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ASSOCIATION
OF ONTARIO

(Professor Shutt's address continued.)

Any percentage of water you released could be obtained if you only knew just how long to dry the bees. The chemistry on levulose states that it is a substance which is extremely subject to decomposition at heat at 70 degrees centigrade. 70 degrees centigrade is the temperature of boiling water and there is no doubt about the very ready decomposition of levulose at that temperature. But even at the temperature of 70 degrees levulose begins to decompose. We took a second series of honey samples and we dried them as near as we could at 70 degrees centigrade. What did I get. Instead of 29 and 28 I get 21 and 21; instead of 30 and 33 I get 23 and 25; instead of 24 and 26 I get 20 and 19; instead of 28 and 32 I get 22 and 21, and so on.

It is evident therefore that at the temperature of 70 degrees, one obtains from 8 to 9 per cent less water than by the method in which the bees are dried at the temperature of boiling water.

From the work of the last two months I am convinced that any

method which involves the drying of honey at the temperature of boiling water is unreliable and the results will be inaccurate. Now I am prepared to say to-day that the results from this second series of experiments, drying at a temperature of 70 degrees centigrade, are absolutely accurate, but I will say this that I feel convinced they are much nearer the truth than those which you find ordinarily on record and those which I first obtained by the method which was used by the Inland Revenue Department analysts. There is another method of obtaining the amount of water in honey, it is one which is used by the sugar manufacturers largely. By taking the specific gravity of the sugar solution one can calculate the amount of dry matter present and of course by subtracting the dry matter from 100 you get the percentage of water. We tried that method; we took the specific gravity of the honey and we made a calculation and estimated in that way the amount of water so present.

Instead of having 21 per cent of water as determined at 70 degrees centigrade I get by the specific gravity method results from 25 to 17 per cent, a still smaller quantity, than when the honey is dried at a temperature of 70 degrees which is evidently too high for levulose. If our results obtained by the specific gravi-

ty method are correct, then we must conclude that 70 degrees is too high a temperature. I think it more probable that the levulose decomposes below 70 degrees. If the method by specific gravity is strictly applicable then the results obtained at 70 degrees are evidently too high. I will read you a few more results for the sake of comparison :

The percentage of moisture obtained when honey is dried at 70 degrees centigrade is 23 ; by the specific gravity method we obtained 19 per cent ; another sample by drying 20, by specific gravity 15 per cent ; by drying 22 ; by specific gravity 13 per cent : drying 26 ; specific gravity 21 per cent ; by drying 21 ; specific gravity 15 per cent. We seem to get about 5 per cent less water in honey by this specific gravity method than when drying at 70 degrees.

I am not prepared to say to-day definitely which one of those two is the more correct. I do not believe either of them is strictly speaking accurate, but I think the specific gravity method gives results nearer the truth. There are reasons which I need not on this occasion enter upon that lead one to think the specific gravity method does not give the exact per centage of solid matter in the honey, but I believe it will be found on further investigation to be much more reliable than the drying method. We shall examine this method more fully as time permits. We also purpose next year to institute a series of experiments drying at still lower temperature than 70 and using a vacuum. It may be a lengthy process but we shall have achieved something in Canada if, through the instrumentality of this Association, we show that the results as recorded for the per centage of water in Canadian honey are in-

accurate and that we have been able to find out something of a definite character with regard to the normal contents of water in honey. It is a question of scientific interest but it is more than that, it is a question of some commercial importance, because if there are differences in water contents of ripe and unripe honey if it is desirable that only ripe honey should be placed upon the market. it is absolutely necessary we should have some means for determining what is ripe and what is unripe honey ; in other words, a means of accurately estimating water in this material.

I trust I have made clear the reason for the statements I have made with regard to the unreliability of this drying process, of the results on record and the necessity for future work towards perfecting an analytical method. In order to see if our assumption regarding the decomposition of levulose were correct I made artificial honey. You remember that honey consists essentially of two sugars, dextrose and levulose ; so we obtained chemically pure dextrose and levulose and mixed in equal proportions and then analysed them by these two methods the specific gravity and the crysotile or asbestos fibre methods, and with the latter drying at the temperature of boiling water and at the temperature of 70 degrees centigrade. By the specific gravity method we got the results expected ; that is to say, there was a return for all the dextrose and levulose in the solution. It is thus evident that if honey were a mixture of dextrose and levulose only then reliable results as to the percentage of water present would be obtained by the specific gravity method. I am very hopeful of this method and think it very probable that further

research will show us how it can be used to obtain correct results. However, with our artificial honey it worked very satisfactorily, and this was encouraging. Then we started with our asbestos tubes just in the same way as we had done with the honey. What was the result of drying at the temperature of boiling water in the water for over 24 hours? We found that there was a loss of 10 per cent of the sugars, due to decomposition of the levulose. If we had been working on honey with the drying method that loss would have been put down to water. But I knew exactly the amount of levulose and dextrose I had in that tube and 10 per cent of that weight was gone. Hence dextrose does not decompose at that temperature we know it must have been levulose that disappeared. When we put the tubes back again in the water bath and left them there 120 hours Did they still show 10 per cent loss? No, they showed between 18 and 19 per cent loss. These results throw discredit on this method of analysis for the determination of water in honey. Then we equalized drying it at 70 degrees centigrade. We wished to see if the levulose would decompose at that temperature and we found that it did. After 24 hours there is something like 15 per cent loss which under ordinary circumstances I should have attributed to water, but which under these circumstances was plainly due to decomposition of the levulose. In this research I feel justified in making the statement that the percentages of water returned by the methods as present in genuine honey are so high.

You must not understand that I am adversely criticizing the public analysts; they have employed the method by which we estimate

moisture in substances. It is only because of the presence of this peculiar constituent levulose which is so ready of decomposition that the method is unreliable.

It is only right that I should here add that several investigators in recent times have noted the ready decomposition of levulose above 70 degrees centigrade. Special attention is called to this fact by Carr and Sanborn in Bulletin 47, U. S., Department of Agriculture, Division of Chemistry. These authors devised an apparatus for drying in vacuo at any desired temperature and which gave very satisfactory results.

During the coming year I purpose as time permits to follow up this investigation. We shall first endeavor to obtain a method whereby we shall accurately ascertain the amount of water in the honey. If we are successful in finding such a process—and I think we shall be—we shall next proceed with this question of immature and mature honey. Next year I trust I shall have something of a satisfactory nature to report to

One word about ripe and unripe honey. It appears that much depends upon the season—upon the honey flow—as to whether there will be much unripe honey. Much wet and cloudy weather is conducive to there being unripened honey in the hive. This past season the honey flow was good and the honey ripened up well.

