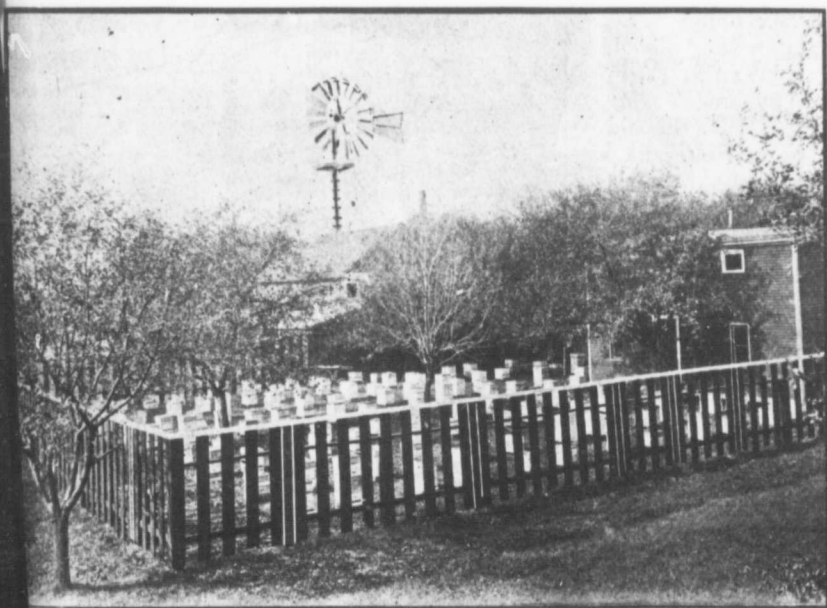


The
Canadian Bee Journal

Devoted to the Interests of Bee-Keepers

Vol. 16, No. 11. **November 1908**

\$1.00 Per Annum



W. A. Chrysler's Bee Yard, Chatham (Summer View)

PUBLISHED BY
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BRANTFORD, CANADA

That Pile of Old Combs

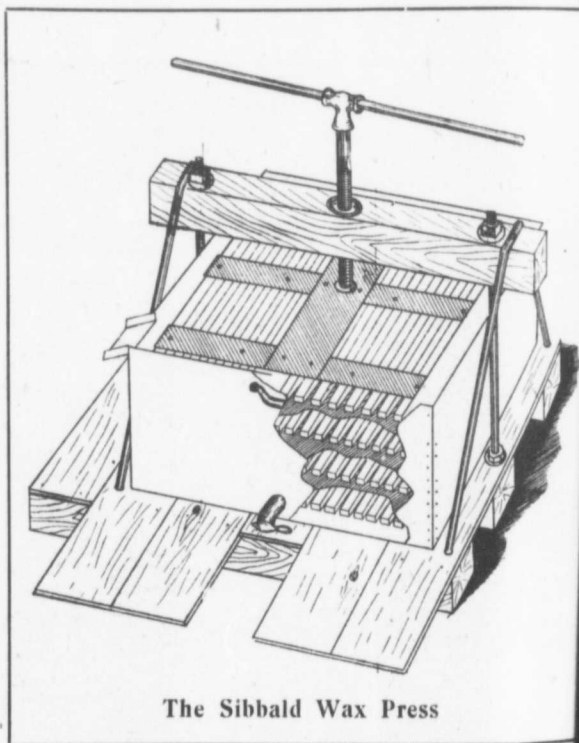
THE Honey Season over, and the bees snugly packed away for the Winter, the Bee-keeper will be able to turn his attention to the accumulation of old and broken combs in the honey house and other places. To the careful Apiarist this accumulation represents so much extra cash over and above his honey crop, and will be treated accordingly. He uses a Wax Press, of course—the latest and best.

The old systems of boiling and steaming did not extract much more than half the wax the comb contained, the steam press was better but still there was sufficient left in the refuse to make it excellent but expensive fire kindling. The latest and best is that of pressing under water, which separates and washes out the wax, practically removing every particle of the valuable.

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JAS. J.

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The Canadian Bee Journal

Devoted to the Interests of Bee Keepers

JAS. J. HURLEY, EDITOR

Published monthly by
THE HURLEY PRINTING CO., Brantford, Ont.

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The Canadian Bee Journal
Brantford, Canada

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Vol. 16, No. 11

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Friday, Nov. 1
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a big turn-out!

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The Canadian Bee Journal

PUBLISHED MONTHLY

Vol. 16, No. 11.

NOVEMBER, 1908

Whole No. 525

All aboard! for Toronto and the O. B. K. A. meeting, Wednesday, Thursday and Friday, Nov. 11, 12 and 13, in the York County Council chambers. Let there be a big turn-out to our annual reunion.

* * *

When putting away your comb honey supers, disinfect them with carbon bisulphide to kill all moths. Pile them up five or six-high and place a saucer about half filled with acid, and put an empty comb honey super on top and cover up well. The acid will evaporate and, being heavier than air, will go down. It will kill everything—ants, spiders, moths and moth's eggs. Your combs will come out beautiful and clean in the spring.

* * *

The Daily Mirror's experiment with bees in the heart of London has returned a profit of 25 per cent. The two stocks were set up on the roof of the Daily Mirror offices in Whitefriars Street, under the care of Messrs. Abbott Bros., Southall. The cost of bees, hives and appliances was £3 10s. 6d., and the return of 19s. 6d. was made up of 18½ lbs honey, at 1s. per lb, and 1 lb wax, 1s.—Irish Bee Journal.

* * *

The National Association met as scheduled in Detroit on the 13th, 14th and 15th of October. There was a good attendance and the various sessions were lively and interesting. It was a great pleasure for the Editor to meet so many of the kings and queens of American bee-dom. We had the good fortune to make a number of acquaintances, which we trust time will permit to further cultivate. It was a splendid gathering. Apart from its educative value, it is a capital holiday and a social reunion that will help to make life cheerful. The Canadian delegation were few

but of great merit. (We believe this is true, even if we do say it ourselves.) We will look forward with pleasure to the next National, or—more properly speaking—International. Messrs. Holtermann and Byer extended an invitation for the Association to meet in Toronto next year. Invitations were also received from Buffalo, St. Louis and Minneapolis. The Executive will decide.

