming. And, speaking of swarming, reminds me, that the neglect to clip off just one little eighth of an inch from her majesty's wing sometimes results in the bee-keeper striking a dejected attitude, as he gazes sorrowfully over the tree tops where he sees disappearing as little specks in the sky, the last few, straggling members of the rear guard of a prime swarm that would have stored 50, perhaps 75 pounds, of honey for its owner had he not neglected to clip that little one eighth of an inch.

When it comes to the extracting of honey there is one point that I wish to mention, although it may be more a mistake than a case of neglect: it is that of extracting the honey before it is ripe. Of course, it is possible to artificially evaporate thin honey, but with this evaporation goes a portion of the fine aroma. Not only this, but the evaporation of honey does not *ripen* it. The bees in their handling of the nectar invert or change the cane sugar to grape sugar. They change the raw nectar into ripened honey. If we take it away from them before this change is completed, it lacks that much of perfect ripeness. It lacks the tang that tickles our palates. Thin, unripe, watery honey ferments, and sours, and bursts tin cans and barrels, and disgusts and disappoints ee-ry

one who has anything to do with it. Nothing has done more to destroy the market for honey than the placing upon it of unripe honey.

Little neglects in preparing the honey for market are very expensive. The neglect to scrape the propolis from the sections, the neglect to use non-drip cases, the neglect to put the cases into a larger case or crate when small shipments are made, may mean the loss of two or three cents a pound. Sections daubed with propolis, honey dripping from one case and daubing the one below it, coal dust and cinders rubbed upon the daubed case, greatly lower the price and retard sales. Before the days of no-drip cases and outside crates I went so far as to wrap a paper around each case before shipment, that the cases might be clean when they reached their destination.

Men who make exhibits at fairs often lose premiums that they might have captured had they not neglected to tastefully label their packages. It is a little thing, but it adds the finishing touch.

Then there are little things like: "Where do you keep your smoker and smoker fuel?" The neglect to provide a proper place for them may mean a costly fire. I once kept my smoker and fuel in an old wash-boiler. Once upon a time, when I removed the cover, the flames burst out. Suppose the boiler had been a wooden box kept in a building, and the fire had not been discovered while still confined to the box? I now keep my smoker and fuel in a large box, with a hinged cover, out in the yard.

The matter of saving wax ought not to be neglected. It is a good deal like saving paper rags, but it is just about as easy to save the odds and ends as to throw them away. A solar wax extractor is a nice thing for this purpose. Keep it standing in the yard, and when there is a bit of waste comb toss it into the extractor. One year when I did a large job of transferring I threw all of the odds and ends into a barrel, and pounded them down hard with the end of a large stick. Then the matter of rendering was *neglected* until that barrel two-thirds full of pounded down comb was one mass of webs and wriggling worms.

But why multiply examples? We all know that the profits of an apiary can be entirely wasted or destroyed by little neglects. What is the cause of this neglect? In some cases it is simply a combination of indolence, procrastination, and a sort of belief that things will come out all right of themselves. Then there is the neglect that comes from having too many irons in the fire. If you have so much business that you can only half attend to it, and something must be neglected, two courses are open: hire some one to help you, or else dispose of part of your business. There is more pleasure and more profit in a small business well managed than in a large business that must be neglected. Some men are so constituted that they cannot employ help to advantage. They have done all of their work so long that they feel no one else can do it properly. It would put them all in fidgets to see some one else cleaning their sections, or uncapping combs for the extractor. Other men have learned that it is much more profitable for them to oversee and plan the work, leaving the carrying out of the details to competent help. You know yourself, or ought to; so choose the course to which you are best adapted, but don't keep on conducting your business in such a manner that you are compelled to neglect it. Be thorough, up-to-date, progressive, and energetic, but do not lose half your profits as the result of little neglects.

Mr. HALL: These little neglects have covered a lot of ground, and I must speak in praise of the address read by our friend Hutchinson. I find as a specialist that my business with the exception of selling honey is all made up of little things. The man or woman who cannot attend to little things has no business to keep bees. A man may be able to equip and run a railway, and yet may not be able to run an apiary, because he cannot condescend to attend to the little things, he must have large things to attend to. I think that the cause of my success as an apiarist is that I can attend to a thousand little things, which is not saying that I can attend to a large thing at all. The phrenologist says this is my forte. He says, "You can attend to a thousand things and do them right, but you cannot boss a lot of men. A man who employed you would give you half his income rather than let you go, simply because you attend to the little things and do them rightly." I have often had young men with me to learn bee-keeping, and some of them cannot do the little things; they want to do a lot at once. They want to do a big day's work and rejoice at the end of it no matter how it is done. They cannot watch for the little things; they cannot cut the grass; they cannot tell me which

of the stocks of bees in the yard wants a super, and which is likely to swarm to-day except they open it. There are a lot of little things like that and I think it is want of observation. Bee-keeping, except in selling the honey crop, is all made up of little things. As far as spring feeding is concerned, I am a lazy man, and I have found it is better to give the spring feed in the month of September previous. As I have advocated in the past, never open your colonies of bees until the fruit blossoms, unless there is something wrong with them. If you want to know their strength, and cannot tell by the noise they make, tip up the hive and look underneath, do not break your quilts. This makes the difference of a crop of honey or no honey. You open them in the spring to see if they are queenless; what good can you do if they are queenless? Let them be. As to locality, Mr. Hutchinson is right. I think we do not as bee-keepers study our locality enough. I was reckoning up the other evening with my good wife how many men we could remember that had started to keep bees in the town of Woodstock and had totally failed, and we counted thirty-four, some of them with two hundred stocks of bees. They had not only failed but had lost everything. They saw that one little fellow was making his living at it, and they said, if he can do it we can. They lost their bees, and while they were losing their honey they lost their money. There are some who do not produce much honey and do not progress in the multiplying of their bees. They do not study locality, and as a result their business is spoiled for themselves and other people. As to wintering bees, I think that also should be done in September, and not in the months of December, January and February, for they will attend to themselves in mid-winter if you will attend to them in September. Give them all a good feed and let them alone. What the wintering of bees, I think, depends on—and I am pretty sure I think right—is the quantity of stores more than the position they are wintered in. I have wintered them with no top and bottom, and I have wintered them shut down pretty close and in cold, in warm, and in dry cellars, and I find those that have nice feed come out in good condition as a usual thing. There are some of them will die for want of the old queen or no queen. There is one little thing in which I differ from my friend who read that beautiful paper. He recommended us, no doubt conscientiously, to unite our queenless and weak stocks in the spring. This I have found from practical experience to be a waste of valuable time. It is all very well to do it as an amusement, but for profit never unite two or three or ten weak stocks. See that they have enough honey, and keep them shut down and give them a good letting alone and they will be sure to pull through. If you have ten and put nine together there is only one queen left, and that may be the poorest queen of the lot. You have not only lost four or five but you have destroyed all the good queens and very likely got a poor queen left, and you have got nothing but your queen. Do not unite in the spring. Let them pull through if they can. If they do not, you have got the hive for something better when the swarming season comes. That is my experience after twenty-five years. I used to unite them, and when we put them together they made a very good looking stock of bees, both in honey and bees, but in three weeks from that I had only one stock of weak bees, and therefore I thought my time was wasted. You know as well as I do that those bees are old, and they will live a few weeks only, and they do not pay for the labor of uniting them with a colony that has a queen. You may lose your best queen by that uniting, and if you do not lose that queen, those bees are old, and are going to pass from the stage of action in a very short time. I do not advise any of my friends to do it. There is one good piece of advice which he gives us, and that is to have a good "ready," and without a good "ready" you cannot do much. One year I had two boys and a man and myself, and we had a good "ready." We stayed there throwing chaff at each other all day long, and we got no honey. They laughed at me. I had 400 supers made to take comb honey, and we did not get an ounce of it. The next year we had them ready, and we got twenty-five thousand pounds of it, with less help. We had a good "ready." Get ready whether you want to be ready or not. As to the extracting of honey, I copied from our friend Pettit who used to attend our meetings. I thought he was mistaken first, that is never to extract a full super. Do not let it go until it is full. Go and take out what are full and ripe, shoving the others to one side. Smoke them and pick them out and set them around while you are putting in new combs, and shut down the hive. These are standing there and you can then shake the bees off, and brush them up and there is no stinging. You can get on as fast as you like with no stinging if you just set them by for awhile.