Though I have brought with me several tables of data from the work on the honeys you see before you I shall not now place them on record, for I do not consider them—for the reasons I have stated—as accurate. I will make this statement, however, that the trend of our results shows that the uncapped, immature, honey contains more water than the fully

capped honey. The difference appears to be in the neighborhood of two per cent.

This Association is going to appoint a committee to make a practical test of these samples which we have brought here and when they have completed their work you will have an opportunity of examining them for yourselves.

You get some idea of the relative viscosity of the honeys by turning the bottles upside down and noticing the length of time it takes the bubble of air to ascend. The samples are merely lettered. They comprise ripe capped honey, honey partly capped and honey entirely capped. The first named are the most viscous. After the Committee has reported on the quality of the honeys I will label them. We wish to learn if practical men can pick out the samples of ripe honey, if their judgement in this matter coincides with ours, which is that the capped honey is a better quality of honey than that from uncapped comb. The latter honeys were collected on July 1st, the former on August 6th.

With regard to the question of water in honey, I feel that its importance lies really in this matter of ripe and unripe honey, water is not used as an adulterant of honey. The chief adulterant of honey is glucose syrup; that is to say the sugar which is manufactured by the action of dilute acid upon starch. Glucose is a sort of generic term and dextrose and levulose are specific terms. The word glucose chemically would include dextrose and levulose. Glucose is what results from the action of dilute acid upon cane sugar. That has been found in one or two instances and it is fairly readily detected. If honey were adulterated by the addition of cane sugar that

would also be comparatively easy of detection. In order to show you what genuine honey would be with the addition of 5, 10 and 15 per cent of water, I have in these bottles just mixtures. The bottles are labelled according to their contents.

It was suggested to me last night that I might just say a word or two with regard to the position of honey as a food. I have already spoken at some length and you already may be somewhat tired of this subject.

Voices: Go on.

Prof. Shutt: It is altogether apart from the question of this investigation which I have undertaken. One word further, however, about our experiments. I believe it would be better to keep the honey upstairs. Everything seems to point to that plan as producing a better class of honey; but I can't say that there is very much difference in our samples between the honeys kept in the cellar and those upstairs. It does, however, seem to be a fact that the honeys in the cheese cloth covered bottles contain a little less water upstairs than those which were in the cellar, but owing to the unsatisfactory character of the examination I do not want at present to speak definitely upon that matter.

Mr. Gemmell: I have found that the specific gravity of capped and uncapped honey is very different.

Prof. Shutt: I had a conversation with Mr. Percy Selwyn, an Ottawa bee-keeper, and he said there was a great difference between seasons on this matter. If you take a moist, damp, cold season you get water in honey and it takes a long time to ripen up, before the bees cap it. I said if you were to take that unripe honey in the comb you could dash it right out; but in a dry season the honey would be too thick

to easily leave the comb.

HONEY AS A FOOD.

With regard to this matter of the composition of honey as a food, honey must be classed with the saccharine foods when considering its value. In order to intelligently appreciate its value I shall have to say something with regard to the general food constituents as found in all foods. It will not take me more than a few minutes just to outline their nature and their composition and function in the animal system. We find that all foods comprise a greater or less quantity of the following classes of constituents Protein or albuminoids, fats, starch and sugar, ash nor mineral matter.

Now first of all, with regard to protein: Protein or albuminoid. These materials all contain as an essential element of their constitution, nitrogen. Now if you asked me for an example of protein or albuminoids I should at first name the white of an egg, which is pure albumen; it is one of the purest forms in which we can obtain protein; then the curd of milk, and gluten of wheat are others. There are more or less pure forms. Fat or oil I need not describe to you, because we have in so many articles such as butter and various classes of oils, materials that you are perfectly familiar with. You know what I mean when I refer to and mention the word fat. With regard to starch and sugars, those are known to the general chemist as carbo-hydrates. You have already learned from what I have said that starch and a sugar are related chemically so that all these substances which come under that head we call carbo-hydrates; then there is also ash or mineral matter which, in the body, is used to form the bone. These substances you understand are present

in greater or less proportion in nearly all our foods, though not in all; we shall see in that respect honey is not a complete food. Now I have said it is absolutely necessary that a complete food should contain these. Why? First of all the body requires something to build up its tissues continually. There is waste of our tissue due to muscular energy. Every time I speak a word or move my arm there is a certain waste of the system and this must be replaced, it is due to the protein or albumenoids that that repairing of the waste of the body takes place, and consequently in order to restore life we must have foods which contain a certain proportion of protein or albumenoid. Such have this quality of being muscle builders, body builders. They contain nitrogen, as an essential element. These other materials, fat and starch and sugar and so on do not contain any nitrogen. The chief intention with regard to protein and all albumenoids is to build up the body and repair the waste which hourly takes place.

With regard to the fat and sugar we have materials which are useful in keeping up the heat of the body. If you put a thermometer in your mouth you will find that the temperature is somewhere in the neighborhood of 100 degrees fahrenheit. How is that maintained? In the same way that heat in the stove is maintained. The wood is burned in the stove; the food is burned in the body. It is really a process of combustion; and the combustion of fat and starch and sugar within our bodies gives rise to heat. Heat is only another form of energy. We know that. Therefore we are able to convert the heat produced by the combustion of our foods into physical force or energy. So that we have in these

two substances fats and carbohydrates those materials or constituents which have for their chief functions the development of heat and energy within our bodies. Of course the formation of fat takes place; a certain quantity of fat within the body is formed and we further find that that fat may be formed from either one of those three substances, but chiefly from the fat and carbohydrates of the food. It is important for us to know that a complete food must contain all those classes of constituents, and that protein or albumenoids differ from those others in possession of nitrogen, and that the latter are absolutely essential and cannot be left out of our daily diet from the fact that it is necessary to build up the body and repair the waste which is constantly taking place. It is also necessary we should have a due proportion of fat and starch and sugar in order to produce the necessary heat of our bodies and for the purpose of developing energy. There is also a certain proportion of mineral matter or ash required for the development of our bones. Having said so much, where does honey come in? Honey is not a complete food, it does not contain any protein or albumenoid; it is not a body builder, it does not contain any fat, but it is a substance of great value from a sasarine standpoint. It consists of sugars dextrose and levulose principally, consequently, we have a substance which from the food standpoint is strictly comparable with sugar.

The digestibility of food in a large measure limits or regulates value. It is not the food we eat that does us good, it is the food we digest and assimilate; that is, is converted into body tissue or helps to develop heat and energy. When we take cane

sugar or syrup into the mouth it is mixed with the saliva and converted into the form of glucose, and that is the form of sugar which is assimilated and passes into the blood and nourishes the body. We have that work already done in the case of honey; it is then already in the forms of dextrose and levulose and therefore sugar in honey is what we may term a partially digested form; it is at once presented in a condition that is immediately assimilable and may pass into the system. From this standpoint we may say that 95 parts of honey sugar are worth 100 parts of cane sugar for the purposes of assimilation.

