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Ontario Bee-keepers' Association
ANNUAL MEETING

ney from Capped and Uncapped Comb.

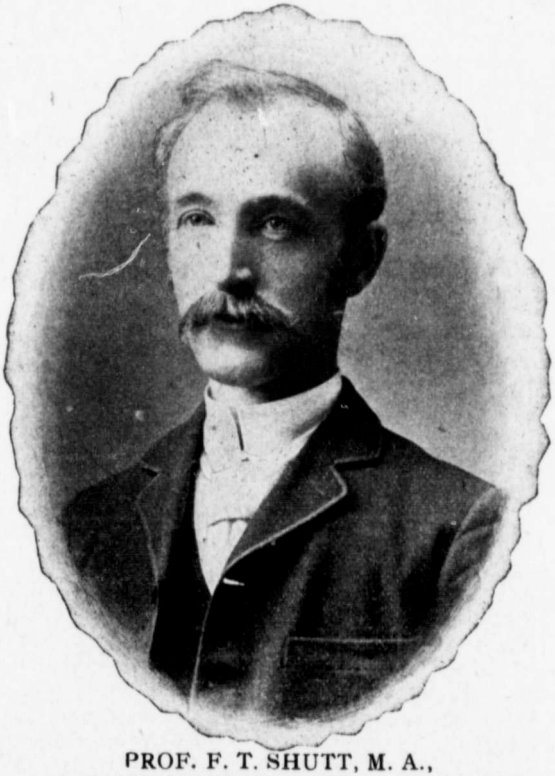
By F. T. SHUTT, M. A.,
Chemist, Experimental Farms, Ottawa

he investigation into the nature oney from uncapped comb—h we have termed here unripe or ature honey—was begun, as some u will remember, in the season 01. Almost at the outset of the we found difficulty. We en-ored to determine by chemical s the difference in composition en honey taken from full capped and that taken from comb which nly partially, and that altogether pped. I supposed from what I learned that the difference, if was any, would be chiefly in the rtion of water held by or con-d in the honeys. Consequently, irst endeavor was to make an ination of these three classes of in order to get the moisture per-ges. That is where our difficulty I found almost at once that ults were extremely variable; by employing the methods of that were then in vogue the data were altogether unreliable. When I attended your convention last year at Woodstock, I could only present to you data of a tentative character. I could only give indications, and say in which direction I thought our work was pointing; but I was not prepared to say that immature or unripe honey was such and such as regards its moisture content. I did, however, say two things: I stated, or aimed to indicate, that immature or unripe honey contained more moisture, probably between two and five per cent; and there was another thing I felt pretty certain about, and that was that the published percentages of water in our honey as they had appeared in a government bulletin some two or three years ago were unfortunately unreliable. I remember I went into the discussion rather fully, and gave you the arguments, and my reasons for coming to that conclusion that those results were altogether too high—not all of them, but a very large number of them, were to high in their water content. Of course it was not intentional, as I pointed out at the time. I said the analysts whose work was represented in that report were good and true men, but that the methods which had been employed were not such as would rightly estimate the moisture, and the reason for that was that too high a temperatuter was being employed: that the high drying temperature really meant

decomposition of the honey, and the decomposed products passing off were estimated as water; that is to say, they were recorded as water when they should not have been so.

We discussed somewhat the chemistry of honey. We showed it consisted really of two sugars,—dextrose and levulose,—and the levulose was the decomposible sugar. After the

position to say fortunately that w have been successful in perfecting method of analysis whereby we con accurately determine the moistur content in honey. I need not go int that matter in dedail, because it i really a chemical question. Th work was rather a laborious one, an took some two or three months—no all of our time, because I have ver



PROF. F. T. SHUTT, M. A.,
Chief Chemist, Experimental Farms, Ottawa.

honey had reached a certain temperature decomposition set in, and the loss had been attributed to water content in the honey. That is the position we were in last year.

Early in the present year I resumed the work with the assistance of Mr. Charron, of the chemial staff of the Experimental Farm, and I am in a

little time comparatively speaking devote to this class of work, b nevertheless it spread itself ov several months. The rsults ha been published in a paper before t Royal Society, and if any you a sufficiently interested in it I shou be pleased to send you a copy of t paper. I do not now propose

repeat the details of that research, but I may say briefly it amounts to this: Instead of drying the honey upon asbestos in the little glass tubes which I showed you last year and drying them in a steam oven at the temperature of boiling water, we are drying upon asbestos or upon sand and at a very much lower temperature viz., 60° C. One hundred centigrade is the boiling point of water. We are also drying in a partial vacuum; the apparatus was improvised in our laboratories. I brought with me a copy of a photograph of the apparatus. At that temperature the honey can be completely dried without entailing any loss through decomposition of levuloes. That being so, and all that being very satisfactory, we reverted to our old samples of 1901 and analysed them by this improved method, and upon this chart I have placed the results.

You will remember that among the honeys I brought to the convention last year there were samples from fully capped comb, from partially capped comb, and from comb entirely uncapped. Half the bottles of honey had been kept in the honey room—which is above ground--and the duplicates kept in the cellar of Mr. Hunter's house. There was also another feature which had been looked into, and that was the matter of the covering of the bottles. Half the bottles had been closed by glass stoppers, whereas the other half had been closed merely by cheese-cloth; so that we had honey kept in the honey room up stairs in glass stoppers, and cheese-cloth covered bottles, and similar samples kept in the cellar.

(Refers to chart) The first four results are from honey extracted from fully capped comb; the first two represent the honey as kept in the honey room and cellars respectively in glass-stoppered bottles; the second two represent the same honey kept in the honey room and cellar in cheese-cloth covered bottles. The date on which the honey was extracted, and the date on which it was analyzed are given. I wish to direct your attention to one or two features without reading too much into my results. In the first place, you will notice that the percentage of water in this ripe or mature honey, as taken from fully capped comb, is somewhere between fifteen and sixteen per cent. I do not propose to say that all genuine ripe honey should be between fifteen and sixteen per cent; we have not done sufficient work on Canadian honey to make that statmente definite-

TABLE 1. Water in honey, 1901.