Mr. Dickenson uses two supers. That is very nice; but you have to lift one of them so high. But by going over them occasionally you can get just as much honey and just as good honey, and you do not give the bees too much room at a time. You know as well as I do bees do not like too much room at a time. If you give them a little room they will say, "We want to fill this." With reference to a man in the apiary, you must have the right sort of man. Generally speaking we cannot lay our hands on a good man in our busy season, and we leave honey in the out apiaries to be extracted till the end of the season, which is very troublesome, and the honey is not so good. There is some of it that is not capped over when the cool nights come and it gets a little thinner. If you take it when it is coming in you do not get hardly any of it thin; you keep the aroma there and you get just as much. Mr. Hutchinson also gives us as a pointer that we must be very particular in the packing and shipping of our goods. That thing in the long run pays better than anything I know of. If our customers get our honey in bad condition they are a little doubtful about dealing with us again, although they may not scold us or grumble; whereas, if a man receives your honey two or three times, and sends in his order without asking the price, and says, "We always get your honey in good condition, ship us so much," we can know that he is satisfied. I find in shipping, especially where you have to ship long distances, that you can ship comb honey without any difficulty. With regard to saving scraps, we can save several dollars in the apiary by not setting it around so that it will draw the moths, and by attending to the bees properly at the right time. I say in bee keeping, as in anything else, the specialist is the man in the long run that is going to make money if there is any in it. You have your eggs all in one basket, and if that basket fall you have lost the lot, but if you have them all in one basket you can look after the basket. If you have several irons in the fire you are sure to get some of them burned. I have done nothing for a living for the past eighteen years but produce honey, and I have always received a living. Some years I have not received a cent, but I have been putting a little to one side all the time. It is simply because I do not give my attention to other things. I have not a good location. We have neighbors who do not get anything from it simply because they have got something of more importance to do—something larger. The bees are a side issue, and therefore they neglect them. In shipping comb honey we pack them up, a dozen small crates in a large crate; we put straw in the bottom and then it is pressed down, and it goes down to about four inches. It is a slatted crate, so they can see what they are handling, and there are handles at each end and two men can pick it up. They see it is frail; it doesn't look strong, and they handle it gently. We send honey in that way to Manitoba and British Columbia. The outside crate is about three-eighths of an inch.

Mr. HERSHISER: I have saved some very valuable queens sometimes when they would be so near gone that there would be only a queen and half a dozen bees left. I have found them in that condition, and by exchanging this hive with the queen and a very few bees with another strong colony when they were gathering pollen, I have saved both.

Mr. HALL: If there is a very valuable queen there is something radically wrong, or else what you state would not be the case.

Mr. HERSHISER: Sometimes bees will drop down into the bottom of the hive and they are prevented from flying and are kept in there so that they worry themselves to death.

Mr. HALL: Certainly, but that is your fault. Your valuable queen that you speak of is not going to give you any service that year.

Mr. HERSHISER: One of these valuable queens that I saved in that way last spring was one that was advertised by Mr. Hutchinson, and I did not want to lose her. He sent her to me and the colony built up very strong and seemed to be in excellent condition to winter; but that accident happened them, and I saved the queen, and I think I got fully forty or fifty pounds of honey.

Mr. HALL: Fall honey?

Mr. HERSHISER: Yes.

Mr. HALL: That is an exceptional case. Where you have a lot of weak colonies you are sure to have some good queens and if you have good queens they will come up and make something and if there is a fall flow they will give you some fall honey. But, as I said before, by uniting them you may entirely spoil your good queen.

Mr. HERSHISER: You mean the ones in the strong colony?

Mr. HALL: I mean the ones in the strong colony may destroy the queen you have in the weak one.

Mr. MCKNIGHT: I have had some experience in shipping comb honey. My first experience was nearly fifteen years ago, when we went over to England with forty tons of honey as an exhibit from Ontario to the Colonial Exposition. Some of us were under the impression that comb honey would pack better than extracted honey. We discovered afterwards it would not. I had not very much comb honey myself and my old friend Mr. Pettit told me that Mr. Alpaugh had a nice collection of comb honey that he would send. I left Toronto and went up to Mr. Alpaugh's home, and I bought two thousand pounds of comb honey from him to supplement our exhibit. I knew Mr. Alpaugh's apiarian experience, and I knew he was a reliable man, and I instructed him how to pack it. I confess it was an experiment, because most of the rest of the comb honey was being packed in all kinds of packing apparatus. I told Mr. Alpaugh to put up his honey in twelve section cases, and to get outer cases made that would hold six of these nicely and closely and put no packing whatever. I told him I would take the risk, for I was buying the two thousand pounds on my own responsibility. That honey went to London in England and out of two thousand pounds there were not three spoiled sections when it reached its destination.

Mr. HALL: You were in company with that.

Mr. MCKNIGHT: Not always. He packed it at his home in St. Thomas, it was sent down to Toronto; nobody saw it from St. Thomas to Toronto. Mr. Couse and I were there. We did not open the cases, but we shipped them from there to Montreal. We did not follow it to Montreal. Mr. Torrance, the manager of the Dominion Line gave us the assurance that he would see that our goods were properly handled and trans-shipped from the train to the boat, and we took his assurance and left it to him. I had the honor of setting up with my own hands perhaps the largest exhibit of honey that has ever been set up in the world, forty tons of Canadian honey. If your comb honey is in proper shape there is not much danger except in frosty weather, when the wax becomes brittle. Something was said as to shipping honey to the North-west. I may say that I have sold nearly all the comb honey I have ever produced up there, and shipped it there but I took another plan of sending it. I took three of these dozen cases, one on top of the other, and I put strips of common lath up the corners and made a kind of a band of lath around each end and that was all I did. At first I used screw nails; I thought it was necessary to fasten these laths very securely to these sections; I discarded the screw nails after a while as being kind of tedious and used common small wire nails, and in all the comb honey I ever shipped to the North-west I have never had a single complaint as to a broken section or a spoiled comb.

AN EXHIBIT AT THE PAN-AMERICAN EXPOSITION.

At this stage Mr. Herschiser gave the members, at the request of the President, some further information as to the Pan-American Exposition to be held in Buffalo during next year, after which Mr. HALL moved, seconded by Mr. BROWN, that the Executive be a committee to confer with the proper authorities and if arrangements can be made that there be an exhibit of honey made at the Pan-American Exposition in 1901.—Carried.

BEE KEEPERS I HAVE MET, AND APIARIES I HAVE VISITED.

On Wednesday evening Mr. ERNEST R. ROOT, Editor of "*Gleanings in Bee Culture*," Medina, Ohio, gave every interesting stereoptican entertainment and explanatory address on "Bee-keepers I have met and Apiaries I have Visited," which was very highly appreciated by all present.

This part of the entertainment having been concluded, the members retired to the Hotel Savoy where an excellent dinner was served, after which the balance of the evening was taken up with toasts, speeches, songs, and recitations, and it was the unanimous opinion of all that an enjoyable evening had been spent.

EXPERIMENTS IN WINTERING BEES.

By John Fixter, Central Experimental Farm, Ottawa.