We already have been saved the expense, so to speak, the physiological expense of conversion of that sugar into assimilable forms. Honey as a food material, furnishes in a palatable, wholesome and readily digestible and easily assimilable condition, sugar which may act for the production of heat, for the development of energy and also for the formation of fat within the body. From the foregoing considerations you see, we could not live on honey alone, no matter how desirable from many other standpoints, simply from the fact that it does not possess any of these protein or albumenoid substances which furnish the necessary nitrogen, neither does it furnish the bone forming material. I think however, it is one of the most digestible, most agreeable, most palatable and most assimilable of all forms of sugar.

With regard to its position as a medicine I cannot say very much. It is used as a demulcent and as an anti-irritant for affections of the throat and coughs and so on. It is slightly laxative in its character and it has some value as a medicine

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that direction. But I think it is used medicinally principally for coughs and colds and affections of the throat although possibly to some extent as a laxative. In former times it was employed medicinally to a much greater extent than it is now.

Honey has not only been used as a food but also for the manufacture of a beverage. In ancient times this beverage, mead, which is really a fermented liquor containing a considerable amount of alcohol, was used all over the northern parts of Europe. Now, I fancy the areas are very restricted in which that beverage is used or manufactured. It was known to the Greeks and Romans and took the place of the beer of to-day.

Mr. Clarke : About what per cent of alcohol is there in mead ?

Prof. Shutt : I should suppose about 7 or 8 per cent, but I haven't any data on that point. It is an interesting fact that in honey we are dealing with a substance which has been an article of food from pre-historic times ; for ages and ages before Christ it was the only form of sugar known to the world. Certainly for many centuries there was no other source of sugar known besides that in honey. It appears that sugar from sugar cane was known about 500 B. C. ; it was known to the Chinese and to the Indians at that date, but it didn't become an article of commerce for many centuries later. In fact I don't think that cane sugar was largely used for a thousand years after that date. So that honey retained its position as the most used saccharine matter both for sweetening materials and for other purposes in which sugar is used, for very many many centuries.

Mr. Clarke : Is there any truth in the idea that common sugar has led to the large increase of kidney dis-

eases in later times ?

Prof. Shutt : I don't think so. There are so many different kinds of kidney disease. Anyone afflicted with diabetes should of course refrain from all forms of sugar or materials which are easily converted into sugar ; but I am not at all sure that it has been the indulgence in sugar that has created that disease. It is rather due to an abnormal condition of the system in which the function of the kidneys is perverted.

I do not know whether the consumption of honey in this country is increasing or not, but I should suppose it were not. It does not seem to me that the general public prize and appreciate honey according to its merits. Many consider it only as a delicacy or luxury but it is really a food of much value and I think honey only needs judicious advertising to be found more generally on the table of our people.

Mr. Holterman : In connection with food if lean meat is largely carbon then the man who in summer tells you you should discard lean meat, must be entirely incorrect ?

Prof. Shutt : Yes, I should say so.

Mr. Holterman : Lean meat is never heat producing ?

Prof. Shutt : Yes, it may be used too by the system for that purpose. However if you ate nothing but lean meat you are consuming a great deal more nitrogen than is absolutely necessary for the repairing of the tissues, and giving the kidneys an extra amount of work to eliminate that nitrogen from the system. If all the food were in the form of albumenoids you would be taking in more nitrogen than is absolutely necessary and that nitrogen has to be got rid of. Now the special function of the kidneys is to excrete that nitrogen. We must have a balanced

ration in order to be economic, in order to maintain health; we must have a due proportion of protein or albumenoids but not too much because such would be not only a waste but a detriment to the system. On the other hand sugars and starches cannot be used alone, for they do not furnish nitrogen. They would provide the system with heat producing constituents but the system would be wearing out. When the food does not contain a sufficiency of protein to replace the daily waste then the body weight decreases. We must have food containing all classes of constituents so that the body may be healthy and strong; each class of constituents has its own particular function to perform in the system.

Mr. Hall: I would like to ask the Professor a question. In liquefying honey would you advise 70 degrees centigrade?

Prof. Shutt: I would advise you to keep the temperature as low as possible. Yes, that is about the right temperature, say 160 degrees Fahrenheit. (Applause.)

News from South Africa.

Durban, Natal, May 23, 1902.

Editor C. B. J.,

Dear Sir,—It is some time since I sent you a line regarding affairs in this part of the world, but there is so much to be done in the way of work that the bees do not get much attention.

There is a steady flow of population northwards, and those who have not gone are trying to get there, so everyone is kept busy in the transport way.

We have had a very wet summer and autumn, which caused an enormous growth of weeds, the hives getting almost covered, as, owing to the scarcity of labor, it was impossible to get anyone to attend to the garden.

Labor is one of the difficulties in bee-keeping here, as the natives, who form the class upon which one has to draw, have a strong natural odor to which the bees appear to object, so that they cannot work about hives in the day time. I must say that I sympathize with the bees, for I have not, after 25 years overcome my repugnance to the "boquet d' Afrique." This is the more unfortunate as the hives are not shut down for half the year, but there always seems to be something wanted.

A pair of honey-guides paid me a visit this year and nested somewhere close by, but did not find it. There are many stories related as to the way in which these birds conduct people to bees' nests and no doubt they do as I have heard in many cases but have never actually seen it. The cock bird of my two visitors, a very handsome fellow, pale grey with bright yellow feathers in wings and tail, fell a victim to an airgun but the hen remained and brought a young one later. They were very fond of pecking about old dry combs, probably after the wax moth grubs, they also collected the young bee grubs that were thrown out, but I never saw them catch bees on the wing, nor do they seem keen for honey. My impression is that it is the grubs and old comb that they are anxious to get at.

There are several kinds of guides and also bee-eaters, some are very pretty birds but I do not think they are any advantage from a bee-keepers point of view.

We are now starting our winter season and the first flowers are out, these are a tall white flower, fine pollen bearer, and a nettle, the peaches will follow and instead of putting the hives in the cellar I hope to be putting section racks

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There is one advantage about a winter flow that the competition is less as wild bees have closed their establishments.

Hoping that you will have a good season, believe me.

Yours faithfully,
A. C. SEWELL.

Prevention of Increase During Natural Swarming.

By C. P. Dadant.