* * *

“Another year of extensive manipulations with both deep and shallow supers convinces me still more that more satisfactory results can be obtained by using shallow supers for extracted honey as well as for comb honey. They have more advantages than disadvantages. It is true that more supers and frames must be nailed up for a given quantity of honey secured, and the first cost is a little greater. It may be well to keep in mind, however, that, as lumber gets scarcer, narrow lumber may be less expensive for the shallow supers, and as the shallow frames are made with a much lighter top bar, the difference in the amount of material between two shallow frames and one deep one is not very great. What difference there is between this and the nailing-up of the frames is soon offset by the fact that no wiring is necessary with the shallow ones; and, further, that thin super foundation is used in them, thus making quite a saving at the very start in this respect. Such light foundation goes much further; and where the frames have to be refilled at frequent intervals the difference in expense soon counts up.”—Louis Scholl, in Gleanings. [We fully concur with the above. The ease and speed of manipulation is a great desideratum.—Ed.]

When this issue of the C.B.J. reaches its readers most of the work in connection with winter preparation will be finished. If you have any neighbors who do not know how to attend to this matter, or who have neglected it, it would be a neighborly act to help them by suggestion or otherwise. Bees put in the cellar should be well stored with honey, kept dry and away from the light. The light disturbs them. There should be sufficient ventilation to carry off the damp air and moisture arising from the bees. If this is not done, the condensation of water from the air will ruin the hive. Bees outside should be well protected in boxes, surrounded with shavings or forest leaves. Any protection will do, in fact, so long as it is dry and warm. Now is the time to guard against spring losses. In the matter of "hefting" a hive to judge whether it has honey enough or not, we would say it is always best to weigh if possible. But many of us cannot do this. Therefore, a glance into a few hives to see what it is that is "hefty" will assure you whether it is honey or not. Old combs loaded with pollen weigh heavily. Therefore be sure that the weight is that of honey. G. M. Doolittle, writing in October American Bee Journal, suggests a good plan to educate the hand and the eye as to weight. It is a good suggestion for both those who weigh by "hand" or scale. He says: "Probably the easiest way to know to a reasonable certainty that all colonies have sufficient stores for wintering is to prepare a hive with empty combs which are as aged (aged combs are the heaviest) as any we have in the apiary. To this weight add three pounds for the weight of the bees, or if brood-rearing has not ceased, add eight pounds more for brood. Suppose your hive of empty combs weighs twenty-five pounds, you will call the weight you are to figure for each hive, less the honey, as twenty-eight pounds, where there is no brood in the colonies, or thirty-one pounds if there is brood in the hives. Now it is generally believed that no colony wintered on the

summer stand should start the winter on less than twenty-five pounds of honey, and that thirty would be better, and so we weigh our hives having colonies of bees in them which we intend for wintering. Fifty-three pounds is as little as should be allowed, while fifty-eight would be better, or sixty-one if the colonies have brood. As the hives are weighed, the weight of each one is set down on a piece of section, and this tacked to the hive, so that after the weighing is over I can go through the apiary and know for the looking just what each colony has for winter."

* * *

Those attending the convention in Toronto will find good accommodation at the Albion Hotel at very reasonable rates—\$1.00 and \$1.50 per day. This hotel is generally the headquarters for bee-keepers.

* * *

In the Farmers' Advocate of Oct. 29th appears a report of the National Convention, recently held at Detroit. The Advocate has no doubt received the report in good faith and paid well for it. In its reference to the discussion on foul brood the name of Wm. McEvoy is entirely omitted. Mr. McEvoy is a Canadian, whose home is in Woodburn, Ont., and is the most prominent man on the continent of America in the matter of foul brood. In the discussion that took place his statement was of the utmost importance, and was so regarded by the convention, as was evidenced by the magnificent reception he received. He is recognized as one of the greatest living authorities on foul brood, for which distinction Canadian bee-keepers are justly proud. Yet in the report above referred to his name does not appear, while that of Mr. Holtermann is mentioned several times. If one takes upon oneself the self-imposed task of reporting meetings of such importance for the money there is in it, one ought to be honorable and big enough to suppress one's envy and jealousy, and

render an honest report. Such facts its purpose is to make more than if it had more, this protocol called forth. assured that the "honest goods

Before putting them away the day before. This cleansing will have till they are This is a very

We wish we could help those probably persuade keeping. Bees most profitable

We notice a report in the Weekly Star and therein to our credit Holtermann, who that he certainly vented. If the prices were as Holtermann's square better with the f

Devote a good evenings to the r Calculate well your season, and order you are likely to disposal during the your frames and them up, wire you them in, and when fruit bloom tantalizing than requiring supers hand. Remember, comb foundation the honey season

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of Oct. 29th ional Conven- dit. The Ad- ed the report for it. In its on foul brood ry is entirely a Canadian. rn, Ont., and a on the con- natter of foul hat took place tmost import- by the conven- he magnificent) is recognized ing authorities stinction Cana- ny proud. Yet ed to his name at of Mr. Hol- eral times. If he self-imposed gs of such im- ere is in it, one l big enough to jealousy, and

render an honest report. The Advocate paid for it, and was entitled to an honest report. Such unfair conduct always defeats its purpose. The absence of Mr. McEvoy's name made him more conspicuous than if it had appeared, and, furthermore, this protest would not have been called forth. With this hint, we feel assured that the Advocate will insist on "honest goods" hereafter.

* * *

Before putting bees in cellar, see that they have had a good cleansing flight the day before. That is to say, put them away the day after a fine warm day. This cleansing flight is the last they will have till they are removed in the spring. This is a very important point.

* * *

We wish we could reach a large number of our farmers with the C.B.J. We could help those who have bees, and probably persuade others to take up bee-keeping. Bees are certainly one of the most profitable live stock on a farm.

* * *

We notice a report of the Detroit convention in the Montreal Family Herald and Weekly Star. The prominence given therein to our distinguished friend, Mr. Holtermann, would lead one to believe that he certainly was "It" at the convention. If these reports "at good prices" were as "square" as Mr. Holtermann's square hive, they would square better with the facts.

* * *

Devote a good portion of your winter evenings to the reading of bee literature. Calculate well your requirements for next season, and order your supplies early, as you are likely to have more time at your disposal during the winter months. Buy your frames and supers in the flat, nail them up, wire your frames, put the foundation in, and have everything ready when fruit bloom opens. Nothing is more tantalizing than to have several hives requiring supers and have no supers at hand. Remember, also, you can buy your comb foundation cheaper now than when the honey season is upon you.