The following eight experiments have been tried: Four were tried in the cellar, one in a pit dug in a hill side, one in a root-house, one in the house apiary, also outside wintering. The cellar is below a private house. The walls are of stone and the floor cement. The bee room is 12 feet wide by 15 feet long and 7 feet high; this allows three tiers of shelves and two passages. It is boarded off from the remainder of the cellar by a partition, which extends all around the chamber and far enough from the stone wall to allow of a small air space. Under the cement floor a layer of small stones, 12 inches thick, acts as a drain and keeps the cellar perfectly dry. There is also a tile drain which runs through the wall on the lowest side. Any water near by will readily find its way to the drain. The first shelf is 18 inches from the floor, the second 20 inches in the clear above, and the third twenty inches above that. Neither the hives on the third shelf, nor the uprights supporting the shelves, nor any part of the partition touch the ceiling, so that no vibration can disturb the bees from the upper part of the house. The bee chamber is thoroughly ventilated, as is also the whole cellar. There is a three-inch pipe passing through the bee chamber up to a stove pipe provided with a damper, with which to regulate the draught. There is also a six-inch pipe passing through the floor to the chimney that ventilates the balance of the cellar. Before entering the bee room is a smaller room, with a door leading outside and another leading to the bee room; both rooms are provided with sliding ventilators in the doors, so that outside air may be let in at will. Ventilation is carefully attended to, and sudden draughts or changes of temperature are avoided. For this a thermometer, which is always kept in the cellar is watched. The best temperature for the bee cellar is found to be from 42° to 48° Farenheit. This arrangement has given entire satisfaction. In former years there was not proper ventilation, and the cellar was always damp. Since the concrete floor has been laid, and the ventilators put in, the cellar has been much drier and cleaner. It is also rat and mouse proof, which is a very great advantage. The difference in the comsumption of honey by the bees is marked since the cellar was improved. The coal stove, which was formerly in the smaller room to keep a uniform temperature and to keep the cellar dry, has been abandoned, as the cellar and hives can be managed so as not to require it. I would not recommend anyone to use artificial heat.

Experiment No. 1.—Eight colonies in eight-framed Langstroth hives were put into winter quarters in the cellar and placed on the shelves. Under the back end of each hive was placed a three-inch block, by which means the back of each hive was raised so as to insure free ventilation. Each hive was, besides, raised from its own bottom board by a small three-eighths of an inch block placed at the back. All front entrances were left wide open, the wooden covers all removed and replaced with cushions made of chaff, four inches thick, and wide and long enough to lap over the hive two inches. Temperature of the cellar was taken once each week all through the winter, and was as follows: November, 46° to 47°; December, 47° to 48°; January, 44° to 46°, February, 46° to 50°; March, 48° steady. The bees were quiet, only a very slight hum being noticeable up to February, when, the temperature having risen to 50, the bees began to get uneasy, and make considerable hum. Cold air was carefully let in during the night by opening the slides in the doors and closing them in the morning; this lowered the temperature, and the bees quieted down. During the past winter every colony in this experiment was perfectly dry and clean, and all came out in excellent condition. Average honey consumed or loss in weight for the past six years, 11 pounds, ½ oz.

Experiment No. 2.—Two colonies were put into the cellar on 12th November, with tops and bottoms of the hives left on, just as they were brought in from the bee-yard. They were watched for dampness, and to compare the amount of honey consumed. The temperature of cellar was the same as No. 1. During December and January both hives made considerable hum. 27th December, drops of water were noticed all along the entrance of both hives. This same trouble continued until March; on 30th March both hives were removed to their summer stands; one had spots of faeces on the entrances. Both hives were damp and the combs were slightly mouldy, but there were very few dead

bees in either hive. The average loss in weight for the past six years has been 13 pounds 1¼ oz.

Experiment No. 3.—Wintering in a root house. The hives were placed on a shelf nailed up against the wall, about three feet from the ceiling and projecting two feet. A curtain was hung from the wall over the top and down in front of the hives, so as to keep out all light. The wooden covers were removed and replaced with a chaff cushion. A strip of wood 2 x 2 inches was placed all along both sides between the brood chamber and the bottom board, so as to give more ventilation at the bottom, and both back and front were left wide open. In former years the hives kept in the root house did not appear to have ventilation enough; this extra space has proved very satisfactory. Temperature was taken every Monday of each week and was as follows: November, highest temperature, 38°, lowest 36°; both hives quite dry but very noisy. December, highest 42°, lowest 36°; mice had found their way into both hives and disturbed the bees. Some strips of tin put around prevented them getting in again. January, highest temperature 41°, lowest 39°. February, highest 39°, lowest 38°; by the end of February both hives had got perfectly dry and fairly quiet. March, highest temperature 40°, lowest 36°. During March both colonies had got very noisy, and showed signs of dysentery, dampness and mould, but were strong in numbers. Considering the amount of disturbance the bees are subject to in this experiment, I would say that they came out well. Once or twice each week the large doors of the root-house were thrown wide open to allow the teams in to draw the roots out, and this let in much cold air which came in suddenly upon the hives. The teams, also, drawing over the floor, jarred them very much. The amount of honey consumed on an average for the past four years was 14 pounds 3 oz. each.

Experiment No. 4. Wintering in a pit dug in a dry hill side. The pit was 3 feet deep, 3 feet wide and 10 feet long in such a way that the ventilators at both ends might not be immediately above the hives, which were in the middle of the pit. The hives rested on two cedar poles laid along the full length of the pit. The ventilators, which were 3x4 inches, were made of boards, three of which reached down to the bottom of the pit, and the fourth only to the top of the pit. The ventilators rose 3 feet above the ground, wooden covers removed and replaced by chaff cushions. In each hive 2x2 inch strips of wood were laid under both sides and under the back end between the brood chamber and the bottom boards, so as to provide more space for freer ventilation at the bottom of the hive. The pit was covered with cedar poles laid along its length, the middle ones higher than the others, and these covered with a layer of straw and one foot of earth. A small shaft was so arranged between the hives, down which a thermometer could be lowered by means of a string, so that the temperature of the pit could be ascertained. Temperature was taken once each week. From November to March the temperature did not go below 38 nor above 39. On 26th March the pit was opened, both colonies came out good and strong, but the combs were badly moulded. Average weight consumed during the past four years was 11 pounds 4¼ oz. Great care should be taken to guard against water reaching the pit.

Experiment No. 5. Wintering in a house apiary. The house apiary faces the south, the walls are double boarded, with an air space of four inches. The floor, which is about one foot from the ground, is also double boarded and there is no draught under it. The hives were moved one foot from the wall, and placed on a double thickness of sacks laid on the floor; the wooden covers were removed and replaced by chaff cushions. In addition to this, the hives were covered above and all around with a double thickness of sacking. Also one foot of cut straw was put below and all around. A small shaft 1½ inch square extended from the opening of each hive to the outside of the building; 2 inch strips of wood were placed under both sides and under the back, between the bottom board and the brood chamber, so as to give more space at the bottom of the hive in case a quantity of dead bees should accumulate. No flying took place from 12th November until 7th March when several bees flew out. From March 8th to 26th they flew 9 days but were very weak. Another examination was made April 21st. Both colonies had deserted. The combs were quite dry and clean, and there was plenty of sealed honey in the hives. An average amount of honey consumed during the past five years, 15 pounds, 15 oz.

Experiment No. 6—Two colonies were put into the cellar with bottoms of the hives left on, just as they were brought in from the bee-yard. The wooden covers were remov-

ed and nothing left on except a tightly sealed propolis quilt; the entrance was left wide open. During the entire winter the bees kept perfectly dry, and a very slight hum could be heard. Both hives came out in excellent condition. An average amount of honey consumed during the past four years, 11 pounds, 7½ oz.

Experiment No. 7.—Two colonies were put in the cellar and placed on the shelves, a three inch block being placed between the bottom board and brood chamber only in front making the full entrance three inches high across the whole front. The wooden covers were removed and replaced with a chaff cushion. Temperature same as No. 1. During the whole winter both colonies in this experiment were perfectly dry and clean, and showed no uneasiness of any kind. They came out in the spring in excellent condition. The average amount of honey consumed during the past four years, 10 pounds, 8¾ oz.

Experiment No. 8.—Wintering on summer stands. Two colonies were left on their summer stands with extra packing around the sides and top. A box one foot larger each way was placed over the hive and filled with cut straw. The wooden cover was removed and replaced with a chaff cushion. A small shaft one and a half inches square extended from the opening of each hive to the outside of the box. No flying took place from 12th November until 7th March, when a slight hum was perceptible and a few bees made their appearance. On 15th April the hives were taken out of the packing and found to be deserted. Many dead bees lay at the back end of each hive. The frames were all dry and clean, and had abundance of sealed stores. Average loss of weight including honey and dead bees during the past six years, 19 pounds, 1½ oz. Only two seasons out of the six the bees came out in good condition. From experience gained I would recommend wintering in the cellar in any section where the temperature goes over 15 below zero.