Comb.	Where kept.	Bottle closed with-	Date of extraction.	Date of analysis.	Water per cent.
Fully capped	Honey room	Glass stopper	Aug. 6th	Oct. 1st	15 46
"	Cellar	"	"	"	15 89
"	Honey room	Cheese-cloth	"	"	16 95
"	Cellar	"	"	"	15 84
Partially capped	Honey room	Glass stopper	July 1st	"	19 12
"	Cellar	"	"	"	20 68
"	Honey room	Cheese-cloth	"	"	20 63
"	Cellar	"	"	"	21 03
Uncapped	Honey room	Glass stopper	"	"	19 57
"	Cellar	"	"	"	19 24
"	Honey room	Cheese-cloth	"	"	18 25
"	Cellar	"	"	"	22 09

ly, emphatically and beyond denial; but I will say this, that during the last two years we have examined a large number of samples, and I have never found any honey with any such percentages as I quoted from that bulletin last year, where the water content went up to twenty-five and thirty-five per cent. I do not think that is at all possible in genuine ripe honey. The difference of half a per cent, may be omitted from consideration. There is very little difference between keeping it in the honey room and in the cellar, and we did not expect very much, because the bottles were closed with glass stoppers. When we come to consider those covered with cheese-cloth, there is certainly in one case a slightly higher percentage of water, and in connection with experiments which we have recently tried in regard to the storing of honey, we shall find an explanation for this fact, viz., that there is slightly more water in honey which is kept in a bottle merely covered by cheese-cloth as compared with honey kept in a hermetically sealed vessel.

four results of the latter would be somewhere in the neighborhood of sixteen per cent; but you notice for the former that the percentage of water varies from nineteen to twenty-one, so that the average would be in the neighborhood of twenty per cent. We find from our improved method of analysis, therefore, a difference, in the season of 1901, of about four per cent of water more in this partially capped honey than in the fully capped honey. Proceeding and looking at the honey from the uncapped comb we find that the water content varies from 19.24 to 22.09, so that the average would be somewhere between twenty and twenty-one. The conjecture in this connection I made last year has been borne out by this chemical analysis, and I am very pleased that we have got such definite results. I wish to say one other thing about this; that not only does the immature honey contain more moisture, making it of poorer quality at the outset, but further that its keeping qualities are imparied. The honey readily spoils. Honey from uncapped and partially

TABLE II. Water in honey, 1902.

Comb.	Where kept.	Bottle closed with-	Date of extraction.	Date of analysis.	Water per cent.
All capped	Laboratory	Glass stopper	Aug. 7th	Nov. 6th	15 78
"	Apiary	"	"	" 11th	15 88
"	Laboratory	Cheese-cloth	"	" 6th	17 35
"	Apiary	"	"	" 11th	16 25
Partially capped	Laboratory	Glass stopper	July 7th	" 6th	16 58
"	Apiary	"	"	" 11th	15 33
"	Laboratory	Cheese-cloth	"	" 6th	15 51
"	Apiary	"	"	" 11th	15 90
Uncapped	Laboratory	Glass stopper	"	" 6th	17 13
"	Apiary	"	"	" 11th	16 20
"	Laboratory	Cheese-cloth	"	" 6th	17 56
"	Apiary	"	"	" 11th	16 18

Let us look at the honey from the partially capped comb. You will at once perceive that there is a difference in percentage from that of the fully capped comb. The average of the

capped combs did not keep so long that from fully capped comb. In fact I have never yet found any difficulty in keeping capped honey for any length of time. I was examining

sample of honey fourteen or fifteen years old, and it seemed to be just as good, as far as I could judge, as any fresh honey I have examined. But with regard to these imature honeys I found with the temperature of the laboratory anywhere between 65 and 70 degrees that in the course of a few months these honeys began to ferment. Undoubtedly the unripe honey has very poor keeping qualities. This of course, points to the danger of putting such a honey upon the market, and also to the danger of mixing it with ripe honey. The honey season of 1902 was somewhat different, as you are aware, from the season of 1901. The work consequently was duplicated.

I now refer to the figures which we placed upon this second chart. There is only this difference, that we have not got the samples kept in the cellar. Half the samples were kept in the laboratory and honey room, and they are from capped, partially capped and uncapped combs, as in the year 1901. However, I should say this word about cellars. There are cellars and cellars, and with regard to this one in which Mr. Fixter keeps the honey, it is apparently dry, (and dryness is a great factor) or has air almost as dry as that of the honey room. These results no doubt would have been very different if the cellar had been damp, in which the air was moist. That will be very apparent to you when I call your attention to some figures upon this third chart upon the wall. But you must not think, from the results which are placed upon the 1901 chart, that you can keep honey uncovered in a damp cellar as well as you could keep it in a dry atmosphere. That inference must not be drawn from this chart.

In considering capped comb, this honey was extracted, you notice, about the 1st of August, and it was analyzed the first week in November—that is to say three months later. The percentage of water again in 1902 was between fifteen and sixteen per cent. You see how very similar it was to the honey we had in 1901. That bears out my conjecture that the percentage of water in normal ripe honey is somewhere between fifteen and sixteen per cent. The cheese-cloth covered bottles, you notice, contain slightly more moisture, 17 per cent. in one case and 16¼ in the other case; one kept in the laboratory, the other in the honey room. What does that mean? It means that the honey attracted moisture from the atmosphere. With regard to the partially capped and the uncapped comb honey, we do not notice that difference observably last year. In 1901 there was something like four per cent. but this year apparently the partially capped comb honey was of a very similar character. The only inference I can draw is that it is likely to vary according to the season. The results in experiments in storage of honey furnishes an explanation for that; it will depend upon the moisture in the atmosphere at the time.

The uncapped comb certainly shows a somewhat higher moisture content; it runs from 16.18 to 17.6 per cent., so that the average per cent. of water in the uncapped comb honey would be between 16 and 17 per cent. There is no doubt as to the better keeping qualities of ripe honey, and the fact that this immature honey will, if it is exposed to anything like a warm temperature, rapidly ferment.

Mr. LOTT: Relative to the honey produced in 1901, how do you account for the greater percentage of water in partially capped honey and uncapped?

PROF. SHUTT: Practically it has been due to the character of the season I have brought the 1902 samples here, and they are numbered so that you

do not know their origin; you may probaly be able to judge from the appearance which are ripe and which are unripe, and I will tell you afterwards if you have made a correct judgment.

For one or two momentes I am going to direct your attention to this chart No. 3. The question of the storage of honey is an important one,

that temperature. See the result upon the honey. The percentage of water in the original honey, 15.88; that which was exposed to the atmosphere for one month was 14 24. What does that mean? It means that the water has passed off into this dry atmosphere. But honey kept in a moist atmosphere contained 31.46 per cent; it had doubled its moisture contents.

TABLE III. Experiments on the storage of honey, 1902.

		Water, per cent.
	Rip honey, from capped comb	15 88
A	" exposed to dry atmosphere 1 month	14 24
A	" " moist " 1 "	31 46
B	" " dry " 20 days	13 84
B	" " moist " 20 "	43 23

A: Honey placed in glass cylinder.
B: Honey placed in open evaporating dish.

and I expected our work in connection with ripe and unripe honey would throw some light upon it, but in addition to those experiments just detailed I took some honey extracted from fully capped comb, which you will therefore call ripe honey, and I exposed it in a glass cylinder to the atmosphere of the laboratory, which at this time of the year in Ottawa is an exceedingly dry atmosphere You know that the atmosphere in the winter time is always drier than in the summer time. The higher the temperature the more moisture air can hold. I took some of the same honey, and I exposed it in a similar glass cylinder to a very moist or saturated temperature. For this we took a large bell jar, and placed in it a flat dish of water; then making a little scaffolding or shelf over it, I placed upon it the honey in this cylinder, and put the bell jar over the whole thing and left it in the laboratory at a temperature of, we will say, 70 degrees Fahrenheit, and very soon that air took up as much moisture as it could from this dish of water. The air was saturated with moisture at

In the next experiment, we exposed a larger surface to the atmosphere by pouring honey into a flat evaporating dish. You might term it a soup plate. One was kept in the laboratory exposed to the atmosphere and the other put under this bell jar also holding a vessel containing water What was the result? In that exposed to the atmosphere we have 13.84 per cent of moisture; it had lost a little more, as we might easily expect, by being exposed in the open flat dish than the honey in the glass cylinder. That kept in the open flat dish in this bell jar, in this moisture laden atmosphere, contained 48 per cent. of moisture. That was nearly one half of water—more than three times the amount of water that the honey originally contained. I think that is a very valuable result in indicating the necessity of keeping our honey in a dry atmosphere. This honey, as soon as it had absorbed this water began to ferment. The spores which are always present in the air, found a suitable medium in which to develop and that honey fermented in the course of a very short time.