WILLIAM HILL KILLED

Struck by Wagon Tongue While Stopping Runaway

St. Thomas, Oct. 19.—William Hill, one of the best known agriculturists and apiarists in the county, was fatally injured in a runaway accident at his home, north of the city, on Saturday afternoon. He had left his team standing outside the house while he went for a drink, and in his absence the horses started to run. Mr. Hill ran in front of the team, and in his efforts to stop them was struck in the breast by the tongue of the wagon. He died three hours later. A wife and four children survive. Mr. and Mrs. Hill had just celebrated the twenty-fifth anniversary of their wedding by having a family group picture taken.

[Mr. Hill was a well-known bee-keeper and member of the Ontario Bee-keepers' Association. The C. B. J. extends its heartfelt sympathy to the bereaved family.—Ed.]

HONEY MARKET

Montreal, Oct. 24.—A fair business continues to be done in honey, and prices are unchanged. We quote: White clover comb, 13c to 14c, and dark at 10c to 12c, as to size of sections; white extracted at 9c to 10c. Buckwheat honey, 7c to 7½c per lb.

Toronto, Oct. 24.—Honey is steady. The demand is fairly active at 10c to 10½c per lb for strained and \$2 to \$2.75 per dozen for combs.

Renew your subscription to the C.B.J. and help along the bee industry. We are endeavoring to give you something that will help you. Your dollar is well invested. It will be returned to you many times over.

In renewing his subscription to the C. B.J., Mr. John Nasmith, of Ziska, says: "I am well pleased with the C.B.J. since it came into your hands."

LOCATING AN APIARY—POLLINATION, ETC.

[Prof. A. Cook, in American Bee Journal]

There is no one question that ranks in importance, or which should receive more thoughtful consideration by one just starting in bee-keeping, than that of location. Of course, one's surroundings of people, scenery and climate are important, but one can hardly go amiss of pleasing prospects in these lines anywhere in our favored country, and so we have only to look to it that we secure the conditions that make for success in our chosen line. At the present time we have knowledge that makes it possible to select wisely in relation to this crucial point.

We now know that excessive rains and, even more, drouths are inimical to nectar secretion, and so make against any large production of honey. In nearly all sections where we depend upon natural honey plants, like white clover, tulip, linden, sage, mesquite, etc., we are always more or less dependent upon the rainfall, and so can have no surety that we will have favorable seasons and get a crop. But even supposing that the rains are rightly gauged, and we have everything just to our liking, yet the cold of the spring and early summer, especially if attended with harsh winds and heavy fogs, will stay the secretion of nectar and work of the bees, so that we will still lament the absence of honey. In our quest, then, of the ideal honey location, we must seek some section where both these handicaps are wanting.

In Nevada, Central California—the great San Joaquin Valley—Arizona, Colorado, the County of Imperial and the Coachella Valley in Riverside County, California, we have our honey plants in cultivated crops, like alfalfa, beans, melons, asparagus and various kinds of fruits. These are not dependent upon the rains at all, but are kept in full vigor by irrigation. Thus we are sure that we will have the conditions for full nectar-secretion, and we have gained the first essential point.

Again, these sections are inland valleys, where the cold and damp, and the blighting winds, are not prone to come, and so the nectar-glands are not blighted, and the bees are not forced to stay in the hives. Have we not, then, in these locations the best sections for a sure honey-production of any section of the world? I have long thought so, and the experience of the last years seem to make this surmise a certainty.

Bees and Pollination

Despite the many excellent articles in our agricultural press, regarding the necessity of pollination of plants, and the valuable service of bees in this work, I am sure that the importance of the subject is not at all appreciated at its real magnitude. We do not practice intensive agriculture as they do in Europe. Our rich virgin soil, and general thrift as a people, make it unnecessary, and so we are content to get the half loaf. When the full-sized one might as well be secured.

Who has not seen far too often the dwarfed and deformed strawberry and blackberry, and even the pear and apple, and has rightly divined the cause? Do we realize, as we should, that this imperfection, and the more frequent entire absence of fruit, is the result of failure of bees or other insects to cross pollinate the fruit? I am persuaded that many fruits will not bear at all without this important function on the part of insect pollinators, and the great part of this work must be done by the bees of the hive, as there are by no means enough of the other pollen-carrying insects to do the work.

Other plants will bear when all conditions are favorable, but will refuse to do so when weather or climate lays a heavy hand on the growth and vigor. Such plants will not refuse when the flowers are cross-pollinated. In some cases a part of the bloom will be fertile to its own pollen, while other will be sterile. The deformed berry is the result of only partial pollination. Gnarly apples and pears

are not unfrequently the same lack of pollen.

I make bold to say that we should come when science stood that specimen secure enough in a section so that it do its best. If you have one child, a chance to study him or her the hive, we would like of the children on the farm, but we would in the better agricultural important work. In the olden times had its few colors were in old boxes managed. This restored, except kept in the best and managed in the corner of our best apiary.

Honey Crop

The abundant honey crop is a great hope of a beekeeper in all parts of our country. This is true in our country the rains were not the years, but they had great hope. In early summer can be nights, with cool star glands were producing very little honey. We have experienced cold and damp, honey failure. But this year was late, as later was we will get quite some of the more crop has been reduced in parts of the State did not prevail, a fine. In all sections have done something failure, of May or the season is generally

are not unfrequently the result of the same lack of pollination.

I make bold to say that the time will come when science will be so well understood that special pains will be taken to secure enough bees in every agricultural section so that every fruit and tree will do its best. If every farmer would select out one child, and give him every opportunity to study and manage bees, giving him or her the entire proceeds of the hive, we would not only have many more of the children of the farm held to the farm, but we would have a greater gain in the better accomplishment of this all-important work of cross-pollination.

In the olden times almost every farm had its few colonies of bees. True, these were in old box hives and were poorly managed. This condition may well be restored, except that the bees should be kept in the best of the improved hives, and managed in the most improved manner of our best apiaries of to-day.

Honey Crop Not a Total Failure

The abundant rains of last winter gave us great hope of a bountiful honey harvest in all parts of our State. Especially was this true in our lovely Southland. True, the rains were not as heavy as in some years, but they were so timely that we had great hope. But with the spring and early summer came very cool days and nights, with cool breezes, and so the nectar glands were paralyzed, and we secured very little honey. Now, for two years, we have experienced these conditions of cold and damp, and have lamented a honey failure.