Average loss in weight of honey and bees:

No. 1.....	11	pounds,	½ oz.....	wintered in	cellar.
No. 2.....	13	"	1¼ oz.....	"	cellar.
No. 3.....	14	"	3 oz.....	"	root house.
No. 4.....	11	"	4¼ oz.....	"	pit in hillside.
No. 5.....	15	"	15 oz.....	"	house apiary.
No. 6.....	11	"	7⅓ oz.....	"	cellar.
No. 7.....	10	"	8¾ oz.....	"	cellar.
No. 8.....	19	"	1½ oz.....	"	on summer stands.

Mr. DARLING: As to experiment No. 6, where did you winter your hive?

Mr. FIXTER: In the same cellar as No. 1.

Mr. POST: Referring to experiment No. 7, what distance was this from the cellar bottom?

Mr. FIXTER: I generally carry on my experiments on the second shelf. The first is eighteen inches and the second twenty above that; that would be thirty-eight inches from the floor.

Mr. DARLING: Before the matter is discussed I would like to suggest that there is one other experiment that might have been tried if Mr. Fixter had had the time; that is, to either leave the top board on, or leave a propolized sheet under the cushion, and raise it up at the bottom and note whether there would be any difference. By taking the cushion off and putting the board on you allow the moisture to get away.

Mr. FIXTER: I have tried that but I didn't keep track of the amount consumed.

Mr. DARLING: What about the condition of the colony?

Mr. FIXTER: It came out very good. What I tried it for was to see how much heat there was between the cushion and the hive.

Mr. DARLING: I failed to find any particular difference in the honey consumption.

Mr. SMITH: You said in the last experiment it was single packed, and also that the consumption of the stores was very much greater than in the other experiments. Have you ever tried them packed in four so that they have the benefit of heat from each other?

Mr. FIXTER: No.

Mr. SMITH: We have never conducted any experiments, but I think you will not lose so much with four.

Mr. FIXTER: In changeable weather I think it is harder on the bee. They must consume more honey to keep up that heat. I have come to the conclusion that it does not pay any person to winter outside where the temperature will go down to ten below

zero. So far as packing is concerned, one man can carry ten hives into the cellar in the time it would take him to pack one. The great fault had been that have been leaving our bees in the cellar too long in the spring. We are trying them every year a little earlier—about a week earlier. Last year I set out those in the out apiary, those in the closed apiary and those in the house apiary, and in the out apiary we had a foot to a foot and a half of snow to scrape away to get the hives down to the ground. I covered them over to protect them to a certain extent; and I find as soon as we take them out they start to breed up, and by the time the honey flow comes on they are in excellent condition.

Mr. SMITH: Of course that is all very nice where you have the bees at home, but when you have out apiaries cellars are not always convenient. We have to use the next best thing. You will find if they are packed in four that any time during the season if you put your hand down in the corner of those four there is quite a warmth, and the bees cluster to what side and they do not consume nearly so much stores.

Mr. FIXTER: Taking all things into consideration I think it would pay well to build a cellar.

Mr. HALL: I want to suggest to Mr. Fixter that in answering Mr. Smith he has just given us the reason why those outside consume more honey. As soon as you get your bees out in the spring they begin to brood. I once put out twenty stocks in the Hedden hive, on the 1st March, and it went down 10 below zero, and I said to myself, "You ought to be kicked." Allow me to tell you that those twenty hives, with one exception, when the honey flow came, were about two weeks ahead of all the rest put together.

Mr. POST: As these experiments were all conducted about forty inches from the cellar bottom floor it would have been very interesting to have had two hives prepared, one quite close to the bottom of the cellar and another one higher. There are not many of us to begin with, that have the room to put our hives forty inches from the cellar bottom. I have to begin close to the floor. I commence by putting a cushion under the first one. There is a trouble with combs becoming mouldy at the bottom, and the reason of that is that if there is any current of air circulating the cold air will circulate near the floor of the cellar, and it strikes the bottom of the hive, and it condenses the warm air in the hive and causes moisture. If the bottom of the hive has a cushion put underneath, and the hive is set close to the floor, I cannot see any difference between the top tier and the bottom.

Mr. HOLMES: I would like to ask Mr. Fixter with reference to the loss of bees in the first flight, in the experiment where he had to remove the snow.

Mr. FIXTER: You will have to watch the day when you set them out. If you can get a day where the temperature goes about 48 degrees or 50 degrees and calm there is very little loss, but if you happen to get caught and put them out and the wind comes up cool, then you will find quite a few dead bees on the snow. But I would take my chances and set them out early.

Mr. EVANS: I would like to suggest an experiment. Instead of putting a block under the hive just simply pull the hive back so that there will be a space of about two inches behind the bottom board. That is my system.

Mr. HALL: Mr. Evans is all right with this exception, that if you put a couple of hundred stocks in the cellar you are sure to have a larger or smaller quantity of bees die. Some are lazy. They do not take them out of the hive, but let them lie on the bottom board, and they accumulate, and they touch the combs and the combs become mouldy. If you raise them up that does not happen.

Mr. MILLER: I find an excellent way to avoid this trouble if a man is lazy, is to leave the bottom board in the yard; lift your hive directly from the bottom board, and carry it to your cellar. The idea of bees escaping is erroneous. I have found it very satisfactory both in carrying in in the fall and in placing out in the spring.

Mr. HALL: If Mr. Miller had a cushion in front he could not carry very many out except with a hand barrow.

Mr. MILLER: I carry them on my shoulder.

Mr. HEISE: The only experiment I am particularly interested in is the one where they are wintered outside. Mr. Fixter told us that the consumption of honey was somewhere in the neighborhood of six pounds greater than of those wintered in the cellar. Mr. Hall said those wintered outside commenced brooding earlier than those in the cellar. What is the difference, if any, and is it not in favor of the colony wintering out-

side, notwithstanding the consumption of honey? When the honey flow commences are they not in a better condition to take advantage of it?

Mr. PETTIT: In wintering outside with ventilation to the entrance are you successful in getting the dead bees all away from the entrance?

Mr. FIXTER: Yes, I have a long wire, and I do it as carefully as possible so as not to make the least sound.

Mr. SIBBALD: I have wintered in and out both, and I find, like Mr. Fixter, that it takes a good deal more stores to winter outside. Mr. Hall's idea may be all right, but I always fancy that the occasional flights they get through the winter, which are really unnecessary—because they will winter all right in the cellar without any flights—such flights cause a consumption of stores, and a wearing out of the vitality of the bee; and in consequence of that they have got to start to breed, to have a new generation to take the place of those that are going to be perhaps a month earlier than the ones that are placed in the cellar. That early brood of bees only takes the place of the ones that are worn out, and there is no gain, and they have got to consume just as much honey to raise other bees in the spring. As far as being ready for the honey crop is concerned, those wintered in the cellar always seem to me to have the bees ready for the harvest at the right time, whereas those outside were often very numerous a week or two weeks before the clover came in, when we had not anything for them really to do and had not hardly enough honey to keep them. I do not know whether I am right or not. Mr. Hall has had a great deal more experience than I, and I always hate to state anything that conflicts with him, he is an authority.

Mr. HALL: We winter both ways, two lots in the cellar and one outside. I prefer them in the cellar because it is the easiest way.

Mr. SIBBALD: I always weigh my hives before I pack them, and either have them up to a certain weight or feed them up to a certain weight, and then the next spring I find those outside in that out yard short of stores, and my cellar ones never run out of stores; they had an abundance right through, and I had to take combs from the home yard up to the other yards and put them in there, and I could not come to any other conclusion than that they used far more stores outside than in. As far as the condition is concerned I could not say there was very much difference. I am very much in favor of cellar wintering if you have a cellar. If you have out apiaries and can not get a cellar there is no other way I know of except pack them up. As far as blocking up goes, I have tried blocking up in front like Mr. Hall and Mr. Fixter, and I noticed a little moisture at the back end of the hive with that system, and one winter the mice got in the front and did a little damage. With the system of blocking them up three-eighths of an inch behind, a mouse cannot get in, and you are safe from them. At the apiaries where you cannot watch them very closely a mouse gets in and does a great deal of harm.

Mr. HALL: I do not defend either outside or inside winterings. I do both.