Mr. McEvoy: Did you test any comb honey on the same plan?

Prof. Shutt: No; our experiments were upon extracted honey. We could not obtain comb that was not unbroken. The experiment would be of no value if the capping were not sound.

Mr. Holtermann: Where the honey was kept exposed there in the winter it got drier, did it?

Prof. Shutt: Yes. The winter atmosphere at Ottawa is very dry, probably much drier than at Toronto.

Mr. Holtermann: I think, if I am not mistaken, I asked Prof. Shutt to carry on those experiments some years ago, and I, of course, entirely agree with him. I believe he has done excellent work here. I have been able to get but very few bee keepers to agree with me in this way of handling honey: that is, when you extract your honey, strain it put it up in your package and then close it at once. This idea that in average summer temperature you can dry honey, as it were, and evaporate it, is not correct. I am very much pleased, indeed, that Prof. Shutt, in these experiments, bears that out. You do not alone lose as far as the amount of moisture in honey is concerned, but you lose in the aroma of the honey. I am delighted with the work Prof. Shutt has done, and I think it will be of great value to bee keepers. And I hope that that will come not alone before the bee keepers of the province, but before the consumers and buyers of honey, so that they will value more well ripened honey and they will know where to keep it and how to keep it.

Mr Morrison: Do you know whether that honey lost in flavor as lost in its percentage of water?

Prof. Shutt: I am not an expert on at, but you can try that, for yourlves. There is a practical part with regard to this matter, especially where honey is used for manufacturing purposes. If you buy a honey with thirty per cent. water you only get seventy per cent. of sugar, and if you buy it with fifteen per cent. water you get eighty-five per cent of sugar. Therefore, the manufacturer ought to discriminate between the qualities of the honey.

Mr. Morrison: Would not that honey with thirty-one and forty-three per cent of water ferment?

Prof. Shutt: That is what I pointed out.

The President: Would it be possible that any moisture that collected on the inner side of the bell jar would drop directly into the honey?

Prof Shutt: That is a very large bell jar; there is no possibility of anything of that kind.

Mr. Heise: Can Prof. Shutt tell us after a certain quantity of honey has absorbed that extra percentage of water whether the weight would be increased to the same extent?

Prof. Shutt: The weight increases, because we tried it in both ways I do not know about the bulk; I did not measure it in that sense, but the weight increases directly as the amount of water absorbed is concerned, because there is nothing volatile about the sugars of honey.

Mr. Darling: If comb honey is kept in a damp place the honey swells until it touches the cap and produces a dirty appearance. With regard to the matter that is under discussion at the present time, I tested some well ripened honey a few days ago, and it tested about 14½ pounds to the gallon. I figured out how much water it would take to make honey 13 pounds to the gallon. It takes about twenty-eight per cent. of water. That is, take one hundred pounds honey, 14½ pounds to the gallon, add twenty-eight pounds of water to it, ten pounds to the gallon,

and you still have a honey thirteen pounds to the gallon, and the manufacturer who buys the best honey at ten cents a pound gets it cheaper than the one who buys the other at eight cents.

Mr. Gemmell moved, seconded by Mr. Holmes, that a hearty vote of thanks be tendered to Prof. Shutt, Mr. Creelman and Mr. Fixter, for the very excellent addresses given, and the assistance they have afforded to this convention, which on a vote being taken, was declared carried, and the President tendered the vote of thanks to these gentlemen.

The President oppointed Messrs. Sparling, Post, and Sibbald as a committee to examine Prof. Shutt's samples.

FOUL BROOD

How to Detect It, Hold It in Check, and Finally Get Rid of It With Slight Loss.

BY R. L. TAYLOR.

"If you had an apiary of 200 colonies with cases of foul brood scattered through it, how would you manage throughout the entire season to get rid of the disease, or to keep it in check?" the editor asks me.

In the first place I would avoid, as far as possible, getting into a panic. Foul brood is bad enough, to be sure, and its cure entails considerable labor and loss but it is, fortunately, not without a remedy. I should try to preserve my equanimity, and thoroughly mature plans for affecting a cure; for there must be no halting while taking any step in the operation.

CHARACTERISTICS OF THE DISEASD

The first point that claims serious attention is the distinguishing of the diseased colonies from the healthy ones. This is a matter that is attended with more or less difficulty, at any season of the year, but with more at some seasons than others, except in cases where the disease has made considerable progress. In these cases, even one with no experience, need have no hesitancy in coming to a correct decision. All the ear-marks of the malady are but to evident: the weakness of the colony, listlessness of the bees, the repellent odor, the ragged cappings of the brood, the shapeless dead brood and the general unprosperous appearance of the combs and the honey, make the diagnosis easy.

But if the colony be yet strong, and but slightly affected with the malady, the case is quite different. If it be in the fall, after breeding has ceased, or in the spring before it has begun, the bees, owing to the strength of the colony, have almost, if not entirely, removed the cappings from the diseased cells, the odor is faint, if not practically absent, and the colony appears prosperous, so that even the adept, on a hasty examination, is liable to be deceived: and one without experience is sure to be. The diagnosis of those of this sort is the most difficult of all, and the difficulty increases with the slightness of the affection. How, then, may the disease be discovered in such cases? Let us go to one of the colonies badly diseased, and take from the center of the brood-nest a comb—the newer it is the better—in which there has been brood during the past breeding season. Now, we will hold it in a good light, so that the light falls upon the comb not quite perpendicularly, but at an angle of 70 to 80 degress from the top of the comb; now we look down at an angle of about 40 degrees from the top of the comb into the cells, and what do we see? In many of the uncapped cells on their lower sides—not bottom—we see brownish, not grayish black

scales nearly as wide as the cells, and reaching nearly to the opening of the cells. These scales are the remains of brood destroyed by foul brood.

We will spend a little time in looking at them to fix in our minds the image of their forms; will examine the other side of the comb, and even take out one or two more to look at. If the colony is weak, many of the affected cells retain a fraction, or the whole, of their cappings, but in any case, there are many with no capping. If the colony has been afflicted with bowel trouble, one, on a careless examination, might take the scales to be dried excrement, once half liquid, but we look carefully and see that they are always in the same position, and of the same size and shape, which would not be the case if they were excrement.