The prevention of increase by returning swarms to the parent colony shortly after swarming was tried by me accidentally on a large scale a number of years ago—I believe it was in the years 1877—78. It happened in the following manner:

We had at that time made arrangements with an apiarist some 14 miles from us to furnish him hives for his swarms and take care of his bees at the same time, taking one-half of the money and of the increase for our day. He was to harvest the swarms as they issued. The season was exceedingly favorable, and we were crowded with work. The number of swarms were greater than we had anticipated, and our man found himself short of hives for two or three days. When I arrived at his apiary with a load of some 15 or 20 hives, he had been hiving his swarms in all sorts of boxes, nail-kegs, etc. Upon my arrival at his apiary I at once went to work to transfer, to the new hives that I had brought, all the swarms that had issued within the last two days, as they had but little comb built. But each of them had several pieces of comb with eggs in them, in almost every instance. They were so ill-pleased with my unceremonious transfer into freshly painted empty hives that every swarm left these new hives and returned to the parent hive from which it had come

forth a day or two previously.

Subsequently we ascertained that none of those colonies swarmed again that season. I thought that I had made a discovery, and used this method repeatedly afterwards with very frequent success, but I later found that my original discovery had been put into practice years ago in Europe, by the box-hive bee-keepers.

In his *Cours D'Apiculture*, the first edition of which was published in the 50's, Hamet, the well-known champion of the box and eke hives in Paris, describes his method of returning the swarm to its parent colony. This method he uses for all secondary swarms, and he considers it necessary in order to secure strong colonies, or rather to prevent the "swarming to death" that weakens the parent colonies and furnishes worthless swarms. His method is to hive the swarm as usual in a plain box, and on the evening of the following day return this swarm to the hive from whence it issued, by shaking it in front of that hive.

His explanation of what happens is that by the end of the second day the bees have usually destroyed all queen-cells and have kept but one young queen. When the swarm is returned thus unexpectedly, the two queens come together and have a duel, in which one of them is killed. It would perhaps serve the purpose still better if the queen of the swarm that is returned was killed by the apiarist at the time when the swarm is returned.

As I said before, Hamet used this method only upon secondary swarms. It is quite likely that he had never tried it on primary swarms, for the reason that natural swarming was considered by him as the best method of increase, but my accidental trial and further experiments have con-

vinced me that it works nearly as well on a primary swarm as on a secondary swarm.

Bear in mind, however, that this method is not infallible. The conditions which cause the bees to make preparations for swarming being still there, it is quite likely that other preparations may be made a few days later, but if the apiarist takes the pains to increase the space, giving room and additional ventilation so the bees may not find themselves too crowded—if he sees that the hive is as well sheltered as possible from the heat of the sun during the warm part of the day—this method will prove most successful. Returning the swarm on the same day will not do; the excitement is not over, and several young queens may be roaming about the hive, or the additional queen cell may still be intact. It would be better to wait two days, if for some cause the swarm can not be returned on the second day.

This method I gave several years ago in *Gleanings*, and perhaps also in the *American Bee Journal*, and a number of apiarists have reported favorably upon it, though it has not been uniformly successful in all instances. But there is nothing which is at all times a success, and exceptions only strengthen the rule. If in dry weather all signs fail, it is also true that in a crazy swarming-time all methods will fail to keep the bees within reasonable bounds. But this method is very worthy of a trial by those who have small hives and wish to keep down the increase as much as possible.—*American Bee Journal*.

Cultivate your conversational powers, but especially try to be a good listener. To draw people out by gentle and judicious questioning is sometimes the highest art.—*May Ladies' Home Journal*.

Notes by the Way

By G. A. DEADMAN.

Since writing my last notes on straining the honey as it comes from the extractor, and using great care afterwards, to prevent dust, bees or other objectionables from getting in, I have felt that I did not write strong enough regarding this. Whether one sells retail or wholesale he should be just as careful, but more especially when dealing with the latter. If a buyer has to examine every pail to make sure that it is presentable, he will either pay less to make up for time spent in so doing, or will be discouraged from buying at all. I have purchased from some that I felt sure would give me a satisfactory article and was not disappointed in most cases. Yet occasionally there would turn up a pail that if sold as it was might lose a customer. Only the other day a friend drove up for a 10 lb. pail I carried out one and with confidence took off the cover, as this lot I had found very satisfactory—to my dismay it contained a lot of black specks, dissected bees, etc., I explained that it was same I had bought but those examined before finding one even passable. "Eternal vigilance" some one has said is required in the management of bees and I would add of honey also. We require to be ever on the watch. but we think it should be the seller and not the buyer that is require to be watchful.

If buyers of extracted honey have difficulties and trouble I can readily understand that those who buy should

tion honey have. Friend Chryler, of Chatham gave me to understand that around there at least it could not be handled satisfactorily. Shippers of extracted honey should be very careful and keep each grade by itself. I do not refer particularly to clover and basswood but when dark honey of any description gets along with either or both of these it is going to give dissatisfaction. It may be ever so little, but a little dark stuff goes a long way sometimes, and when retail buyers in remitting deduct a cent or two a lb. because not up to standard, one feels like as Hutchison says "keep more bees" and then buy less honey. I hardly need to say that buyers like good weight but what will you say to nearly $\frac{1}{2}$ lb. short on each of 300 ten pound pails, unfortunately I was late in discovering this. We like to be charitable but hardly think this accidental. I would have thought it might have been the fault of the scales, if party had been ready to make good the deficiency.

I hope it is not too late to caution extracted honey producers against extracting before the honey is ripe. One buyer wrote me saying how did that honey turn out that you bought from Mr. R., as some he said was too thin to keep? He wrote me after, that he was glad to get rid of it at a loss. It has been said that those who put unripe honey on the market are as bad as others who adulterate, and so they are. Away with all those who extract and sell unripe honey. Nothing will discourage the consumption of honey as long as we are eating this unripe stuff.

and now Mr. Editor I have a proposition to make. It has occurred to me that the larger number of your readers are too busy during July to give you such attention to what the journals

contain, and that it would be as well for all, and better for some, if ye editors and associate editors took a vacation during this month and have it understood there would be no issue of your journals in July. This would, I am sure, be an immense relief to you and enable you to get out amongst the bees, enjoy the rest and change, or visit your brother bee-keepers. The editors of our local papers who publish weeklies have adopted this plan for some years back and nobody objects that I am aware of. Our minister has a six weeks' holiday each year and we not only rejoice in the thought that he enjoys and is benefitted by it but we feel that he does better work when he returns and so we are the gainers after all. Now would it not be the same with ye editors and your subscribers if you took a month off. I for one will boycott any journal that will refuse, if two or three of you will agree on this, I don't know how it is with the majority of your readers but hitherto I have found very little time for reading bee journals in July, unless on Sundays. Apart from the right or wrong of reading them on that day we believe it is best to have our thoughts run along other channels, at least one day in seven, and we find it difficult enough to keep our mind away from bees and all that pertains to them as a means of livelihood without any encouragement in the line of reading. By the way though it looks as if most of us will have more time for reading this season than desirable unless the weather changes. Too much rain, but perhaps not too much if it would only turn warmer after but so far almost if not always followed by cold with high winds. Artificial heat in the middle of June is rather unusual and of course no surplus as a consequence so far, and very little in the hives."