Mr. NOLAN: We have always wintered outside, and have had no experience of wintering in the cellar. We use chaff, sawdust, and all kinds of packing, but I cannot see any marked difference in favor of any of the different kinds of packing. We did at one time try wheat chaff, but whether there was any better result I could not say. I think Mr. Smith referred to packing more than one in a case. In our experience packing more than one has nothing of advantage. We find they winter better with us in single cases. When there is more than one put in, if one colony becomes uneasy from any cause whatever, you will usually find a colony on each side of that, or probably more, which will be attracted by that uneasiness and will be affected; whereas, if they are packed in single cases an uneasy colony will not affect any of the others.

Mr. SMITH: I have never found any trouble whatever. If one colony didn't winter as well as we liked it did not make any difference to the next one. We simply pack them in the same shape as they are in the summer. They are set in fours, two facing east and two facing west, and the cases are so made that the lumber can be cut up without any waste to make these boxes to hold four. It does not take many minutes to pack them, and we find they winter that way as well as any way I have tried. We used to have long cases when we lived in Muskoka.

Mr. MCEVOY: I have tried both ways, and I have found everything was in favor of the single cases, and I never put them in anything else. I approve of Mr. Nolan's way

of keeping them in single cases. The trouble when they were put together was that if it came a warm spell in January some young queen was apt to lay, and they broke the cluster more, and they got a little over-heated. They seemed to winter better in the single cases, and not to start brooding so early in the spring as they did when they were bunched together.

Mr. SHAVER: Do you find any difference in your bees going from one side around to the other on a nice day, Mr. Smith?

Mr. SMITH: No. We narrow up the entrance. We have an entrance of about five inches by three-eighth, and we narrow that up still more with a piece of card-board. We leave an entrance on the windward side of about an inch. If the colony wants more room they make the entrance to suit themselves.

Mr. DARLING: Mr. Fixter referred to the question of loss of bees by snow in case there was plenty of snow upon the ground. I am one of those fellows that do things I would not do if I could see a little way ahead. A year ago last spring I carried out quite a number of colonies on the 11th March and the balance I put out on the 26th. It was rather a fine spring, and for sometime I thought those taken out on the 11th were going to outstrip all of the others, but I found when it came to the honey flow that those were the worst we had. With regard to the bees flying out I think I would throw a little of that snow in front of the hive. Sometimes I put out bees in the evening and occasionally am a little late in doing so. I remember once in particular when I carried out some bees and set them out at night, for I was sure it was going to be fine the next day; and I think it was three days that it was not fit for bees to fly, and there were some that were carried out so late that they didn't get out that night, and they went in and stayed quiet until it was fine two or three days afterwards.

Mr. POST: That exactly agrees with my experience. I have a great many bees, and I am not very particular whether it is really fine for them to fly or not. I would rather have it so that they could fly well or else not at all. If they cannot fly at all then they will wait until there is a fine day.

Mr. ARMSTRONG: Did you ever try setting anything up in front of the hive to keep the wind from blowing in at the entrance?

Mr. FIXTER: Our apiary is particularly shaded, and the wind can scarcely get at them; there may sometimes be a little from the east, not very much. I have not done that. In the house apiary last winter I put a piece of brick a little distance out from the front of the entrance.

THE VALUE OF BEES IN FRUIT ORCHARDS.

BY DR. JAMES FLETCHER, DOMINION ENTOMOLOGIST, OTTAWA.

The subject on which I have been asked to speak to-day is one of considerable importance, although strange to say, it is one which is seldom spoken of at conventions of beekeepers or fruit growers, viz.:—"The Value of Bees in Fruit Orchards." Indeed, this may be due to the fact that this value is so well known, and generally acknowledged that some might think that the discussion of such a subject would be to use valuable time somewhat unprofitably. This, however, is not my opinion, and I was much pleased to avail myself of the opportunity when specially requested by the council of the Association to address you upon it to-day. Although the main facts are generally accepted, few have paid sufficient attention to the matter to be able to express a definite opinion, and fortify themselves with actual observations with which they could prove their position. In fact my address to-day will be an appeal to bee-keepers to know a little more about what is really a branch of their own business of no little importance at all times, but particularly at the present juncture.

The probable reason why the executive asked me to discuss this subject to-day, was the keen interest in the true relations existing between the bee-keeper and the fruit-grower, which has been recently evoked by two important actions at law. One of these the *Queen vs. Sparling* was only yesterday decided in favor of the latter, a bee-keeper in Canada; and the other *Utter vs. Utter*, which is even now before the courts of the United States. The significance of these cases is very great, for it is clear that if the verdicts in

these cases should be given against the bee-keepers, it will be a serious set back to the industry of honey raising in North America.

In the first of these cases it was claimed by a neighbor of Mr. Sparling, that by keeping bees he was a public nuisance, and several things were claimed to be true which all bee-keepers knew were very improbable, and which many claimed were utterly impossible. This, however, had to be proved to the court; and although the case was given in Mr. Sparling's favor, the action was taken in such a way that he was put to considerable expense. A rather more important test case is that of Utter Brothers, of Amity, in New York State. The suit was between two brothers living near to each other, one a bee-keeper, the other a fruit grower, who claimed $100 damages for injuries done to his peaches and peach trees by his brother's bees. This case has already been tried before a justice of the peace, who, notwithstanding that many impossible injuries were claimed to have been done by the bees, gave judgment for $25 and costs against the bee-keeper. The serious nature of allowing such a judgment to go unchallenged, was at once recognized by the National Bee-keepers' Association, and, owing to the most commendable generosity of the Hon. Eugene Secor and Messrs. A. T. and E. R. Root, all well known to bee-keepers, the necessary funds for appealing this case have been guaranteed. The case is, therefore, to be tried again in a higher court in a fortnight's time at Goshen, N.Y. Expert testimony will be taken from the leading bee-keepers and entomologists in the country, and if the same absurd claims are made at the coming trial as were put forth previously the verdict in this case must be reversed. Nevertheless, however this may be, it is perfectly evident that sufficient definite and exact knowledge as to the habits of bees was not forthcoming from bee-keepers at the first trial when it was required to convince the judge that the claims made were untrue and not founded on fact. This, I submit, should not be the case. It is the duty of every bee-keeper to observe closely and study the matter until he is able to answer the old question which has come up time and again; "Do, or can bees injure unbroken fruit, however ripe it may be?" I am not either a bee-keeper or a fruit grower, and had no preconceived opinion one way or the other when I began to study this question. During the last ten years I have read everything I have seen in which the matter was dealt with, and have made many observations of bees when visiting ripe fruit, and I must acknowledge that I believe it is impossible for honey bees to rupture or pierce the skin of any of our cultivated fruits, even when over-ripe and in any unfit condition for the market. This too, as far as I can learn from published reports, is also the opinion of the majority of the leading entomologists.

The claims which have occasionally been made that bees injure fruit with their claws or stings need not, I believe, be even discussed before this meeting of practical beekeepers gathered here to-day. With regard to the jaws of bees, when we examine their shape, position and softness, I feel sure that it is as impossible for them to use these for the rupturing of the tough skin of fruits as it is for them to do the same work with their soft flexible brush-like tongues.

A great deal of most excellent critical and scientific work is done by the practical bee-keeper every year, and I am surprised that more attention has not been devoted to this point by bee-keepers. Let every member of the Association try next year to make some careful observation and report them at the next annual meeting.

I have said that I do not believe that bees can injure fruit, but I have no experiments of my own to back up this opinion. Fortunately, this is not necessary, for I can submit to you some careful and very conclusive experiments which were carried out some years ago at Aurora, Ill., under direction of the United States Department of Agriculture and are reported in the *Rural New Yorker*, of November 10th last by Prof. M. V. Slingerland, of Cornell University, one of the very first practical entomologists in the United States. I will read to you some of the most striking paragraphs in this article; but it will be worth the while of every bee-keeper and fruit grower to get this number of the *Rural New Yorker* and read it carefully. In these experiments a house was built sixteen feet long by ten feet wide and eight feet high at the corners. The sides were partly covered with wire cloth; the house was quite bee-proof, and the temperature and light were practically the same as outside.

"Along the sides of the house were built shelves upon which fruit was placed so that the rays of the sun might strike the different varieties in different stages of ripeness from

green to dead ripe. Plates of ripe peaches, plums, pears, etc., were placed on the shelves; clusters of different kinds of grapes, green and ripe, sound and imperfect, and such as had been stung by insects were suspended from the rafters and cross-ties of the house.