We will now return to the colony but little affected, and take out and examine one after another, the combs in which brood has been reared during the past season. Now we see the scales at a glance. There may be but half a dozen in some of the combs, and in some none at all. It is safe for us to pronounce the colony diseased, and to treat it accordingly, but this test is not quite so certain as one we shall be able to apply when brood-rearing has been under way for some time, and settled warm weather has come. I say it is not quite as certain for the sole reason that in one or two cases I have known the scales of brood dead from other causes than foul brood, though, in those cases I think the scales were all finally removed by the bees.

We will now go forward to apple-bloom, or to the opening of white clover. If the colonies we visited earlier have been left undisturbed, we will examine them again in the same order as before. Providing ourselves with some toothpicks, or bits of straw, we go to the sicker colony of the two for its through examination, and proceed with the greatest deliberation, for we are trying to learn to distinguish foul brood with absolute certainty. Having an eye out continually for the appearance of robbers, which must be taken as a signal for closing the hive, and postponing further examination, we raise the cover

If we are on the leeward side of the hive we may catch a faint whiff of the ill odor that proceeds from the diseased brood, as the cover is raised but we make sure of it by bending over the hive with the face near the top of the combs, but we do not unnecessarily prolong this part of the examination, for the scent is by no means pleasant—nor worse than that of colonies badly effected with diarrhoea, perhaps; not so bad, but quite different—something like that of a poor quality of glue as it is warming for use, or like that of a dead animal after it has lain and decayed and dried for weeks in the open air. With a little practice we shall shall not be liable to mistake the odor, and we shall find it of considerable assistance in discovering the disease to the extent that often the necessity of lifting combs will be precluded.

Now we will take out two or three combs from the centre of the brood-nest, and look for the peculiarities in their appearance or contents. At the first glance, one who takes delight in seeing his bees prospering would have a feeling of depression come over him without realizing the reason for it. But we easily discover the reason. There is plainly a general appearance of shiftlessness, slovenliness and squalor. The combs are too dark, and without the natural, clean look. The bees do not cling well to the brood but slink away; the cappings of the brood do not have the pretty clean, slightly convex appearance, but some are flat, or even concave;

(Continued on page 14)

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Editor, W. J. Craig.

AUGUST, 1903.

EDITORIAL NOTES.

Mr. R. L. Paterson of Lynden Ont., has written us to say that the National Bee-Keepers Association U. S. has paid his costs in full in the bee case of Brock vs. Paterson.

The Office of the C.B J.was favored by a visit from Mr.M Niles, Merriton, and Mr. Hubert F. Hartry of Seaforth a few days ago; both report good honey crops. Mr. Niles is purposing going into bee-keeping exclusively next season.

The Toronto "Sun" says: "Morley Pettit, of Belmont, reports to the Canadian Grocer a good crop of honey of first-class quality,but not by any means an extra crop. He anticipates a satisfactory market and looks forward to large demands for honey from the North-West Territories."

The Ontario Department of Agriculture crop reports just issued, says: "The season has been a favorable one for the apiary. Bees swarmed freely, and there has been an abundance of nectar in both field and forest," more especially in the case of white clover, which was more or less in bloom all summer. The yields reported range from 25 to 100 pounds per colony, but the average for the Province will be about 55 pounds, spring count. Little or no disease has been reported among bees, and at last accounts they were said to be in a thrifty condition."

W. J. Cowper, Assiniboia, N. W. T. asks if we have ever tried shallow frames, says he finds them excellent 1st as an extention of the brood nest in spring. 2nd as a means of inducing the bees to work in sections, 3rd to secure a surplus of extracted honey from rather weak colonies. We have not used shallow frames to any great extent, years sgo have occasionally thrown swarms on them to finish up sections quickly, but they have not been satisfactory. Would be pleased to hear from others who have used them.

Mr. A. Boomer of Linwood Ont. has had the misfortune to have his fine residence and honey house and a large quantity of bee-keepers'supplies destroyed by fire recently. We have not yet had particulars of the accident but presume it will be to a large extent covered by insurance as Mr. Boomer's good business principles and caution would not permit this neglect Nevertheless there is always an amount of annoyance, discomfort and loss following that no amount of insurance can repay, We are sorry for what has happened to our friend.

The "Domion Exhibition," Toronto, Aug. 27th to Sept. 12th; the Central Fair," Ottawa, and the

"Western Fair," London, Sept. 11 to 19. We give the list of prizes for honey and bee-keepers' supplies on another page of this issue. We hope to find the bee-keeping industry largely and creditably represented at these centres; apart from the prizes altogether we should consider these annual exhibitions as public educators; people, city people especially, are made familiar with bees and bee-keeping and with honey in its different varieties and uses. Hundreds of Toronto citizens and others who are now buying honey largely and regularly for family use got their "first taste" at the Industrial Exhibition, and much credit is due R. H. Smith; St. Thomas, Geo. Laing, Milton, and others who have exhibited there from year to year.

The Exhibitions promise to be larger and better than ever before owing to the general prosperity that has characterized the season throughout. Toronto, especially, has spent a large amount of money on improvements and new buildings. We understand that the honey exhibit there has been permanently provided with a building opposite the carriage exhibit and the "Little World" building so that exhibitors can now count on commodious and comfortable quarters favorably situated. We understand that the enterprising firm J. A. Simmers and Co. Seedsmen Toronto intend displaying a full line of bee-keepers supplies which will be worthy the attention of visiting bee keepers.

We have just received the following communication from the secretary of the Canadian Honey Exchange.

Editor C. B. J.—The Honey Exchange Commitee met in Woodstock on the 18th inst along with the grading rules commitee and after hearing the reports from members on their honey and fruit crops and the amount of honey offered to be sold through the Exchange, it was decided to go on and make final arrangements with Rutherford Marshall & Co. Toronto to handle the Exchange Honey at a commission of 5 per cent; the honey to be graded and sold as exchange honey and at prices set by the commitee. Grading to be according to the following grading rules.

The president and secretary were appointed to make final arrangements for doing business and we hope in less than week to have everything ready when circulars will be sent to all members.—W. Couse Sec., Streetsville Ont.

GRADING RULES.

Fancy Comb Honey—All sections to be well filled, combs straight of even thickness and firmly attached to all four sides: both wood and comb unsoiled by travel stains or otherwise. All cells sealed except an occasional cell next to the wood: free from pollen and not to weigh less than 14.oz.

No. 1 Comb Honey—All sections to be well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel stains or otherwise, all the cells sealed except an occasional cell, the outside surface of the wood well cleaned from propolis, comb free from pollen and to weigh not less than 12.oz.

No. 2—All sections to be well filled; combs may be uneven, crooked or detatched at the bottom with a few cells unsealed or slightly soiled to weigh not less than 10.oz.