But this year we are not entirely desolate, as later warm weather came, and we will get quite a crop, after all. In some of the more protected canyons the crop has been reckoned by the carload. In parts of the State the cold and winds did not prevail, and the harvest has been fine. In all sections July and August have done something to make up for the failure, of May and June. Thus while the season is generally poor—yes, very

poor—still there will be quite a showing for our State, after all.

Robber Flies

These great dipterous or two-winged flies are very common in Southern California. We have both types—the great black ones with their long slender bodies, and the yellow hairy ones, much like the bumble-bees in form and appearance. We can but admire these brave robbers, for they kill many of our worst insect pests, and their courage in seizing even the worker-bee is surely to be admired. I recently saw one such capture and struggle. The fly grasped the bee with its strong legs, and held it despite the struggle and masterful efforts of the bee to escape, and at once proceeded to insert its great, strong rostrum or beak, and to suck bloodless and lifeless its unwilling victim. It is to be regretted that these flies thus maraud on the workers of the hive, but as they do so much good, we will not treasure it up too seriously against them.

Claremont, Cal.

" SQUARE " HIVES

We clip the following from the Montreal Family Herald and Weekly Star, which appears as a report of the recent Detroit convention. Our good friend D. Anguish seems to endorse the "square" idea, as he has discovered since his return that his success must be owing to the fact that he uses "square" packing cases!

"So strongly is the trend of public opinion in favor of larger hives that no one could be secured to defend or advocate an eight-frame Langstroth brood chamber. Finally S. D. Chapman, Mancelona, Mich., consented to take the affirmative in a debate. 'That an eight-frame Langstroth hive is preferable to a larger hive in extracted honey production.'

"R. F. Holtermann, Brantford, Canada, took the negative side. Mr. Chapman advocated raising cards of brood into the super when the eight-frame hive became

crowded, thus enlarging the capacity of the brood chamber. He claimed that the bees would thus enter the supers more readily. He admitted the need of strong colonies, but stated that when the bees did not occupy the entire room they wasted stores in keeping the hive warm.

"Mr. Holtermann, on the other hand, claimed that the bees only covered the greatest amount of brood and stores when the cluster in the hive was as broad as it was long. To lengthen out the cluster was to put more bees on the outside of the cluster in proportion to the number of bees, and, therefore, decrease the brood capacity. When the Langstroth hive was used the frame was of such a length that the hive was as wide as it was long.

"Again, in house construction, the house which gave the greatest amount of room for outlay of material was a square house. On the same basis the cheapest hive was the square hive, and not the eight-frame Langstroth. He stated that he could use twelve frames in the brood chamber before adding a super, whilst Mr. Chapman had to have sixteen combs as soon as the bees required more than eight. He was not like the Irishman who when a stick was too long did not know what to do with it, and when it was too short he could splice it. If the bees did not require twelve frames in the brood chamber he could remove those not required and put in a division board. As to drawing the bees into the supers, he thought any bee-keeper who could not get bees to go into the super when the bees occupied the room below, and they had need for more room, should go out of bee-keeping. He admitted difficulty when only foundation was put in the supers, but not when drawn comb was given. Quite an animated discussion followed, the convention generally taking part. Mr. Holtermann claimed that by keeping bees together as they should be a twelve-frame hive was full of bees in the fall—as full as the eight-frame hive, and more so if the eight-frame hive had been allowed to swarm. It wintered as well as the eight-

frame hive, and there was no reason why it should not; then it would be as full in the spring and build up more rapidly and give more honey."

"TURNING WINTER LOSSES INTO PROFIT"

Also How to Free a Locality From Disease

Taking it for granted that our readers will, at least the greater part of them, have access to the stenographer's report of the National convention at Detroit, I will not attempt to give a write-up. Perhaps I ought to add, however, that I do not think I ever before met so many people who wanted to shake hands with your humble servant. If I attended the different sessions of the convention, and avoided talking while some speaker occupied the floor, it was about all I could possibly do to shake hands and make each one tell his name and address. In that way I could locate and identify many of them. A dozen times or more I said to myself, "I must go back and hunt up that dear brother or sister, and have a talk." My name was called by many voices at the close of the first evening session; but as it was already bedtime, I decided to give my little talk the following day; but the program was so full, and the speakers were so able, that there did not seem to be any chance for me to return even a friendly greeting. I hope the women folks especially will accept my apology for replying so briefly to their many kind words of appreciation—especially the expressions, accompanied by a pleasant look, in regard to the Home papers. I am going to try hard to keep well and to live long for the sake of the wives and mothers, if for no other reason.

The marked event of the convention (to me) was the address of W. J. Manley, of Sandusky, Mich. The subject was the title of this article, "Turning Winter Losses Into Profit." By the way, friends, Manley is not only a comical genius, but he is a first-class humorist. It would not do to say that he held his audience

"spellbound," were hooting the time at sentiment and hug the good President he really must he might have forenoon with rics. When he he was not going subject; but, relation when he It was worth to him and to he Ernest and Hull were both content about the large other things co By the way, the ers' supplies on itself; and the room up during tion—at least, i Mr. Manley s. ter losses in h tioned closely h likely owing, to aster honey that freezing weather and, of course, bees dysentery, bees are all dead open in the spr said he thought this poor honey stores of sugar sy But how are yo take the sugar sy to be had in t thought it very p all combs outside ing unsealed stor with combs of better still, suga up early in the success of winteri deal of trouble, a much "easier" t of themselves; so when springtime of dead bees all o

"spellbound," for, on the contrary, they were hooting and yelling a good deal of the time at some of his sallies of merriment and huge jokes. In fact, had not the good President gently told him that he really must stick to his subject, I fear he might have occupied nearly the whole forenoon with his queer speeches and antics. When he first started out I feared he was not going to be able to handle his subject; but, oh dear me! what a revelation when he "got down to business!" It was worth the whole trip there to see him and to hear his talk, and yet both Ernest and Huber missed it entirely. They were both continually called on to explain about the large display of implements and other things connected with bee culture. By the way, this exhibition of bee-keepers' supplies ought to be in a room by itself; and the President should lock this room up during the hours of the convention—at least, it looks that way to me.