THE
CANADIAN BEE JOURNAL

Devoted to the Interests of Bee-Keepers,
Published Monthly by
GOOLD, SHAPLEY & MUIR CO.
(LIMITED)

BRANTFORD - CANADA.

Editor, W. J. Craig.

JULY, 1902.

EDITORIAL NOTES.

Our sympathy goes out to Mr. and Mrs. J. L. Byer in their sorrow for the loss of their little son, Frank, who passed away on Tuesday morning, June 17th.

Wouldn't it be jolly? Friend Deadman, in his notes, suggests a holiday for Bee Journal editors. Unfortunately, most of the said editors are encumbered with other duties that bind them as closely at home as any of their readers during the month of July. Editing Bee Journals is like a good many "bee-keepers'" bee-keeping—it is generally a side line.

Bee-keepers are complaining loudly of the unsettled condition of the weather. In some districts they have had to feed their bees during the latter part of June to keep them from starving. The country is one great mass of clover bloom and the colonies merely wait the opportunity; unfortunately up to this date the rains and coolness has admitted only about one day in seven. Basswood will be later than usual.

Cook's Manual of the Apiary and Advanced Bee Culture.

We have been recently favored with copies of the new and revised editions of these excellent works. Cook's Manual, by Professor A.J. Cook, published by Geo. W. York & Co., Chicago, thoroughly revised and enlarged by about 80 pages and numerous engravings. Scientific and Practical Advanced Bee Culture, by W. Z. Hutchinson, editor of the Bee-keepers' Review, Flint, Mich., also thoroughly revised and enlarged and up-to-date in every department. We recommend both of these very excellent works to our readers.

A Bundle of Corrections.

Circumstances would not admit of our reading the proof sheets of the Journal last month and as a consequence some very queer statements appeared in the issue that were not intended. Through a slip on the part of our good friend, Mr. J. D. Evans, Prof. Fletcher, of Ottawa, received the credit due and intended for Prof. Harrison, of the O. A. C., Guelph, for the discovery of formaline as a disinfectant for foul-broody hives, combs, etc. We regret the mistake.

The bee-keepers of Canada owe much to both of these scientific gentlemen for their experiments and discoveries in connection with bees and bee-keeping. To Dr. Fletcher, Professor of Entomology, in dealing with the relationship of bees to plant life, spraying of fruit trees, and the alleged injury to fruit by bees; and to Prof.

Harrison, Bacteriologist of the Ontario Agricultural College, Guelph, for his experiments with that dreaded disease' foul brood, and his valuable discoveries in connection therewith.

In Mr. Evan's letter, page 283, second paragraph, line 12, our printers make Mr. Evans to say "Here is a solution to the 'wintering' of queens in confinement" which should read "Here is a solution to the 'mating' of queens in confinement," and in *Multum in Parvo* by York County bee-keeper, line 10, the word apicultural is rendered agricultural.

Many Are Going.

The attendance at the Ottawa Exhibition this year promises to be much larger than ever before. From all accounts an August show—the dates of the exhibition are August 2nd-30th is popular, and what with grand show and the many other attractions at the Capital, a very large number have already expressed their intention of going to Ottawa next month. These will certainly see a fine exhibition, for the entries are very numerous this year and the directors are sparing no expense to secure the best special attractions on the continent.

A number of queries have come to me regarding Professor Harrison's experiment and the use of formalin as a disinfectant, for foul-broody hives and combs. We regret that the January issue of the C. B. J., which contained the Professor's address has

been exhausted so beg to reprint the following part which deals directly with the experiment.

"Sections of comb were taken out and placed in a box the same size as an ordinary hive. The exit at the bottom was plugged up with the exception of a small hole, and a small opening about half an inch in diameter was left at the top. To the lower hole was affixed a formalin apparatus consisting of a small alcohol lamp at the bottom, with a reservoir at the top which contains formalin. Formalin, I might say, is the trade name given to a 40 per cent solution of formic aldehyde gas in water. A small portion of this is put in the reservoir over the alcohol heater and then the top is screwed down. The top connects with a small hose pipe, and it is placed in the lower hole of the hive. Directly after the apparatus is attached the alcohol lamp is lit and the formalin is vaporized and spreads throughout the hive. This means of disinfecting the hives was used; and the wax of the comb that was placed in it was several years old, judging from the looks of it, and contained dead larvæ, foul brood, and also a certain number of capped cells, so that probably all the conditions were present which would be met with in a bad case of foul brood. After the gas had spread through the hive and, the smell of the gas could be noticed issuing at the hole at the top, this top hole was closed and almost immediately afterwards the formalin apparatus was disconnected and that lower opening plugged up, and it was kept there from one to four hours. At the end of that time the hive or box was opened and the combs taken out and a careful examination made not only of the capped cells but also of the foul brood cells

and also certain marked cells which contained honey and also spores of the foul brood bacillus. In not a single instance did foul brood germs grow from these combs after they were treated. And since then I have performed the experiment three separate times with three other distinct combs and with the same success, and in each case the germs were killed, whether they were in dead larvae, whether they were in honey, or whether they were in capped cells."

By a compositor's error the signature of Mr. Wm. Moore is omitted from the article on "Advertising Honey" on pages 306 and 307 of this issue. Also the article immediately following should read "A report from Linwood," instead of from Mr. Moore.

Honey Prospects; a General Failure thus far in the U. S.

Editor E. R. Root says in Gleanings:—The reports that have been received have been any thing but favorable. The great extremes from cold to hot, the heavy and continuous downpours of rain, days so chilly that an overcoat has been comfortable, and fires almost a necessity in the homes, leave the hives in all the northern and eastern portions of the United States almost destitute of honey in spite of the fact that I believe that there was never a time when there was more white and red clover than now. Just before the last cold spell, about a week ago, we had a few days of warm—yes, hot—weather. The humidity was very high, then for a day or two bees were just piling in the honey, and we be-

gan to think the cold spell had been broken. But this was soon followed by another "spell" colder than the first, lasting day after day. In vain did we look for a change; but at this writing, June 26, the weather is beginning to moderate. There is still an abundance of clover in the fields, and the reports over the country show that like conditions prevail everywhere. If we could have ten days more of warm weather there is yet a chance for the bees to make a living and something more; and if the basswood should come we might be able to get a fair crop. But the chances are against us. There ought to be a marked stiffening of prices, as the markets are nearly bare, and there is not very much prospect of any considerable quantity of new honey.

If clover fails, and basswood too, our bee-friends in Colorado, New Mexico, Texas, and some of the other Western States subject to irrigation are to be congratulated, as they will get good prices.