Extracted Honey No. 1—must be good honey, color and flavor.

FOUL BROOD.

(Continued from page 11)

many are perforated, some slightly, others in a greater degree, and are more or less ragged.

Now we will look into the cells. Some, not capped, contain larvæ of a clear, pearly luster, others have nicely rounded cappings—all these are as yet healthy. In the cells with sunken, perforated and ragged cappings, and in many of those not capped at all, we see larvæ of a brownish color of various shades from slightly yellow sometimes to the prevailing hue of a dark, dirty brown. These are all dead. Did they die of foul brood? We can surely tell by trying them with our toothpicks. We open some of the sunken and the perforted cells and insert the sharp end of the toothpick into the remains of the larvæ the different cells contain. The skin of each one goes to pieces with a slight touch,and a slight turn converts it into a homogeneous, glue-like mass of the color of coffee when prepared with milk for drinking; and on with drawing the toothpick the matter is drawn out in a string a half inch, more or less. It is foul brood, and the toothpick is the supreme test. There is no foul brood without viscidity, and no viscidity without foul brood.

NECESSITY FOR CAUTION WHEN EXAMINING INFECTED COLONIES.

The toothpick, as used, we must dispose of with care to prevent the contamination of healthy bees. We may burn them in the smoker; and it is an additional safeguard to have always at hand a dish containing a weak solution of carbolic acid in which to wash tools and hands before manipulating a colony that may prove to be healthy.

Now we must go and examine the colony but slightly affected, for the detection of the disease in such a one requires some patience and care, O opening the hive, if we have "good nose," we may, on applying to the top of the combs just over th centre of the brood-nest, possibl distinguish slightly the characteris odor of foul brood, but very likely may not be able to do so. We th remove combs from the centre of th brood-nest. On a cursory view ever thing looks prosperous—the colon is strong, the brood is compact a abundant, and of a general norm appearance, and the bees are worki energetically. But if we look carefull we may see here and there a cell t capping of which has lost its live appearance. It is a little too dark, a is slightly flattened. We must ha recourse to our toothpick. One brea the suspicious capping. Yes the lar is dead and discolored. The toot pick touches it with a slight turn a is withdrawn, bringing the strin tell-tale matter with it. Other simil cells are found. There is no questi but that it is foul brood.

HOW PREVENT THE DISSEMINATIO OF THE DISEASE.

Now that it is established that fo brood has a foothold in the apiary must make every effort to prevent farther dissemination. It might asked, Why not do that by curing the diseased colonies? The reply that the periods of time when th can be done quickly and safely limited, both in number and exte The temperature must be wa enough for comb-building, a security against robber-bees must had for the necessary operations, that a time of waiting of greater less length is pretty sure to interv hence the necessity for taking p cautionary measures. And first, most important, is the guard against robbing. We must mak weak colony secure against the p ibility of being attacked. The w colonies are the ones by far

likely to be diseased, so we will make sure not only that the entrances are small enough for successful defence but also that the bees have sufficient spirit to make the defence. We will sacrifice, without hesitation, any affected conlony that will not fight.

WHAT MAY BE DONE WITH MEDICATED SYRUP.

If the character of the time is such that the bees will take syrup, this may be taken advantage of by feeding diseased colonies a quart or two of medicated syrup made by mixing one ounce of salicylic acid in sufficient alcohol to dissolve it, in about 25 quarts of a not too thick syrup or honey This will be found to be very helpful; and we will not omit to avail ourselves of it as fast as the diseased colonies are discovered. I have found that this medicated food stops the spread of the disease in the hive, and, no doubt, on stronger grounds, prevents the spread of the contagion to other hives. If the time be early spring as we find colonies which were badly diseased the previous fall, before giving the brood we will remove from each of the combs which contain the dead larvæ, and leave the bees only the ones which have few or none. These will prove sufficient untill a cure can be affected; and the withdrawing of the combs with greatest amount of affection will be a very decided advantage to the colony.

UNITING WEAK COLONIES.

We are now supposed to have critically examined the entire apiary, and distinguished each diseased colony by a prominent permanent mark, and have given each a supply of medicated syrup. We will now keep them supplied with this syrup untill the flowers yield fairly well. In tending to this we shall find some of the colonies that are taking but little or none of the food; these we will unite either with each other, or with others that are stronger, putting two or more together as rapidly as it can be safely done. I say safely done, because two colonies standing some distance apart among healthy colonies may not be brought close together at one moment, for that would be likely to send some of the bees into healthy colonies. They must be brought together gradually so that all the bees will be brought along. We will make the united colonies strong by putting a sufficient number together to make them so, for weak ones will prove to be of little if any value.

A CAUTION REGARDING USE OF COMBS FROM COLONIES THAT HAVE DIED.

There is one other preliminary matter that must be attended to, and that is the examination of the combs of colonies that have died during the winter. Diseased colonies are particularly liable to perish, and a larger proportion of the dead ones will no doubt be found to be of that class. The status of each is to be determined in the same manner that we determined the condition of the colonies examined for foul brood early in the spring before brood rearing had made much progress; that is, by looking for the scale-like remains of the larvæ which perished the previous year.

It will be understood, of course, that all diseased combs, that is, all combs from diseased colonies, bits of comb and honey, must be kept at all times where no prying bee can by any chance get access to them. These are the readiest means of the spread of the disease. The honey may be extracted from combs, containing sufficient to make it worth while, boiled well for at least 15 minutes, then medicated and used for feeding but unless one has conveniences for keeping all combs and honey safe, they should be burned up at once, However, with care, there is no good

reason why the wax from the combs, and most of the honey, should not be saved. Every one must consider his own conditions to determine how he can best dispose of them without incurring risk.

GETTING RID OF THE DISEASE.

We now come to the final and indispensable operation for effecting a cure, and that consists simply in transferring the bees from their own combs to hives furnished with frames of foundation or frames with starters. I have not found it necessary to disinfect the hives containing diseased colonies, so if found more convenient, the combs may be taken out, the bees brushed and shaken in front of the hive, and the hive furnished with frames of foundation.

AT WHAT SEASON TO DO THE WORK.

But at what time is this to be done, and what disposal is to be made of the brood?

The operation may be successfully performed at any time during warm weather, if only sufficient allowance of time is made to enable the bees to complete their combs before the cool weather of the fall comes on. May, June and July are the best months and of these about the begining of the white-clover flow would be the most favorable time of the year for begining the work. This is so, both because it is the best time for the bees to build up without any care, as well as because it is the time when robber-bees are least likely to be troublesome.

At this timely season let us go into the apiary with the necessary hives, ready furnished, to undertake the work. We find many that were but slightly diseased strong and almost in condition to cast a natural swarm. Each one of this class is moved a little aside and one of the prepared hives is put in the place of each. Now, from each one take out the combs with the bees and shake the bees off in front of the new hive, making sure that the queen goes with them, untill we have a driven swarm, leaving sufficient in the old hive to care for the brood. Within a week or ten days we will see that each of the latter has given it a good young queen, or a good ripe queen-cell, and in 21 days we will take away all the old combs and replace them with frames containing fouudition or starters. This disposes of this class, and will surley affect a cure. It would be more than useless to give them another set of frames and another shaking out.