Mr. Manley said there were many winter losses in his locality. When questioned closely he said he thought it was likely owing, to a great extent, to the aster honey that is gathered clear up till freezing weather. This honey is unsealed and, of course, not ripened. It gives the bees dysentery, and in many apiaries the bees are all dead by the time blossoms open in the spring in his locality. He said he thought it very likely that taking this poor honey away and giving some stores of sugar syrup would save the bees. But how are you going to make them take the sugar syrup when there is honey to be had in the fields? He said he thought it very probable that taking away all combs outside of the cluster containing unsealed stores, and replacing them with combs of good sealed honey, or, better still, sugar syrup fed and sealed up early in the season, would make a success of wintering. But this was a great deal of trouble, and many found it very much "easier" to let the bees take care of themselves; so that, year after year, when springtime came, there were hives of dead bees all over the land.

One spring a few years ago he told his wife he did not believe there were live bees in a dozen hives out of a hundred or more that were covered up with snow. When somebody asked why he did not put them in an up-to-date bee cellar, I cannot remember exactly what his reply was, but I think it was to the effect that, in his locality, where bees can winter outdoors, they are generally ahead of those wintered in the cellar. Well, last spring he told his wife that a hundred colonies or more were dead. She was bright enough and wise enough to suggest that it did not matter very much any way, as it would give them a good chance to start over again with things in better shape, and in due time he and his wife went to work to get the wax and honey out of those empty hives. The combs were mostly old and heavy, and he got so much wax out of them that they had one of their "happy surprises." The honey was also saved and sold to good advantage. If I remember correctly, some of it went to the baker's. But his greatest success came by changing his whole apiary over into modern hives with the bees all on frames of wired foundation. The advantage of working with new up-to-date implements compensated, or more than that, for the value of the bees that died. Of course, this change might have been made with bees that did not die, but had they all lived they probably would have worked along in the old-fashioned way.

Well, after friend Manley and his wife had really gotten into the business he thought he would see how low he could buy the hives and combs of his neighbors where the bees had died. He found them generally glad to have him take the things off their hands at his own figures, and he finally scoured the whole country, gathering up the hives that would probably breed moth-millers or, perhaps, in some localities, foul brood. By the way, friend Manley's scheme of clearing up the remnants of "blasted hopes" throughout the country all roundabout is one of the

best remedies, both in the way of prevention and cure of foul brood, and he made money by it, too. And his neighbors also made money. He said they were always glad to see him, because he took a disagreeable job off their hands. I have not the figures in dollars and cents that he gave us, but when you come to see them you will be astonished.

Now, here is a point that was brought out by his talk: He suggests, if I have it right, that it would pay any bee-keeper to melt up his combs every four or five years, and fill the frames with new sheets of wired foundation. If there has ever been any foul brood in the region the frames and hives should be treated in boiling water to banish effectually all traces of the contagious disease.

I do not know of any subject of more importance to bee-keepers than this very thing that friend Manley has opened up to us. Old, dilapidated, run-down apiaries are a curse to any community or neighborhood, and friend Manley goes about through all his region doing missionary work in "gathering up the fragments that nothing may be lost." The man who has sold out everything clean, and gotten rid of his old traps, will be very much more likely to start anew with nice up-to-date fixtures than he would if the old traps were left lying around loose. By the way, would it not be a fine thing if some such missionary would go around and buy up the old implements and other truck lying around in the corners to disfigure many farm homes? Years ago T. B. Terry astonished the people of Northern Ohio by having everything unsightly cleared away from around his home and even from around the barn, and I did not understand how he did it until one day when I went over the hill back of his house. Everything unsightly was carried off to a sort of "boneyard" back of the hill. Friend Manley has been doing for bee culture exactly what Terry did for the average farm home. The women folks will enter into this work most heartily. In fact, Mrs. Root will hardly let

me go to sleep nights with unsightly rubbish left around in sight, especially in the front yard.—A. I. Root, in *Gleanings*.

A BUCKWHEAT STORY

In connection with buckwheat as a honey-yielder, the writer a few days ago had a hearty laugh over a story told him by a farmer bee-keeper who also raises poultry quite extensively. The first year that buckwheat was sown near his place, when the plant came in bloom nicely, a decidedly bad smell was noticed about the hives in the evenings. Not being acquainted with the peculiar odor of freshly-gathered buckwheat honey, my friend came to the conclusion that some of his chickens had died under the hives, and were responsible for the trouble. Two or three evenings he and his good wife searched among the bees in an effort to find the dead chickens that were so offensive, and, failing to find them, were at a loss to account for the peculiar and unpleasant situation, for, as they said, "their neighbors were turning up their noses in disgust every time they went past the place."

One morning when examining a strong colony, the odor was located without a doubt as coming from the inside of the hive, and, lo! the mystery was solved at last—"the bees had foul brood." That same day a well-known bee-keeper happened to be passing, and our friend hailed him at once and told of his "misfortune." Needless to add, that when Mr. Bee-keeper came and examined the bees a hearty laugh all around was in order.—J. L. Byer, in *American Bee Journal*.

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There was a keepers at the the occasion of tional Bee-keep prominent bee- were present. pared by Mr. one and kept ployed.

At the first 13th, the most demonstration o cage, by E. R. Mr. Root strip and entered a smoker. The o of bees. These manner, and th late the hive. H the hive the co but shook the be pan, and then so hands, after havi in the pan, Mr upon his head, He explained th to pinch a bee. talk on the life made a very int audience.

Prof. E. F. Ph Apiculture, Wash ture, with stereop keeping in Hawai onies yielded a per colony, and colonies could be sweet the bees g mostly an excretic worked upon the hopper." Some that the bees wor molasses set out fo was of about the but he never saw troughs, and, as a tions, he was quite plus the bees ga source indicated.

THE NATIONAL MEETING AT DETROIT

There was a splendid collection of bee-keepers at the Wayne Hotel, Detroit, on the occasion of the meeting of the National Bee-keepers' convention. The most prominent bee-keepers of the continent were present. The programme, as prepared by Mr. Hutchinson, was a good one and kept the convention well employed.

At the first session, on Tuesday, Oct. 13th, the most interesting feature was a demonstration of handling live bees in a cage, by E. R. Root, of Medina, Ohio. Mr. Root stripped himself of his coat, and entered a wire cage with his smoker. The cage contained a colony of bees. These he smoked in the usual manner, and then proceeded to manipulate the hive. He not only removed from the hive the combs with adhering bees, but shook the bees from the combs into a pan, and then scooped the bees up in his hands, after having shaken the bees about in the pan. Mr. Root also shook bees upon his head, surprising his audience. He explained that he was careful not to pinch a bee. Mr. Root also gave a talk on the life history of the bee, and made a very interesting session for his audience.