California, from all the latest advices will not furnish any considerable amount of honey; and if in the next ten days clover and basswood do not yield the markets will be almost bare of Eastern honey, except such as will be shipped in.

Our friends have responded magnificently in giving us reports, and we hope they will continue to send them in, for I desire to hear from every locality.

If we could report even one county in any one State as having a crop of honey I should be glad to mention the fact; but so far there has not been a single such report received, out of dozens and perhaps hundreds that should have come in. In the meantime thank our friends, one and all, for the courtesy of their reports, and solicit a continuance of their favor-

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Thoughts and Comments

ON CURRENT TOPICS.

By a York County Bee Keeper.

The weather is always a seasonable if not profitable topic for discussion and the season we are just passing through is furnishing vagaries enough to satisfy the most chronic rumbler.

In this locality at least, the seasons seem to be reversed and we are getting October weather in June. Up to date, (June 28th), since the clover came in bloom we have only had four days that the mercury has gone up to 70 degrees. The order for the month so far has been, rain one day, then cold north-west winds, for three or four days, then rain again. I have been thinking that if any particular class of people need a full measure of the virtue of patience, surely must be us bee-keepers. Clover everywhere from the shores to as far as the bees would fly to go and it is very full of nectar. I have noticed the bees working freely on it, when the thermometer was standing at 60 degrees. Unfortunately the bees are not able to be busy more than one day in six.

For the first time in many years, in this section, we have white clover in abundance, roadsides, old meadows, etc., are white with bloom, and we have been trying to find out which the bees prefer, white clover or red clover, but as we have had so few warm days, I have not been able to arrive at any definite conclusion. We should have a good opportunity of determining which yields the best honey if we have fields of both varieties,

near the yards, cultivated for the seed.

STIMULATIVE FEEDING.

In connection with this subject Arthur C. Miller says in the American Bee-Keeper, "I have been and am still experimenting with stimulating food for bees, but I am already satisfied that here, at least, feeding in the spring is done at a loss. Cane sugar syrup has to be "inverted" by the bees and that process calls for an expenditure of vitality that the bees, after a winter's confinement can ill meet." I have always been opposed to stimulative feeding in the early spring, and while this past season, in common with some others, I had to feed colonies to avoid starvation, the results have convinced me more than ever of the fallacy of spring feeding unless absolutely necessary. Without exception the colonies so fed were among the strongest in the yard and I think I am safe in saying that the same colonies were among the poorest on the first of June.

To my mind the best stimulus for any colony in the spring, is an abundance of stores, in a roomy enough hive so that the queen will not be cramped for room to lay, then leave them alone till fruit bloom. Certainly, colonies in that condition are the ones that always roll up a big surplus when there is any honey to be had.

NEW IDEAS ABOUT QUEENS.

In the same journal (American Bee-Keeper) "John Hardscrabble" has this to say about some of our queen breeders. "It do be queer how everytime a new idea about queens gets a start, the 'boys' in the trade shout, 'I've got em, and got 'em first too.' And when they can't keep the pace, then 'the new ideas ain't no good.'" I expect "John" was think-

ing about "long tongue", "red clover" and other popular phrases, when he penned such impudence as that. Dr. Miller in a "Stray Straw" in "Gleanings" throws out a word of warning to friend "Hardscrabble", something like this "Say 'John' that tongue of yours will get you into trouble yet, don't you know the truth must not be spoken at all times" ?

SHALL WE KEEP MORE BEES ?

Editor Hutchinson is still driving away at his pet hobby, "keep more bees", and while different people have different ideas, yet there is no denying the fact, that the tendency of the age is more towards specialization than ever. However, the majority of bee-keepers have other irons in the fire and it would be a hard job to persuade many of the fraternity to throw aside everything but the bees. If present weather conditions continue, some of us may conclude that we have too many bees already.

It just comes to my mind that friend Hutchinson has a champion of his theory of 'specializing', in the person of Andrew Carnegie, who in his latest book, expresses himself something like this on the subject, "If you deal in coffee, deal in coffee ; if you deal in sugar, deal in sugar ; on no account mix the two unless it be at breakfast."

Does clipping queens cause supercedure ? T. K. Massey in the "Review" asks this question and answers it thus : "Yes if done in a bungling manner, and not if done rightly". The right way, in his opinion, is that only half of the large wing on one side should be clipped. He says that if both wings on each side are clipped, the queen is certain to be superceded in a short time. While I am not just sure which is

wing's ; I am quite sure that in this locality' that statement is not correct, as I can show quite a number of queens three years old, that had all their wings clipped close to their bodies. From my limited observation, I don't believe that clipping hastens supercedure, but as has been pointed out by some others it simply shows us when queens have been superceded, which supercedure would have taken place just the same if the queens had not been clipped, only we would not have been aware of the fact.

 Communications

Advertising Honey.

Dear Editor C. B. J. :

In reply to your request for "suggestions" and articles for C. B. J. allow me to suggest the following thoughts in regard to creating a demand for honey. Why should not every bee-keeper try to advertise the use of honey by experimenting or studying up its uses from literature, then letting others know of its uses, through the local papers or through conversations with friends. The use of honey as a table delicacy is often referred to, but what about the stronger grades of honey which are inferior for table use? How many bee-keepers (or their wives) are making a study of the use of honey in cooking and preserving. Though a bachelor myself, I have been making experiments along this line ; and I have found that for preserving some fruits honey is excellent ; but a point that I have not decided is, which fruits are improved by the use of honey.

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which fruits are more suitable to be sweetened by sugar? Also in baking, honey is fine in some kinds of cakes, but sugar is better in others.

Another point comes up just now, I have heard quite a number of people say they like honey but dare not use it. Now is there any way to prevent honey from causing biliousness? If so, and if every one knew of the plan the use of honey might be greatly increased.

But it is not enough that these things should be published in bee journals. I suppose few take them except bee-keepers, and it is not bee-keepers we wish to get at, it is those who buy honey. The local papers, and the "Domestic Department" of the larger papers and magazines would be more likely to reach the right class. But these things are not likely to reach such papers except those interested in bee keeping do not see to it themselves. In fact all matters which would further the sale of honey by increasing the use of it, should be kept before the public by means of the local and general newspaper, etc. Why are people so much in the dark regarding honey? Because no one has enlightened them. Such information has been kept for beekeepers by being inserted in their special journals instead of being spread broadcast over the land to reach everyone especially those who are both able and willing to pay a good price for any thing they take a fancy to.

Algoma, Ont.

Report From Wm. Moore.

The spring and summer so far have been the most unfavorable for bees which I have had any experience of; too much wind, cold and

wet; and now June 30 with abundance of flora, but no weather to handle it. The thermometer is bubbling around 50 when it should be from 80 to 90 to produce a good flow of nectar.