THE TREATMENT OF WEAK COLONIES.

Now we go back to the weaker class. These we will take in pairs. We first select the first pair, set one of them aside and put a new hive in its place and shake out the bees as in the former case, only get all of the bees and the queen out. Now we put the old hive with the brood in the place of the other one of the pair, and bring that other one and shake out the bees and queen in like manner in front of the new hive, then take back the old hive and unite it with the one already on its stand; thus getting from the pair one new one with the bees and the two queens, and one united old one with the brood, that will be wanting a queen in for a few days and a new set of frames in three weeks, as in the former case. The rest are to be treated in like manner.

A good part of the success of this plan is owing to the medictated food given during all the forepart of the season. Without that the colonies would have been in comparatively poor condition, which would have entailed an increase of care and labor.

The cure may be effected during any part of the three months mentioned, or even in August, but the giving of medicated food must

resorted to unless the field is yielding an abundance for comb-building.

Sometimes the brood from several colonies may be given to a single one, and that one treated latter.

Without feeding during a dearth, absconding is pretty sure to take place.—Bee-Keepers' Review.

Lapeer Co., Mich.

BRANTFORD, CANADA

Among the greatest railroad lines of America, and one of the most interesting and showing the great possibilities of the country through which it travels is the Grand Trunk Railway System of Canada. Take it at almost any point along its great length, and the day's ride is never wearisome, as nature gives such changes and beauties along the route as to keep your attention from flagging.

Last summer it was our good fortune to ride from Toronto to Brantford through one of the most fertile sections of Middle Canada. Settled down in a beautiful valley on the Grand River, this quiet, attractive city in the heart of the fruit belt of Canada offers to the visitor, as well as the resident, one of the most delightful points to make home in, it has ever been our good fortune to see. Broad, well-kept streets, attractive parks, convenient trolley system, perfect sewerage, healthful water, an honest civic government, well organized police and fire departments, and reasonable prices at both boarding houses and hotels.

The Indians call this lovely spot Tsissagua, which was later on changed as a mark of honor to Brant, the great Indian friend of the white people, who did much when times were seamy to bring about a better feeling between the Indian and the white man. The great telephone inventor, Mr. Bell, made his home in Brantford and the newspaper men often speak of their town as the "Telephone City."

The historic market square is still one of the great features or Brantford for here twice a week the raisers of produce from all over the nearby country bring their goods and offer them for sale from their wagons. Here is a veritable delight to the average housekeeper: piles of white onions vieing in their beauty with the pearl; the blood-red, the pink and the yellow beet; the scarlet strawberry; the soft, creamy piles of light green lettuce; flowers, eggs, poultry, meats, butter, cheese and fruits in all such wonderful profusion and so cheap in value as to be almost astonishing. We were attracted by some unusually beautiful sweet pea blossoms that were bunched in a dilapidated water pail, shading from the softest pink to the deepest purple. Captured and held by their beauty we said, "How much?" The answer came, "Twenty-five cents." We paid over the money, indicating the bunch we wished, but the seller emptied out the seven other bunches and handed them to us in huge paper bag, and then we learned that our offer had been for the whole lot, as the separate bunches were retailed at five cents.

Among the natives of the soil that we feel honored in having met and been entertained by, are Mr. Harold and his sons, George and John, sturdy, manly, intelligent men, well up in the world's news, yet living a quiet life in the beautiful, sleepy old town.—Robert Mitchell Floyd in "Trade Price List."

More About Forced or Artificial Swarming.

In my previous article upon artificial or forced swarming I treated the subject in a general way only, but as there are a great many who will no doubt try it for the first time this season, it may interest some for me to give some of my experience in the matter more in detail.

I have in the past said, and I am still of the opinion, that the amateur, or those without experience, can secure better results by allowing natural swarming. While quite a few have reported good results from forced swarming upon their first trial of the plan, there is no question in my mind but that to every one who has reported favorably, a dozen or more have tried it with unfavorable results, and said nothing about it From this it will be seen that I do not believe with some that this method or control of swarming will greatly increase or revoluntionize our business

From careful reading of what has been written on this subject, I know that some localities are for for some reason more favorable for forced swarming than my own is. For instance one who has had a good deal of experience reports that with him these forced swarms very seldom or never, attempt to swarm out or desert after being made. Now, here that is one of the main draw-backs about the plan, for from 40 to 80 percent of these swarms will swarm out within a day or two after being made, the number varing in different seasons. In fact, I do not know but what some seasons I would be safe in saying that over 100 percent will swarm out for some will come out twice, and in a few instances I have had them come out half a dozen or more times, and sulk around for a week or so in the height of the white clover harvest, before setting down to work.

If it were not for this swarming out, I could produce much more honey each season than I do now. But as the matter now stands, I know from actual experience that I can, one year with another, make more money from one yard than I can by attempting to run one or more out-yards. I mean, of course, without hiring help; and if this is to be done it requires less skill to handle natural swarming than it does to make forced swarms so that good results will be secured.

The last two seasons all the bees I have personally handled were located in one yard. Last season there were 180 colonies, spring count, in this yard, and I secured about 13,000 pounds of honey which averaged me about 10 cents a pound net. I also sold about $100 worth of bees and $20 worth of wax. About a third of this honey was extracted and the rest comb in sections. I did nearly all the work myself, and I had more than I wanted to do, and more, I think, than any man should do.

I have given the results of last season to show that good results can be secured from forced swarming, but I had to be right there every day to attend to the forced swarms, and if I had been running around to out-yards but little in the way of surplus would have been secured from them. This matter of one handling a number of yards alone must depend upon locality for no man that ever lived could do profitably here. Through June, July and August one large yard keeps a man moving lively in a fair season if he does what should be done. Last season I let on shares a large out-yard to a man who has quite a family of children, a number of which are nearly grown up. He allowed natural swarming and also practiced forced swarming, and for a while it took him

the hired man, and all the rest of the family to handle them. The forepart of the season, though, was the worst for swarming, and the swarms were the hardest to handle that I have ever known.

One of the many mysteries about our pursuit to me is, why some of these forced, or, for that matter, natural swarms will stay in their new hive and go to work at once with apparantly no thought of swarming out, and others just alike in every way so far as can be seen, and treated in exactly the same manner, are determined to swarm out and loaf awhile before going to work. With some, leaving one frame of brood for a day or so prevents swarming out, but here so little reliance can be placed on this that I do not practice it any more, unless for some reason or other a colony is "swarmed" before they have begun to construct cells. In this case I leave them permanently one or two frames of brood, and if a colony has not got the swarming fever, they seldom attempt to swarm after nearly all their brood is taken away.