"September 1st three colonies of bees were removed from their hives carefully and quickly, so that they would carry very little honey with them when transferred from one hive to another. Two of the colonies were hybrid bees, and one Italian. The colonies were hived on empty comb and placed in the house with the fruit. A wood stove was put in the house, and for a number of hours each day a high temperature was maintained. The physical conditions which would ordinarily prevail in nature during a protracted and severe drouth were artificially produced and steadily maintained. The bees were brought to the stages of hunger, thirst and starvation by these artifical conditions. Every inducement and opportunity was afforded the bees to satisfy their hunger and thirst by attacking the fruit exposed. They daily visited the fruit in great numbers and labored diligently to improve the only remaining source of subsistence. They inspected and took every advantage they could of every opening at the stem, crack in the skin or puncture made by insects. They regarded the skin of peaches, pears, plums and other fruits having a thick covering simply as subjects for inquiry and investigation, and not objects for attack. If the skin was broken or removed, they lapped up and sucked the juices exposed; but made no attempt to grasp the skin of grapes with their mandibles or their claws."

This experiment, with various modifications, was continued for thirty days, and then was repeated a second time for forty days and afterwards again for twenty-five days. "The bees showed no more capacity or disposition to offer violence to one variety of grapes than to another; no more attention was given to the thin-skinned varieties than to the thick skinned. As long as the skin remained whole, they did not harm the grapes. When the skins were broken by violence, the juices exposed were appropriated."

"At times when bees could gather nothing in the fields clusters of grapes were saturated with honey and suspended in front of hives in the apiary, other clusters dipped in honey and syrup were hung in the house. The bees thronged upon the grapes until the clusters looked like little swarms hanging to the vines and limbs. They lapped the grapes until the skins were polished perfectly smooth and shining, but the skins of all were left intact."

There is much more of interest in this experiment than it is advisable for me to read to you now; but you will find that it was a carefully planned and carried out exhaustive experiment, and the conclusion reached was that bees, not only did not, but could not injure fruit unless the skin was previously ruptured by wasps or some other insects, or by birds, etc.

With regard to the question of stinging fruit, Mr. Slingerland says: "Many erroneously suppose that bees sting the grapes, but they never sting except in self-defence or in defence of their homes."

In the cases referred to above it had been claimed that bees had been a nuisance by stinging pickers in fruit plantations, and by preventing horses from drinking at watering troughs. You are all aware that naturally bees do not sting if no quick aggressive motions were made to irritate them; but anyone can make the quietest bees sting by hitting at them. With reference to bees clustering around horse-troughs this could of course be prevented by providing plenty of clean water for the bees near to the hives, a practice which is always seen to by good bee-keepers who know the importance of it. The statement that bees had stung fruit, and that this had induced decay is so improbable that I cannot believe it. Of course I have not tried any actual experiment of making bees sting fruit; but I am quite postive they would not do so when at large in a state of nature, and as to causing decay of the tissues, judging from analogy the exact opposite to this is what might be expected: and instead of the fruit being injured it would be preserved. The poison injected through the sting of a bee is formic acid, identically the same poison as that of a wasp. One of the chief differences between bees and wasps is in the nature of their food. Bees feed upon pollen and nectar which they gather from flowers; wasps, on the other hand, although they are very fond of nectar and other sweets, feed their young upon animal food in the shape of other insects. The solitary wasps build their cells and provision them with the bodies of spiders, caterpillars, etc., which they have disabled by stinging them, not to death, as some think, but to a state of insensibility. The

remarkable fact has been discovered that the formic acid of the sting of wasps, ants and bees is chemically almost identical with chloroform. When a wasp has made a cell for her young she fills it with the bodies of insects which she had stung and paralyzed and which will remain in a torpid condition for several weeks. Before closing up the cell she lays an egg among these insects. When the grub hatches it is surrounded by a copious supply of fresh food, which is preserved from decay by the antiseptic properties of the formic acid. A common insect which may be watched by all is the large black ground wasp, *ammophila luctuosa*, which is a dire enemy of cutworms, hunting them and digging them out like a dog. As soon as one is detected by the wasp, either by smell or some other keen sense, she sets to work to burrow down and find it. I have seen one of these wasps dig down half an inch into sandy soil until its body was nearly out of sight and a heap of sand was thrown up behind it. As soon as the caterpillar is found she lays hold of it with her jaws, and backs out of the hole dragging her victim with her. Without any delay she mounts on its back and stabs it once or twice with her sting when, after a quiver or two, it at once becomes motionless. Then standing over it she holds it up to her body with her middle pair of legs and runs off with it if it is too large and heavy to fly with, to her nest, a hole in the ground, sometimes a long way distant, where it becomes the food of her young.

If, then, this is the effect of formic acid upon animal tissue we may, at any rate until we know the contrary, claim that it is likely to have a similar effect upon fruits, and must try as soon as possible to find out the true facts of the matter. It has been claimed by some that one use of the sting and poison of bees is to inject a small quantity of the latter into each cell of honey before it is sealed for the very purpose of preserving it from fermentation and decay. This is one of the points which we must try and get settled. It will, of course, be difficult; but I fancy that magician, the chemist, will be able to help us.

There is another phase of my subject to which I wish to direct your attention, namely, the inter-relation of plants and insects, and I hope that I may be able to lay before you facts which may be new to some of your members, facts which cannot but call forth admiration for the marvellous provisions to be seen everywhere in the world of nature for bringing about good and useful results, and preventing waste. It will be found that not only are flowers absolutely necessary to bees as a source of their food—nectar and pollen—but that insects are no less necessary to most flowers to secure their perpetuation. This fact above all others should be recognized by the fruit grower, for were it not for insects, and particularly the honey bee, his crops of fruit would be far less than they are every year, and even in some cases to be referred to later he would get no crops at all.

Flowers of plants are a special development of leaf growth produced for a special purpose, namely, for the maturing of seed, the chief means by which a species is preserved from extinction. A normal flower consists of two sets of organs, a protective envelope made up of the corolla, which, as a rule, has highly colored and showy petals, and the calyx, which is mainly a protection during the time the corolla and the more important organs contained inside it are developing. The other set of organs known as the essential organs comprise the stamens and pistils; the former of these represent the male sex and the latter the female. The anthers, the important part of the stamens, are practically small cases containing pollen, without the agency of which the ovules or undeveloped seeds, which are formed in the lower part of the pistil, cannot come to maturity; or, from the fruit growers' point of view, unless the flowers on his trees are fertilized in this way, no fruit will form, and his labor will be in vain.

It is necessary, then, that pollen should be applied to the stigma or sensitive portion of the pistil before the seeds can be developed, and it has been found that it is most advantageous to a species that the seeds of a given flower shall be fertilized by the pollen from some other flower. A study of the devices provided by nature to ensure this cross-fertilization forms one of the most charming branches of the whole study of botany. It is a branch of the subject which may be said to have had its origin in the remarkable studies of the great naturalist Charles Darwin; therefore, is quite recent. But now that attention has been drawn to it, it can be seen to be a general principle running through all branches of the vegetable kingdom as well as of the animal kingdom. Although, as was pointed out by Darwin, some plants can be and are fertilized by their own pollen, it is

always of greater benefit to their descendants for flowers to be fertilized by pollen from other flowers of the same kind growing upon other plants. He summed up his observations with the trite axiom: "Nature abhors perpetual self-fertilization." Which was first enunciated in his great work published in 1862 on the fertilization of orchids. The publication of this classic work marks the beginning of one of the most important eras in the history of the science of botany. Since then endless observations have confirmed the accuracy of Darwin's law, and it had been found that in the vast majority of plants special appliances exist which will secure a more or less frequent inter-cross, and that in many these appliances completely exclude the possibility of self-fecundation.