The bees in anticipation of a good flow have made ample preparations for swarming, building queen cells by the dozen, and having been so retarded in their desires, have swarmed with the least possible outbursts of sunshine, and, in many cases before the swarm could get on the wing a dark cloud would obscure the sun and the air become so cold and the wind so strong that the bees would be driven down upon the tops of the hives and on the grass, and have to remain there until the cloud passed and they got warmed up, so they could return to the hive. In most cases I was able to capture the queen on the alighting board and get a new hive adjusted on the old stand before the bees were able to return. In several cases they took refuge in other hives, and in one case the cold being so intense they remained there over night and the weather continuing too cold for several days for them to fly they remained there.

This year is my first real experience with clipped queens; have clipped nearly three-fourths of them, leaving one row of about 20 unclipped as I failed to get such practical help as I needed when weather would permit. Of the clipped ones fully 10 per cent have been superceded, whilst not one to my knowledge of the unclipped ones have so far disposed of their queens. This seems to be some evidence that clipping causes supercedure. I find, however, that I can manage swarms much easier with clipped queens than with unclipped, and notwithstanding the apparent tendency it seems to have and with me to supercede.

become an advocate of clipping.

Swarming having been delayed the swarms are now coming off very large and if the weather should clear up we may get some honey yet, but at present the prospects are for a very short crop.

A. BOOMER.

Rearing Queens to Italianize an Apiary.

"Good Morning. Is this Mr. Doolittle?"

"That is what they call me around here."

"My name is Barber, and I have called on you this morning to see if you will tell me something about how I can Italianize my apiary so as to have all pure Italian bees."

"How large an apiary have you?"

"I have 125 colonies, all told, 10 of which are pure Italians, while some 15 to 20 are hybrids and the remainder blacks; but all of my neighbors for miles around have either blacks or hybrids, so that it seems almost impossible for me to get ahead at all."

"Could you not get these neighbors to allow you to Italianize their bees? I know this will cost you quite a little; but after it was once done you would be master of the situation."

"I hardly think they would all allow of this, even could I do it; but what stands in the way more than anything else is, that nearly all of these black and hybrid bees are in box hives, so that the undertaking would mean more to me than where frame hives were used; and the bees being in box hives allows of ten times the drones being reared above what would naturally be reared were these neighbors progressive enough to use frame hives and restrict the

building of drone comb. Now, under these conditions how can I, in rearing queens for my own use, secure them purely fecundated?"

"There are several ways of working looking toward the accomplishment of this, all of which I have used during the past 30 years."

"What I wish is a good practical plan."

"Such a plan is the following: Give to all the colonies which have good Italian queens one or two frames of drone comb, so that large numbers of drones will be reared in these Italian colonies, which will be very likely to secure the pure mating of from one-fourth to one-half of your young queens; and when one is found that is impurely mated, kill her and give the colony a queen-cell from your best pure breeder, and try again. As your colonies increase, your drones will increase also; and the more drones reared in your Italian colonies the better will be your chances of having all purely mated."

"That would require a lot of work weeding out the impure queens. Have you anything different from this?"

"Yes; and were I to reject this, the next I would try would be this: Give frames of emerging worker brood to your drone rearing colony early in the spring; and this, together with a little warm feed given each night, will cause the desired queens to lay in the drone comb early, through the stimulation given, thus giving you strong colonies with plenty of drones before your neighbors' colonies rear any drones. As soon as any drone brood has been capped from three days to a week, start to rear queens and in this way you will have your queens ready for the first drones which appear. The main objection to this plan is, that such rearing of

queens comes at a time when it is likely to interfere with your crop of honey; for in all queen-rearing the colony is thrown out of its normal condition; and whether the old queens are taken away from their colonies to give place for the queen-cells desired or nuclei formed to take care of these cells, this interference comes at a time when all should be booming as much as possible along the line of rearing the laborers (bees) in time for the honey harvest, which, as a rule, will be from 30 to 50 days ahead. I am one of those who believe that impure stock, with a good yield of honey, is to be preferred to pure stock and less surplus honey."

"I think I should like this better than the other, only, as you say, it would interfere to a damaging extent with the yield of honey. As you said you had several plans, tell me another, that may please me better than either of those you have spoken of."

"Another plan is, to wait till fall about raising queens, when if you can reserve the desired drones till all of your neighbors' drones are killed off, you will have every queen to mate with the drones you desire."

"Let me interrupt you long enough to ask how I can have my drones reserved when others are being killed. It is something I have not been able to do."

"My way of preserving drones is to gather all the drone brood I can find in the apiary from the queens I have decided shall be drone mothers, and bring this just at the close of the honey harvest, soon after which we may expect drones to be killed, and keep this brood in one hive, tiering up as much as may be necessary to accommodate this brood and lots of queens; for the larger the hive and the more honey it contains, the more we will these drones be during the

late fall. At the time of massing this drone brood the queen should be taken away from the colony; and as often as a new queen commences to lay she should be taken away also, and this colony kept supplied with sufficient worker brood to keep it in a prosperous condition. In this way you will have reason to believe that all the queens will be purely mated; and were it not that this plan requires much extra work and care as well, in feeding the queen-rearing colonies, that fairly good queens may be raised out of season, and, also, that this late manipulation of colonies forfeits our chances for successful wintering, I should say that this was the best of all the plans for securing purely mated queens."

"I thank you for this plan especially for telling me how to preserve drones, for I think I can now accomplish what has been a failure with me heretofore. Have you still other plans?"

"Another plan is to take a hive containing many of our best drones to some locality isolated four or five miles from other bees; and, as often as may be, take a load of nuclei, supplied with queens from our best mother, they being from three to five days old, to this isolated place, leaving them there from eight to ten days, when they can be brought home with laying queens, which will, as a rule, be all mated with the desired drones. With a proper rack fixed, from 20 to 30 can be carried to and fro at a time, so that it is not as laborious as it at first appears, and it has this advantage: Our queens can be reared at a time when nearly every queen will be perfection itself, all being reared in the height of the honey season, when the best queens can be reared with the least work."

"That sounds well, but I do not

know that I can find a locality isolated that far from other bees. Have you anything else?"

"Still another plan is to rear the queens and drones in the best part of the honey season, and, when ready, take the drone colony, and as many nuclei as we have queens of mating age, into the cellar or some dark room, before the bees are flying in the morning, leaving them there till some three or four o'clock in the afternoon, after all other drones have ceased flying for the day, when they are to be brought out and allowed to fly. If each nucleus and the drone colony are fed a little warmed diluted sweet just before setting out, and the hives set facing the sun, queens and drones will fly the same as they would were it three hours earlier in the day."

"Well, I have bothered you more than I inteneed, and I wish to thank you for the plain way and the many plans you have given me. I will now be going."