I have done a great deal of experimenting in making these forced swarms, trying to find some method or plan by which they could be made that would prevent their swarming out, and while I have not succeeded in this I will give the plans I now practice, which gives the best results of the many methods I have tried. The colony that is to be swarmed is set or moved just back of its old stand, and a new hive, the frames of which contain only starters, is set in the place. Underneath this new hive is placed an empty hive-body without frames, and another without frames is placed over it. If I have made my meaning clear, it will be seen that we have three hive-bodies or stories tiered up, the middle one only containing frames. I now take the frames with adhering bees from the old hive and shake or jar them into the empty top story, when they at once run down into the two lower stories. No brushing is required, for if desired nearly every bee can be jarred from the frames. With the left hand I hold the frame by the top bar over the empty hive, and then with the closed right hand, I hit the top-bar near the centre a sharp, quick blow. After a little practice one can with two or three blows or strikes, jar nearly every bee from a frame

After the bees are jarred in, the upper story is removed, and if the old hive had on unfinished sections these are placed on the new hive; or, if they are to be run for extracted honey a set of extracting combs with a queen-excluding honey-board between the two stories is used. The second or third day the empty under body is removed. The object in having it there is that I have found that for some reason when it is used the bees are much less liable to desert or swarm out the next day or two, and they are also not nearly so apt to loaf or sulk for a few days. When only one story is allowed at first a good many of the bees, especially if the weather is very warm, will come out and cluster on or under the hive, and in some cases loaf there for a week or more. Here, if there are no unfinished sections to place over the new or made swarm, the conditions are very seldom such that sections with either starters or full sheets should be given a new colony untill they have considerable comb built in the brood chamber; for at all times when honey is coming in, excepting some heavy bass-wood flows, so much pollen is also being gathered that enough of it would be stored in many of the sections to spoil their sale.

In this locality, one, if not the

most, important matter in regard to artificial swarming is the disposal and management of the removed brood. The white honey-flow here usually commences the forepart of June and lasts until the latter part of July. This gives a flow of from 40 to 60 days in length, and a swarm, either natural or forced, that is not re-inforced by the young bees from hatching brood greatly decreases in its field force long before the flow is over. While, of cource, many of these field-bees are old and about used up at the time the swarm issues or is made as soon as there is considerable brood in the new hive, it takes a large number of bees for hive or house work that would be free for the field if the new colony is re-inforced by young bees from the old hive.—C. Davenport in American Bee Journal.

County Organizations.

Sir: I was surprised to see in the report of the O. B. K. A. that in only nine Counties in Ontario had the Bee-Keepers County Organizations. Could not something be done to organize every County during the fall months. I would suggest a circular letter from a Director of the O. B. K. A., or some other prominent Bee-Keeper in the County to a number of Bee-Keepers calling a meeting for organization.

We think the advantage to be derived from County Associations would more than justify the labor and expense.

The interchange of views on wintering by men of the same county would be of more practical benefit than by men hundreds of miles apart

Mr. McEvoy says; "Ignorance is the greatest obstacle" in eradicating Foul Brood and since the only way to overcome ignorance is by education let our County Associations educate by having samples of comb containing Foul Brood at our conventions and thus enable our members to discover the disease before their apiary is ruined.

We can further spread this information by appointing men to attend the Farmer's Institute Meetings through the County during the winter months taking samples of diseased comb with them and thus enabling the farmer with a few colonies to know if his bees have Foul Brood or not. The great obstacle seems to be, that the great mass are unable to detect the disease in its earlier stages. When every one who has bees knows Foul Brood, the Mc Evoy treatment is so effectual that the province will soon be cleaned.

A Country Association can also be used to collect statistics such as name of bee-keepers, number of colonies, quantity of honey, etc, and thus prove a great help to the honey exchange. It appears that Country Organization is essential to the success of the Honey Exchange in Ontario.

With an Association in every Country sending two or more delegates to the O. B. K. A. we would always be certain of a good representation at our Provincial Convention and might thus attain to the membership we had twelve years ago. Those are only a few of the advantages in every Country.

J. C. MORRISON.

Guthrie Ont.

It is not what we read, but what we remember, that makes us learned. It is not what we intend, but what we do, that makes us useful. It is not a few faint wishes, but a life-long struggle, that makes us valiant—Henry Ward Beecher.

Central Canada Exhibition Prize List. Ottawa.

CLASS 61.—HONEY AND APIARY SUPPLIES.

Sec. 1—Best 20 lbs. of Extracted Granulated Honey in glass, 1st. $5, 2nd. $3, 3rd. $2.

Sec. 2—Best display of 100lbs. of Liquid Extracted Honey, of which not less than 50 lbs. is in glass, quality to be considered 1st. $10, 2nd. $5, 3rd. $2.

Sec. 3—Best display of 100 lbs. Comb honey in section display, fresh appearance and finish to be considered 1st. $10, 2nd. $5, 3rd. 2.

Sec 4—Best 10lbs. of comb honey, quality and finish to be considered, that is to say, body and flavor of honey and clean and best filled sections to be considered 1st. $5, 2nd. $3, 3rd. 2.

Sec. 5—Best 10 lbs. of extracted Clover Honey in glass 1st $3, 2nd $2.

Sec. 6—Best 10 lbs. of extracted Linden Honey in glass 1st $3, 2nd $2.

Sec. 7—Best 10 lbs. of extracted Buckwheat Honey in glass, purity to be considered 1st. $3, 2nd $2.

Sec. 8—Best Beeswax, not less than 10 lbs., 1st $2, 2nd $1.

Sec. 9 Best Exhibit, the object being to educate the public as to Bees their natural history, the bee-keeping industry and its relation to horticulture 1st. $5, 2nd. $3, 3rd $2.

Sec. 10—Display of Bee-keepers' supplies. Diploma.

Sec. 11 Best foundation for Brood Chamber 1st. $1, 2nd. 50c.

Sec. 12—Best foundation for Sections 1st. $1, 2nd. 50c.

Sec. 13—Best Hive for Comb Honey 1st. $1 2nd. 50c.

Sec. 14—Best Hive for Extracted Honey 1st. $1, 2nd 50c.

Sec. 15—For the largest, most tasty and neatly arranged exhibit of Honey in the Apiarian Department, all the Honey to be the product of the exhibitor ($10.00 of this prize is given by the Ontario Bee-keeper's Association.) 1st. $15, 2nd. $10, 3rd $5.

Exhibitors showing honey not the product of their own apiary, in competition for prizes, shall forfeit any prizes awarded and be debarred from exhibiting for two years hereafter. This rule will be strictly enforced by the Directors. The Directors wish it to be understood that no bees will be allowed upon the grounds or in any of the buildings thereon. Bee-keepers who have supplies manufactured specially to order, can exhibit such in competition for prices.

Prize List Dominion Exhibition Toronto.

CLASS 253—HONEY AND APIARY SUPPLIES.

(Entrance Fee, 25 cents each entry.)

Sec. 1—Best and most attractive display of 50 lbs. of extracted granulated Clover Honey, in glass.—1st $5, 2nd $4, 3rd $2, 4th $1.