Prof. E. F. Phillips, of the Bureau of Apiculture, Washington, D.C., gave a lecture, with stereopticon views, on "Bee-keeping in Hawaii." He found that colonies yielded a large amount of honey per colony, and that a large number of colonies could be kept in one apiary. The sweet the bees gathered was, however, mostly an excretion from an insect which worked upon the sugar cane, the "leaf hopper." Some expressed the opinion that the bees worked on the troughs of molasses set out for cattle. The "honey" was of about the same taste as molasses, but he never saw a bee working at the troughs, and, as a result of his investigations, he was quite satisfied that the surplus the bees gathered was from the source indicated.

Wednesday morning session opened with the addition of a number of later arrivals. The President, Mr. George Hilton, of Fremont, Mich., delivered an address. He eulogized the Canadians, and gave them credit for much assistance to the bee-keeping industry. He spoke encouragingly and optimistically of bee-keeping as a profession.

Dr. G. F. White, of the Bureau of Apiculture, Washington, followed with an address on "The Bacteria of Bee Diseases." He dealt with the subject ably, claiming that disease was an abnormal condition, a state of not being at rest. The causes varied, age, sex, race, heredity or pre-existing diseases being the predisposing causes. The cause of European foul brood was yet undefined. A lengthy discussion followed, in which Messrs. N. E. France, Byer, McEvoy, E. F. Phillips, R. F. Holtermann, John Newton, R. L. Taylor and others participated to some effect.

Mr. Byer referred to the European foul brood discovered by him in Eastern Ontario. He considered it very virulent. Mr. McEvoy stated that in his opinion European foul brood was nothing other than black brood. He believed we had only one kind of foul brood. He also stated that he must also rule out pickled brood, and call it what it was—starved brood. He went fully into experiments made by himself in 1875, and related the manner by which he traced the diseased honey in the diseased cells, as distinguished from those cells not diseased. By the use of wires crossed over the comb he marked off certain areas as foul and not foul. He took the head of a pin and lifted the honey out of a diseased cell and dropped it upon sound brood, and thus transferred the disease. He then took a clean pin and lifted honey out of clean cells and deposited this also upon sound brood. In this case no disease appeared. He thus satisfied himself that the disease lay in the honey that was stored in a cell wherein a young bee had died of the disease. He then gave full

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instructions how to cure foul brood, which was according to his well-known method. During the discussion some suggestions were made in reference to boiling the hives and otherwise disinfecting them. Mr. McEvoy convulsed the audience by asking with fine sarcasm if it would not be wise also to boil the bees. Mr. McEvoy's remarks were received with great enthusiasm.

Mr. N. E. France, General Manager of the National Convention and Bee Inspector for Wisconsin, very largely endorsed Mr. McEvoy's position. He believed also that bee-keepers retained old combs too long. Old combs and questionable combs should be melted up and turned into wax.

A discussion took place between Messrs. Holtermann and S. D. Chapman, of Mancelona, Mich., as to the relative merits of the eight-frame Langstroth hive and the ten or twelve-frame hive. Mr. Chapman supported the eight-frame hive; Mr. Holtermann championed the twelve-frame hive. Others joined in the discussion. The supporters of the eight-frame came out on top.

Mr. W. J. Manley, of Sandusky, Mich., gave an address on "Turning Winter Losses Into Profit." It appears that he bought up all the foul brood combs in his neighborhood at about 10c per frame and rendered them into wax. He showed that he got the profit, but he failed to show where the profit was for the man who sold the combs. His address was very rambling and much interrupted. He said he once went to school in a log schoolhouse in Canada. Some of the Canadians were of the opinion he had not stayed there long enough.

The Executive will decide where the next convention will be held, making a choice between Toronto (Canada), Buffalo, St. Louis and Minneapolis.

Below we give some impressions of the convention by Mr. Byer, Mr. Chrysler and Mr. D. Anguish:

Mr. Byer's Impressions

Our Editor has asked me to write our impressions of the National Convention

recently held in Detroit, which it was the writer's good fortune to have the pleasure of attending. It is with some hesitation we endeavor to comply with his request, as we have an idea that, aside from the fact of not being very "impressionable," we lack the ability to convey to others our ideas, only as couched in the crudest form.

When we say that previous to this time we had never been west farther than Woodstock, readers of C.B.J. will excuse us for saying that we were greatly impressed with the beautiful stretch of agricultural country that stretches from Toronto west to Windsor—in fact, friend Chrysler was assured by your scribe that some of this land was as good as the York County section. After crossing the river by ferry, and having assured the customs officers in Uncle Sam's employ that we had nothing in our grip worth over a quarter, we passed into Detroit, tickled with the idea that we had escaped from being deported as "undesirables," for you know, Mr. Editor, such things have happened in the past. About 2 p.m., having had our room shown to us by the obliging colored gentleman, and being sure that all our valuables were safely under lock and key in said room, we sauntered forth to the Wayne Casino, where the Michigan State Bee-keepers were in session. Of this session, as well as of two or three different sessions of the National, the "impressions" were made principally on our ear drums, as between endeavoring in that big hall to hear the speakers trying to drown the noise of numbers of carpenters pounding on the ceiling of the flat beneath our feet, was very trying to those delicate organs, and reminded us of the celebrated Balaclava charge, "Cannons to right of them, cannons to left of them," etc., only in this case it was the front and rear that was causing the trouble. Not to multiply words, as regards the programme, we must confess to a little disappointment—not but that it was good, but because we expected too much. Associating in our

minds the fact 2,000 members stretch of country somehow we the case with the case with the case with the case with these latter as President Hilt able one, bre good-fellowship United States exemplified by and we were that so far as of these two c boundary is s Space will not more of the the writer is c have been enjo no programme. that if we were of our conventi soon be a thin, derstand us as disclaim the id yet we hesiti our going to cor thought of mee newing acquaint ing-card than tl would be possi connection we disappointment tion was on fin not present—a years, yet one pleasure of meet mate, Mr. York Dr. Miller is to l thousands of bee to that sentime friend, in sayin pressing sentime applied to him: look back with and formed acqu Mr. York, but whose very com and helped us t