The cross-fertilization of some plants is ensured by the male and female organs occurring in separate flowers either on the same or different plants. Familiar instances of male and female flowers on the same plant are the male catkins of such trees as the butternut, hickory, the birches, oaks and hazels. The female flowers are much less conspicuous but easily recognizable near the tips of the twigs. In the willows we find the male and female catkins on separate trees, each tree bearing either staminate male flowers or pistillate female ones. In many cases where the two sexes occur in the same flower self-fertilizing is prevented by the male and female organs coming to maturity at different times, sufficiently far apart for it to be impossible for the pistil to be fertilized by the pollen borne on the same flower. In many cases there are remarkable contrivances which prevent the impregnation of flowers by their own pollen. In the species of primrose—and no better example can be found than the well known house plant from the Himalayas, *Primula obconica*—it will be found that the flowers on different plants are dimorphic, some flowers having the tip of the pistil at the mouth of the tube and the anthers well down towards the bottom, while in other flowers this order is reversed, and the anthers are produced at the mouth of the tube and the pistil is so short that it does not reach half way up. Darwin proved by growing many plants from the seed that by far better plants were obtained by the flowers bearing long or short pistils being crossed with pollen from the other kind of flower. There are some flowers which are actually sterile to their own pollen, but can be fecundated readily with pollen from flowers growing on another plant of the same species. It has been pointed out by Prof. Waugh, of Vermont, that this is the case with the red American plums, and it is also the case with many varieties of apples and pears. This fact at once indicates the important bearing the presence of insects in an orchard at the time of blossoming has upon the production of an abundant fruit crop. Moreover, it can be shown that, owing to its size, weight and habits, no insect is so well calculated to ensure the fertilization of fruit blossoms as the honey-bee, which flies rapidly from plant to plant, and, by running over the flowers in search of pollen or nectar, brushes off the pollen and carries this vitalizing element on the hairs of its body to the next flower visited. The habit of the bees, which has frequently been noticed, of confining the visits when collecting largely to the same kind of plant, is taken advantage off by the bee-keeper to store up at certain seasons particular kinds of honey, such as apple, raspberry, basswood, clover and buckwheat honeys. This habit is also, manifestly, advantageous to the plants on account of the pollen which is carried by the bee being of the kind necessary for the fertilization of its flowers, which could not be effected if the pollen were that of some other kind of plant.

The male and female organs of some flowers are very sensitive, the pollen being cast forth with some violence as soon as the stamens are touched by insects. An instance of this is to be found in the common Canadian swamp plant called Lambkill or Swamp Laurel; the anthers are held down in small depressions round the edge of the corolla, and when an insect visits the flower, the stamens spring up, the anthers burst and the pollen is thrown against the insect's body. The same thing may be observed in the common barberry flower.

In addition to the classes of plants already referred to, which are sterile to the own pollen, and in a few remarkable instances where the pollen is actually poisonous to the pistil of the same flower, there are numberless species which are partially sterile when fertilized with their own pollen, and to a less degree when fertilized with pollen from close relatives such as seedlings from the same parent as the plant bearing the flowers; and finally in a large class where there is no apparent obstacle to self-fertilization, cross-fertilization often occurs from what is known as the prepotency of pollen from another individual over a plant's own pollen.

The agency by which pollen is transported from one flower to another is either animate or inanimate, and certain peculiarities will be found in flowers characteristic of each class. The inanimate agency with most flowers is the wind, and in these flowers the pollen is dusty and exceedingly light, so as to be carried on the lighest breeze ; the flowers are inconspicuous and there is no nectar nor perfume On the other hand, in those flowers which are dependent on an animate agency, which is mainly insects of various kinds, these insects must be attracted to the flowers ; and we accordingly find that brilliant colors and far-reaching odors are developed. These alone, however, would be of small gratification to the visitors ; consequently, something more satisfying is provided, namely, nectar and pollen, which form the food of vast hordes of the insect world, and particularly of the honey bee. Moreover, the remarkable provision is made that these attractions only appear just at the time when the visits of insects can be of a definite benefit to the plant ; and, further than this, an endless variety in the structure of the leaves, stems and flowers of plants makes easy the access of such species as will be of use, but retards or keeps out entirely those which would only regale themselves on the sweets provided without conferring any benefit in return. A pollen grain is somewhat analagous to a seed ; as soon as it reaches the stigma, the viscid portion of the pistil, a sort of growth begins, and delicate tubes are pushed out and run down through the tissues to the ovary. Through these tubes the vitalizing principle (the fovilla) reaches and fecundates the ovules in the ovary. The period during which the pollen and the stigma are in a fit condition for fertilization is only of short duration. Those insects, therefore, which can fly quickly from plant to plant are much better adapted for this work than the slower moving, wingless, creeping insects which would be much more likely to have the pollen brushed from their bodies in their journey from plant to plant or even from flower to flower.

The size even of flying insects is also a matter of importance, so that their bodies may come in contact with the anthers of one flower and the pistil of another, and most marvellous contrivances will be discovered when looked for in the blossoms of flowers, the effect of which is to exclude those visitors which are not profitable Such are modifications in the shape and size of the corolla, the presence of tufts of hair, barbed spikes and bristles around the nectary, the secretion of the nectar at the bottom of long spurs or deep tubes of the corolla, etc. Wingless insects are kept from getting to the nectar by even more numerous constructions : reflexed bristles, copious hairs, viscid glands or viscid rings on the stems, particularly around the flower stalks. In some plants, as the fuller's teasle, the leaves join around the stem, forming a receptacle which catches rain and dew and forms an insuperable barrier.

What also is doubtless a provision for the protection of the seeds of plants is the fact that when plants are eaten by animals or insects, it will frequently be noticed that the blossoms themselves are seldom destroyed. This may be due either to a more abundant production of thorns or bristles around these organs, or that they are rendered distasteful by certain compounds which are more abundantly secreted in the blossoms.

This fascinating branch of my subject is far too wide for me to more than refer to it now ; but I am convinced that the shape, position, nature and adornment of every part of a plant has some special significance if we can only discover it. That we have not yet perceived of what these advantages are, by no means justifies us in assuming that no advantage exists, and the search for the true meaning of the innumerable shape of flowers and leaves, their positions and behaviour under varying circumstances provide a limitless source of pleasure and valuable instruction to whoever takes the matter up earnestly, verifying carefully each observation and exercising every care not to be carried away by the subject and jump to conclusions.

I have with me here to-day some excellent charts made by my friend, the Rev. Thomas Fyles, of Quebec, the President of the Entomological Society of Ontario. These will enable me to illustrate some of the points I have referred to far better than I could otherwise have done.

(Some fine coloured charts were here exhibited, and much interesting information was given about each in turn. Some of the points explained were the following :)

Although so small these minute pollen grains are just as characteristic and easily recognizable under the microscope as the various kinds of seeds. The pollen of pine trees, which is very light is produced in enormous quantities, and when carried on the wind

and deposited at a distance, has sometimes been taken for showers of powdered sulphur. One remarkable instance as illustrating the extreme lightness of these pollen grains was the occurrence of one of these so called sulphur-showers on the deck of a ship nearly 200 miles from land. The doctor of the ship happening to be a botanist detected at once by putting some of the material under his microscope, the true nature of the yellow deposit, by recognizing the peculiar shape of the pine pollen. Some of the patterns on the surfaces of pollen grains are remarkably beautiful.

Mouth parts of the honey bee and wasp were shown. The difference in the mandibles of these insects were pointed out and explained. The mandibles of the honey bee are provided for the working of wax, and this only when softened at a high temperature. Those of a wasp for gnawing wood for the manufacture of the paper with which they surround their nests.

Flowers of plants of the pea family were illustrated by figures of the broad bean, sweat pea, and broom; and the different structures explained in their bearing on the question of cross fertilization, attention being drawn to the brush like stigma and the elastic keel.

Flowers of the sunflower family present many points of interest; the showy ray flowers which attract insects from a distance, as well as the more perfect disk flowers in which the anthers are joined into a tube shedding the pollen inwardly. This is pushed out by the unopened pistil, and the pistil itself does not open until it is raised well above the pollen of its own flower, and then its viscid disk is its upper surface which comes in contact with the under surface of any insect crawling over it.

Figures were shown of the two forms of Primrose flowers already referred to, one having a long pistil and low seated anthers, the other a short pistil but anthers at the mouth of the tube of the corolla. It was pointed out that a moth in sucking the nectar from these flowers would convey the pollen from one kind of flower to the pistil of the other, and that experiment had shown that more vigorous plants were produced as a consequence.

Attention was drawn to the markings and tufts of hair in the throat of the garden flower known as the Nasturtium, which acted as path finders to insects of a proper size and shape to secure the fertilization of the seeds.