"If I have helped you any I am glad of it, and you are certainly welcome. But before you go, allow me to say that, after having tried all of the plans given, I have come to the conclusion that, for the practical apiarist, the first plan is the one to follow; and, let me whisper in your ear, that the mismated queens which you will get by this practical plan will give you just as good results in honey as will any of the purely mated queens; and honey is what the average bee-keeper is after. To my mind, what the average bee-keeper wants is one or two pure Italian queens from which to rear his queens, then let them mate as they please; and let me assure you that such a mode of procedure will give any but a queen-breeder perfect satisfaction, and the breeder also, as far as honey-gather-

ing is concerned. Of course, it will be necessary to have a good queen to rear stock from every two or three years, else we shall soon run into a race of bees we shall not be satisfied with."—Conversation with Doolittle in "Gleanings in Bee Culture."

Eugene Secor Still General Manager of the National Bee-keepers' Association.

Some little time ago it was announced that Mr. Eugene Secor, General Manager of the National Bee-keepers' Association, had sent in his resignation, and that the Board of Directors had selected E. T. Abbot, of St. Joseph Mo., to fill out his unexpired term. But the Board, in reviewing its work, after a great deal of writing back and forth during which valuable time has been lost, finally discovered that Mr. Secor's resignation was never formally accepted; that the procedure was irregular and out of order by which Mr. Abbot was supposed to be elected. Some complications having arisen it was decided by the Board not to accept Mr. Secor's resignation, and to request him to fill out the unexpired time or till the next general election to this Mr. Secor has agreed. All dues and membership fees, hereafter should be sent, as before, to Mr. Eugene Secor, Forest City, Ia., who is still the General Manager, and will continue to be such till his successor is elected and qualified.

E. R. ROOT,
Act. Chairman Board of Directors

Remember that you will never gain but always lose, by being afraid to do the thing that seems to you right by following the crowd without cultivating your own individuality.
May Ladies' Home Journal.

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For the buckwheat honey harvest would take a student or assistant in the Bow Park Co., Limited. apiaries. Address, R. F. HOLTERMAN, Superintendent. Bow Park Co. Limited, Brantford.

BEE-KEEPERS' EXCHANGE COLUMN

Exchange advertisements for this column will be received at the rate of 25 cents for 25 words, each additional word one cent. Payments strictly in advance as the amounts are too small to permit of book-keeping. Write copy of ad. on a separate sheet from any other matter and on one side of the paper only. Say plainly how many times ad. is to be inserted. Matter must reach us not later than the 15th of each month.

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

WOULD exchange well bred White Wyandotte Eggs for a good strain of Barred Rock Eggs for a few colonies of bees. Wm. Bayless, 43 Grand St., Brantford.

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

WANTED to Exchange—Bees for a Happy Thought range, light market wagon, rifle or bomb foundation mill. James Armstrong, Cheapside.

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

50 YEARS' EXPERIENCE

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RIPANS

I had nervous indigestion and a general derangement of the entire system. It had been a continual torture for 12 years. My blood became very poor and at times my toe and finger nails would be diseased. After eating I would sit in a chair and put my feet on something to keep them from swelling, and at times would take off my shoes for the misery I had. Whenever I experience anything to remind me of past aches I cannot be too elated to tell what Ripans Tabules have done for me. I still take one now and then, because I know how bad I have been. They were just what I needed.

At druggists
The Five-Cent packet is enough for an ordinary occasion. The family bottle, 60 cents, contains a supply for a year.

**MY 3 Banded Italians,
5 Banded Italians
and Carniolian Queens**

are bred with care. All Queens sent out are Warranted Purely Mated, and I agree to replace all queens that prove otherwise. Queens Sent by Return Mail.

PRICE OF

3 Banded Italians, 5 Banded Italians, Carnolians.

Tested Queens before June 1st,	\$1.50 each,	\$15.00 doz.
" " after " 1st,	\$1.00 each,	\$9.00 doz.
Warranted " before " 1st,	\$1.00 each,	\$9.00 doz.
" " after " 1st,	75 c. each,	\$8.00 doz.

BREEDERS, the very best, either strain, \$5.00 each

1	Frame Nucleus, with Warranted Queen,	\$1.50 each
2	" " " " " "	\$2.50 "
3	" " " " " "	\$3.25 "

Satisfaction Guaranteed. Send for Catalogue of Queens and Supplies.

J. W. MINER,
RONDA, N. C., U. S. A.

QUEENS YOU SHOULD HAVE

Does blood tell in other stock????? Give your bees a chance. Stock used for breeding the queens offered—not from a sport—but my pick out of an apiary giving last season an average yield as follows:—

Honey Gathering:

102 lbs. Extracted }
68 lbs. Comb } Honey per Colony

Quality of Comb Honey Produced:

"Man! It would dazzle you."—WM. McEvoy, Ont. Gov. Inspector of Apiaries.

Wintering Qualities:

"Up to the present (Jan. 30th) I never found these bees to show the least indication of unrest, always perfectly quiet. They are wintering perfectly."—FRANK P. ADAMS.

General Commendation:

"Out of those queens sent me I have produced the best race or strain of bees I ever owned. Remember that is saying a lot as I have tried every breed imported to this country. The bees winter better, build up and stand cold, chilly winds in spring better, and are more suitable than any bees I ever owned. For the season they gave me about double the honey Pure Italians did, and more increase. Glad you are going into the queen business and are going to join our ranks again. We are much in need of a few men like you."—C. W. POST, (owner 365 colonies Ex-Pres. Ontario Bee Keepers' Assn.

S. T. PETTIT, Canada's most successful comb honey producer and bee keeper, says: "The blood in my apiary is largely the progeny of queens sent by you; they are grand bees."

PRICES OF QUEENS:

(They are duty free to the United States.)

Tested.....	\$2 each; \$10 for 6; \$18 per doz.
Untested until July 1	1.25 each; \$7 for 6; \$12 per doz.
Untested after July 1	\$1 each; \$5.50 for 6; \$10 per doz.

Large quantities prices on application. Postage stamps taken if necessary for fraction of a dollar. To be fair to everyone no Selected Tested Queens are offered, thus everybody has the same chance.

The above queens are bred from a careful selection of Italians and Carniolians. Pure Italian or Carniolian Queens same price. Price of full colonies on application.

Orders booked as received and filled as quickly as possible. Order early.

Address,

R. F. HOLTERMANN,
(Manager Bee Department)

BOW PARK CO., Limited,

Brantford,
Brant Co., Ontario.

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Trotting and Running Races every day of the Fair.

Magnificent programme of stage specialise and other amusements, including balloon ascension with double parachute drops; very funny water acts in the lake by artists just arrived from Europe; Webb's performing seals, the renowned Martinette family, acrobats; also Schreyer, the bicycle wonder of the century in marvellous and thrilling feats.

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