Sec. 2—Best and most attractive display of 50 lbs of extracted granulated Linden Honey, in glass.—1st $5, 2nd $4, 3rd $2, 4th $1.

Sec. 3—Best display of 500 lbs. of liquid extracted Honey of which not less than 250 lbs. must be in glass, quality to count 80 points, display 20 points.—1st $18. 2nd $12, 3rd $8, 4th $5,

Sec. 4—Best 500 lbs. of Comb Honey in sections quality to count 100 points, display 20; total, 120 points —1st $20, 2nd $15, 3rd $10, 4th $6.

Sec. 5—Best 12 sections of Comb Honey, quality to be considered, that is to say, clean sections and best filled —1st $6, 2nd $4, 3rd $3, 4th $2.

Sec. 6—Best 100 lbs of extracted liquid Linden Honey, in glass —1st $7, 2nd $5, 3rd $3, 4th $2,

Sec. 7—Best 100 lbs of extracted liquid Clover Honey, in glass—1st

$7, 2nd $5, 3rd $3, 4th $2.

Sec. 8—Best 10 lbs. of extracted liquid Clover Honey, in glass.—1st $4, 2nd $3, 3rd $2, 4th $1.

Sec. 9—Best 10 lbs. of extracted liquid Linden Honey, in glass.—1st $4, 2nd $3, 3rd $2, 4th $1.

Sec. 10—Best 10 lbs. of extracted liquid Buckwheat Honey, in glass—1st $4, 2nd $3, 3rd $2, 4th $1.

Sec. 11—Best Beeswax, not less than 10 lbs—1st $4, 2nd $3, 3rd $2 4th $1

Sec. 12—Best foundation for brood chamber, not less than 10 lbs.—1st $3, 2nd $2, 3rd $1.

Sec. 13—Best foundation for sections, not less than 10 lbs.—1st $3, 2nd $2 3rd $1.

Sec. 14—Best exhibit of Apiarian Supplies.—1st $8, 2nd $5, 3rd $2.

Sec. 15—Best and most practical new invention for the Apiarist, never shown before at an Exhibition of this Association—1 $6, 2 $4, 3rd $3, 4th $2.

Sec. 16—Best variety of uses to which Honey may be put in preparing articles for domestic use, the increase they are likely to make in the demand for honey, quality and originality to be considered.—1st $6, 2nd $4, 3rd $3, 4th $2.

Sec. 17—For the most tasty and neately arranged exhibit of Honey in the Apiarian Department, to be limited to the quantities called for in the proceding sections, all the Honey to be the product of the exhibitor. The first prize in this section is givek by the Ontario Beekeepers' Association 1st. $25, 2nd. $18, 3rd. $10, 4th $5.

Sec. 18—To the exhibitor taking the largest number of prizes for Honey at this Exhibition, 1903, to be awarded by points, as follows: A 1st Prize to count 5 points; a 2nd, 3 points; a 3rd, 2 points; and a 4th Prize, 1 point. 1st Silver Medal. 2nd Bronze Medal.

Sec 19—To the exhibitor showing the best and most originality of design in setting up the display. Diploma.

Western Fair Prize List, London

CLASS 57—HONEY AND APIARY SUPPLIES.

Sec. 1—The finest and most tastefully arranged exhibit of Comb and Extracted Honey, Bees Wax, the product of one exhibitor put up in most marketable shape; not less than 400 lbs.—1st $16, 2nd $12, 3rd $6.

Sec. 2—Comb Honey. 200 lbs. in sections, put up in most marketable shape and so that sections may be handled for examination in judging—1st $10, 2nd $7, 3rd $5.

Sec. 3—Liquid Extracted Honey, 200 lbs, put up in most marketable shape.—1st $7, 2nd $5 3rd $3.

Prizes in each, Sections 4 to 14—$3, $2, 50c.

Sec 4—Comb Honey, 20 lbs. in sections in best marketable shape.

Sec. 5—Liquid Extracted Clover Honey, 40 lbs., in glass packages.

Sec. 6—Liquid Extracted Honey not clover, 40 lbs., in glass packages.

Sec. 7—Extracted Granulated Honey, 20 lbs., in glass packages.

Sec. 8—Bees Wax, 10 lbs

Sec. 9—Honey Vinegar, half gallon, in quart glass packages.

Sec. 10—Maple Syrup, half gallon in quart glass packages.

Sec. 11—Largest and best variety of domestic uses to which honey may be put, prepared by the exhibitor or his household, two samples of each—Canned Fruits, Cakes, Pastry, Meats, Vinegar, etc.

Sec. 12—Comb Foundation for surplus Honey, by manufacturer.

Sec. 13 Comb Foundation for Brood Chamber, by manufacturer.

Sec. 14—Display of Queens, put up in shape to be readily seen by visitors.

Sec. 15—Queen Cage, admitted to mails by Postal law—Diploma.

Sec. 16—Assortment of Glass Packages for retailing extracted honey—Diploma.

Sec. 17—New and most practical invention for use of Apiarists—Diploma.

Sec. 18—Display of Honey-bearing Plants, named and labled—Diploma

Sec. 19—Display of Apiarian Supplies—Silver Medal.

The Ontario Bee-Keepers' Association have kindly donated $10.00 in Honey Section

Entries postively close and on alterations permitted after Sept. 10th. Entry Fees 25c. each section.

Exhibitors making entries amounting to $1 or over shall receive one pass.

Jndge—Martin Emeigh, Holbrook; Saturday, 1 p m. The arrangement of exhibits will count 5 per cent.

TEMPERATURE OF THE HIVE.—IV.

Continued from Page 230

Temperature is everything to the bees, and in cold climates they have a great deal to contend with. Large numbers are chilled and benumbed foraging in the spring, and are unable to return to the hive. The loss of bees in this way, however, is not so serious as the loss from disease, which cold is so certain to bring about. Editor Hill says that the bees in Florida do not suffer much from disease, and in the West Indies foul brood is most prevalent, while in some of the islands it is said to be unknown. The more honey the bees have to consume in order to keep up the temperature of the hive, the more they exhaust their vital powers, and the more susceptible they become to disease, i.e., the less is the resistance to the growth of the bacteria.

We know that the microbes causing foul brood retain their vitality in honey for sometime, but just how long we do not know That the spores of bacillus mesentericus will germinate after being steeped in honey for over a year I have very great doubts, and if a few years' immersion in concentrated honey is fatal to them we have a clue to the reason why bees store and keep in store large quantities of honey.

The instinct of the bees in storing large quantities of honey—an instinct upon which bee-keeping is wholly dependent — contributes, without doubt, to the bees' welfare, and the principal object must be to protect the colony from the microbes. Dr. Lambotte says that microbes will invade the larvae if bees are not placed under conditions that are normal and unfavorable to the developement of the microbes.

Bees robbed of their honey are not in a normal condition, any more than a bank robbed of its money is in a normal condition, and the less extensive the robbery the sooner will the abnormal condition disappear, and the evils which the abnormal condition begets be, possibly, avoided.

(To be concluded next month.)