The necessity of a large strong insect such as a bee to open the Snapdragon flower and reach the nectar was evident, but it was stated that the bees sometimes gnawed a more direct entrance to the nectary at the base of the flowers. After this entrance was made the speaker had frequently seen honey bees rifling the flowers instead of entering by the proper opening. This he believed was an analogous case to these insects sucking the juice from injured fruit.

One chart which was of special interest showed the flowers of the Night Flowering Catchfly, which belongs to the Pink family. In this there are ten stamens, and the flowers open after sundown, when they are white and conspicuous, sweet perfume is emitted, and during the first evening of the three in which each flower expands five of the anthers are pushed out of the tube of the flower and shed their pollen; then they dry up and fall away. The next morning the petals curl up and present the appearance of a faded flower. During the day there is no perfume, but in the evening the petals again unfold, the scent returns, and the other five anthers appear. It is not until the third evening, when all the pollen is exhausted that the pistil lengthens out and exposes itself to receive pollen from other flowers.

In bringing this interesting address to a close, Dr. Fletcher urged the bee-keepers to strive and put themselves in the position of being able to give definite opinions on such important questions as this one, which had now come up for consideration, and pointed out that it was one which concerned every one of them; that as a society they should band themselves together for mutual protection, not against fruit growers or anyone else, but simply to be able to speak positively and give the actual truth with regard to these and similar matters. For his part he was quite sure that bees did not injure fruit, however ripe it might be unless the skin was actually cracked beforehand, or had been injured by birds or other insects. Many enlightened fruit-growers know only too well the enormous advantage of having bees near their orchards, and some actually keep bees simply for the benefit to be derived from these useful little insects in fertilizing the flowers. The study of insect life was full of fascination, and no one could appreciate this more keenly

than bee-keepers, because the life history of the honey bee was probably on the whole more interesting than that of any other known insect. The false statements that were made about bees were due to the prevailing ignorance as to the habits of insects, an unfortunate state of affairs which was too often manifested by the destruction of all insects whether injurious or not by thoughtless persons. Many people were surprised to learn that there were just as many beneficial insects as injurious ones, and yet some would destroy all indiscriminately.

Spiders were instanced as distinctly beneficial insects which were killed by most people. The speaker claimed that we had no poisonous spiders in Canada, and that the instances recorded in newspapers by people who are bitten at night by "small black spiders" which had been seen just vanishing over the edge of a pillow were cases of mistaken identity, and were equally untrustworthy with the accounts of people being killed by wolves (in America), or children carried away by eagles. He was sure that a fuller knowledge of the habits of bees would bring about a better understanding between fruit-growers and bee-keepers, which would be of enormous advantage to both, for their interests were identically the same. (Applause).

Mr. NEWTON: It has afforded me great pleasure to listen to this very able address which Prof. Fletcher has given. We want such addresses as the Professor gave to us this morning. It has been a very instructive and pleasing address, because we have all enjoyed the bright sides of it as he has been going along, and I hope in future meetings we will have the opportunity of having an address similar to the one we have had to-day. I would say, also, with the Professor, let each one of us during the coming year be on the alert and try to find out something in the interests of that which we have been talking of this morning, especially with regard to the fruit industry; because we do not know what day some similar trouble may arise, and if we are on the alert we will have some evidence whereby we may be able to help a brother if we are not helping ourselves.

Mr. MCEVOY: The work of Prof. Fletcher has been of the greatest value to bee-keepers. It was largely through his instrumentality that the bill with regard to the spraying of fruit was passed through our Local House, and therefore the very best thanks of this Association are due to Prof. Fletcher.

Mr. ROOT: I wish to say that I have heard a great many addresses on this one subject. I have attended a good many conventions, as you probably know, and it seems to me, although I do not like to say it in Prof. Fletcher's presence, this is the best address I have ever heard on this subject.

Mr. HOLMES: This is no doubt the best address we have ever listened to. It has been a rich treat; not only have we heard of the relation of bees to plant life, but the Professor has given us some very valuable information on this much vexed question of bees injuring fruit.

Mr. HALL moved, seconded by Mr. DARLING, that the address given by Prof. Fletcher be printed in pamphlet form for future use, and that it be distributed amongst the members of the Association. Carried.

QUESTION BOX.

Q.—What is the best way to keep pollen out of sections?

Mr. SIBBALD: I have never had any trouble in keeping it out. It should be started below before the sections are put on, and when they have sufficient room for pollen below then put on your sections. Use a shallow hive. It would be perhaps a good thing to put on a queen excluder.

Q.—What is the best kind of can to ship honey in?

Mr. SIBBALD: I think the sixty pound can is the best to ship in. Small packages are more useful for the retail grocers. For wholesale houses I advise large tins or barrels.

Q.—How to run an out yard without an attendant being there all the time?

Mr. SIBBALD: If we go to our yards once a week and examine the brood nest we will find what condition each hive is in, whether it is ready to swarm or not; have your queens all clipped, examine the yard once a week and if any have swarmed you have got

to look after the queen cells, or else there will be a young one that will lead the swarm away. Give them another queen with the wings clipped or destroy all the cells.

Q.—What about working for long tongued bees on short flowered red clover?

Mr. SIBBALD: I am sure that would be all right. I have never tried anything along that line, but I hope they will get them long enough to reach the red clover.

Q.—How best can the swarming impulse be controlled in out-yards without an attendant?

Mr. SIBBALD: In controlling swarming I believe in giving plenty of room and in giving it early; do not let them get too much crowded. Give plenty of ventilation. Shade the hive. All these things help.

Q.—Is it advisable to exhibit at Buffalo, New York and Glasgow, Scotland?

Mr. SIBBALD: I believe in exhibiting honey and advertising yourself as much as possible.

Q.—If you had an apiary in Manitoba, and had no cellar or suitable place for one, what method would you follow to make a success of wintering bees?

Mr. SIBBALD: I do not know much about Manitoba, never having been there, only having heard of the climate they have. I fancy if I had not a cellar there I could winter in some of the reliable out door methods employed here. I do not see why it would not work there just as well as here.

Mr FIXTER: In my case I would dig a pit every time if you can get a place where you are sure the water will not get into it. I would not attempt to winter the hives above the ground.

Mr. SIBBALD: I have heard that in Manitoba the frost goes down fifteen feet.

Mr. FIXTER: In one of our winter experiments with the pit I found there was slight change in the temperature, but I put a load of horse manure over it and brought the temperature right up. In Manitoba I would be very careful and watch the temperature, and if I found it was getting down too low I would cover it up in that way with ordinary horse manure. In every case see that they have ventilation.

Q.—What is the best material to use for smoker fuel?

Mr. SIBBALD: I have always used cedar bark. I have heard of rags, pulp and shavings. Shavings work all right.

Mr. MCEVOY: Sometimes you will have to change it. If you get hold of a pretty cross colony take some fine grass hay. It is just according to what you have got. I hold that if you have got an ordinary yard use cedar bark; if you get hold of a cross customer that you want to bring to time use the hay.

Mr. HOLMES: Cedar bark is the most satisfactory I have ever used.

Q.—Is it best to re queen and how often?

Mr. SIBBALD: I believe in re-queening. I re queen more than Mr. Hall does. He believes in keeping them three or four years. I have always found a larger per cent. of my colonies in good shape that contain a young queen. Perhaps that is a mistake I have been making in not getting the right breed of queens. We will have to work that out and think about it, and experiment along that line. Perhaps Mr. Fixter can help us a little on that line.

Q.—Have you ever noticed bees gathering honey from apple tree buds just opening in the spring about two weeks before the blossoms from the same tree are in bloom?

Mr. SIBBALD: I have noticed them around buds; I do not know whether they get honey or not.

Prof. FLETCHER: I am not quite sure about propolis being gathered from apple buds but propolis comes from the buds of trees.

Mr. CHRYSLER: I have noticed it; it is a small white drop of nectar, it is very sweet and as near as I can make out it tastes more like clover honey right on the buds I never noticed it before except the one year and I noticed it on a common apple tree, on one of the grafting varieties. I did not notice it on other trees to that extent at all.

Prof. FLETCHER: Prof. Cook mentions about finding in California trees that had drops of delicious honey on them which he said were secreted by the tree.

The meeting then adjourned.