minds the fact of an association having 2,000 members, and covering a vast stretch of country with its membership, somehow we expect much more than is the case with a State or Provincial Association with few members, forgetting the fact that the same talent is available for these latter as well as for the larger body. President Hilton's address was an admirable one, breathing forth the spirit of good-fellowship between Canada and the United States; in fact, this spirit was exemplified by all the bee-keepers present, and we were impressed more than ever that so far as the bee-keeping fraternity of these two countries is concerned, the boundary is simply an imaginary line. Space will not permit me to say much more of the programme, but, as far as the writer is concerned, our visit would have been enjoyed even if there had been **no programme**. Am I right when I say that if we were to cut out the social side of our convention, that conventions would soon be a thing of the past. Don't understand us as being egotistical, and we disclaim the idea of "knowing it all," yet we unhesitatingly say that as far as our going to conventions is concerned, the thought of meeting our friends and renewing acquaintances is a greater drawing-card than the best programme that it would be possible to arrange. In this connection we would say that our chief disappointment at the National Convention was on finding that Dr. Miller was not present—a man **known** by us for years, yet one we have never had the pleasure of meeting. As my genial roommate, Mr. York, remarked: "To know Dr. Miller is to love him," and I feel that thousands of bee-keepers would say Amen to that sentiment. Unconsciously, my friend, in saying these words, was expressing sentiments that could well be applied to himself, and personally we look back with pleasure to having met and formed acquaintance, not only with Mr. York, but scores of others—people whose very companionship was uplifting and helped us to think of other things

besides the race for the almighty dollar. Begging your pardon, Mr. Editor, for taking up so much of your space, allow me yet to say, for the benefit of Canadian bee-keepers who were not present at Detroit, that there is a strong feeling among our American friends that the National should soon—perhaps next year—meet in Toronto. Let us encourage that idea as much as possible.

One great mistake as regards the Detroit meeting was the entire absence of any arrangements for railway rates. Perhaps it was unavoidable, but no question that the attendance was much smaller because of that reason. If the meeting should be held in Toronto at Exhibition time, railway arrangements would be par excellence.

Mr. Chrysler's Impressions

The National Bee-keepers' Convention held in Detroit on Oct. 13th, 14th and 15th was one of interest. The meeting, being held in a border city, was accessible to a large portion of the United States and Canada. There was perhaps the largest meeting of bee-keepers the National has ever had. There were a large number of Canadians present, and, from the hospitable and congenial feelings extended towards us by every one, I think I can voice the sentiments of all Canadians present when I say that we felt right at home and that it was good to be there; in fact, the worthy President, George E. Hilton, in his opening address, with the Canadian flag and the Stars and Stripes crossed on his breast, said some very nice things of the two great nations and we Canadians in particular, and, if I remember correctly, suggested that the name of the Association should be International instead of National.

The demonstration of handling live bees in a cage, and that of the moving picture exhibition of handling bees, such as transferring, hiving swarms and other manipulations, by E. R. Root, was of a most interesting nature, not only to bee-keepers, but also to the public in general.

Interesting stereopticon views were also given by E. F. Phillips, of the Apicultural Bureau at Washington, of the many apiaries and sugar plantations of the Hawaiian Islands.

The different subjects of brood diseases were handled by such men as R. L. Taylor, E. F. Phillips, Dr. G. T. White, W. D. Wright. It might be interesting to know that there were no less than six inspectors of apiaries from Ontario there to absorb and to spread their knowledge on the subject. It was generally advised that the bee-keeper would find it to his interest to study well the diseases known as foul brood and other brood diseases, also the advisability of melting up more old combs than has been the practice, as with improved wax extractors wax should be a marketable product as well as honey, also preventing to a great extent the spread of foul brood.

Mr. W. J. Manley, of Sandusky, Mich., gave a most interesting talk on the subject of "Turning Winter Losses Into Profit." Mr. Manley, being situated in a locality where the honey from the fall flow is of such a nature that bees do not winter well on it, or possibly from foul brood or other sources, turns his losses to good account by melting his combs into wax where the bees have died. He collects the combs also from his neighbors for miles around, paying for them when required; he also buys all the bees he can, whether they have foul brood or not (I am inclined to think); at any rate, the foul brood would be brought to one spot, the wax being worth about as much as he could buy bees and wax both together—at least, his returns from the sale of wax made from old combs seem to be sufficient to keep him well stocked with bees. From the fact that Mr. Manley buys all the bees he can in his immediate vicinity, he generally has all the botch or careless bee-keepers out of business and no one to undersell him in his honey market, and also rids his locality of foul brood if it exists.

There were other interesting subjects

and papers read at the meeting, which I feel I could not give an interesting description of.

One of the most interesting parts of a convention of a national character are the private talks you are privileged to have with bee-keepers from the far distant parts of the country, professors and persons of high attainments. Reading bee books, bee journals, attending conventions and visiting bee-keepers themselves, are some things a successful bee-keeper cannot well afford to neglect.

Mr. D. Anguish's Impressions

We had a grand time while there, meeting old acquaintances and seeing new ones, and getting information on the bee-keeping industry, as there were speakers from California, Cuba and other States. But for knowledge we Canadians were a wonder. When it came to the paper on getting rid of foul brood with the least financial loss, we lined up in parliamentary form, five of our inspectors to the right of the chair, while Mr. R. L. Taylor, of Michigan, and Mr. McEvoy, Woodburn, Ont., were to the left. I tell you it put us wondering whether we had better keep on bee-keeping or look for some other pursuit, for from the one side of the chair, where the old and supposedly experienced debaters were, came the glad news that it could be cleaned up without melting up everything in sight, while on the other side of the chair, where the younger inspectors were, came altogether a different tune. One of our young men, with only a few month's experience, had found out that the so-called American foul brood was incurable without losing nearly everything, and he was confirmed by others on the same side of the chair. Another from the same side of the chair had found out in his short experience that there was a disease broken out in his district called black brood, that is far worse than the fires that are raging over North Michigan at the present time, sweeping everything before them. The only hope we have is that winter is coming on, and that he sees to it that every

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[Dr. G. Bohrer,

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When it came to the paper, "Whether an eight-gram Langstroth hive is preferable to a larger hive in extracted honey production," our Large Hive King was there, prepared, with one of his large hives that we have so often read about and have seen so frequently at conventions. His opponent was also prepared, only on a smaller scale. Each contestant was allowed to speak twice, using only fifteen minutes, and each time they took the limit. When the judges gave their decision it caused quite a sensation, for it was something to this effect: A large hive is all right when managed right, and a small hive is the same, only a little more work and more honey.

When it came to turning winter losses into profit, we also showed them that if they only wintered their bees in a square they would have no losses. As I was travelling home I kept wondering how it was that I had such good success for a number of years with my small, shallow hives; so when I arrived home I went out in the bee-yard to examine, and I found where the secret was. My outside packing cases are nearly square. See?

BEESWAX AND DIGESTION—INCREASED SALE OF HONEY

[Dr. G. Bohrer, in American Bee Journal]

On page 269 [page 378, C.B.J.], under the above caption, Dr. C. C. Miller criticizes my article on page 241. Part of it he does not find fault with, and I rather think that when he comes to understand it fully he will accept about all of it as not much out of joint. He seems to think I am upsetting the arguments of Rev. R. B. McCain on the same page, and just before mine. Now, please, Doctor, read the McCain article again, and you will learn that he has reference entirely to the adulteration of comb honey. And he is entirely correct. But he does not say one word about bee-sting poison.

But you claim that, according to my statements, bee-sting poison is sure to be absorbed by the honey in the cells.

In this you are in all probability entirely mistaken, as the particles of poison expelled by bees, when their hive is jarred, most likely never reach the honey in the cells at all, as the bees never put their feet nor the tips of their bodies into the cells, nor dip them into the honey. But without doubt it is spread over the bees, and in moving about over the combs a part of it is with next to no doubt spread over the surface of the comb, and, as I have stated on more than one occasion, is taken into the human stomach when eaten with the comb, which, as you know, in a few rare instances, produces spasmodic colic. And, Doctor, you know such people never buy honey to use as food for themselves. So that you, as a comb honey producer, cannot get rich selling them comb honey.

But if I am not entirely mistaken, in uncapping honey with the uncapping knife the bee-sting poison is removed, so that when the honey is extracted it is free from bee-sting poison and wax. The latter, being wholly indigestible and in no way available as an article of nutrition to the human body, whatever action it may have or influence it may exert upon the digestive organs, is entirely of an irritating character. And the extracted honey producer may be able to sell this class of persons honey. See the point, Doctor?

And as to the matter of feeding the little honey from the capings back to the bees becoming the means of mixing the bee-sting poison with the surplus honey, you need not, I think, borrow any trouble, as bees, you know, are fed for two general purposes—the one to carry them through winter, and the other to stimulate them and aid them in brood-rearing.

You ask me how I know that bees invariably thrust out their stings, and that poison is expelled upon any jar of the hive. In reply I will say that I have seen it so often that I feel fully justified in

arriving at such a conclusion. And in the presence of your experience I feel somewhat surprised to learn that you doubt the correctness of this view.

You also say, "Please tell us **how** the spread of **your** facts is going to increase beyond any demand heretofore known the sale of honey." **I never said your facts**; and whatever this remark may be intended to mean, you said it. But, Doctor, I did say, and now repeat, that in all I have said or written I have done no guessing in regard to the influence of comb honey upon a very few persons, as regards its producing spasmodic colic. And I will also say that I feel quite confident that, as the people become acquainted with the requirements of the pure food law, and the effects of a rigid enforcement of the same, the sale of honey, both extracted and comb, will be very largely increased. People have for ages been acquainted with the excellent qualities of unadulterated honey, but you well know that for many years the custom of adulterating honey with glucose has been conducted upon such a gigantic scale that pure extracted honey was regarded as difficult to obtain in the markets: and that this must exert a demoralizing influence upon the sale of honey, you certainly understand. You are also aware of the fact that many people were led to believe that honey producers manufactured comb, filled it with artificial honey, and sealed it so nearly as the bees do that it was difficult for even an expert to detect the counterfeit.

And, further, as to the spread or reprint of my article in question, I have been written to from a distance for permission to publish it in local papers, which has been done. As to how many papers may print it I have no means of knowing. I am, however, informed that where it was republished physicians endorsed my views and groceries were selling honey in larger quantities. So that I perhaps need have no deep regrets to express, nor apologies to offer, for having written the article in question. I am also

convinced that I can produce more honey, and with less labor and expense, in the extracted form than I can in the comb. And to say the very most in behalf of comb honey, the wax or comb is to honey what face powder is to the human complexion—simply ornamental.

Lyons, Kan.

THE PENNSYLVANIA STATE BEE-KEEPERS' ASSOCIATION

I am now able to supply further data concerning our bee convention, to be held in the Court House, York, Pa., Nov. 12-13, with headquarters at the Marshall Hotel, rate \$1 per day.

Thursday, 1.30 p.m.

President's Address, Prof. H. C. Klinger.

Address, Dr. E. F. Phillips: A General Discussion of Apiculture in the United States.

Thursday Evening

Address, George Rea.

Friday Morning

Address, Prof. H. A. Surface: Hay and Honey Plants.

Friday Afternoon

Address, Dr. E. F. Phillips: The Treatment of Bee Diseases.

It is contemplated that with two more pre-arranged communications the programme will be ample, and due attention may be given to the consideration of legislative control of bee diseases and to timely topics.

It is urged that our present membership make special effort to bring other beekeepers into our ranks. We need many new, as well as all our old, members to work together this winter to secure the enactment of the Bill which was so uniformly approved at the last Assembly.

Thanking you for distributing information concerning our convention.

A. F. SATTERTHWAIT,
Sec.-Treas.

Harrisburg, P.A.

BEEES PREPARED Every Colony

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BEEES PREPARED FOR WINTER

Every Colony Put in the Best Condition

[By Wm. McEvoy]

Early in the season I put drone combs in a few of my best colonies, and in July I requeened all colonies with queens bred from colonies that gave the largest yields in honey. Some of these young queens got lost at mating time, and to make up for this delay I promptly filled their brood chamber with brood which I took from several of the best colonies, and then gave them ripe queen cells. By close attention and the giving of brood right after a queen was lost, all colonies were kept full of bees, and when the season closed these were among my best colonies. About the 16th of August I started putting the Porter bee-escapes under the supers, and to get the bees to rush through the bee-escapes quickly I lifted a few of the centre combs up about two inches and let them down again. This disturbed all the bees and caused them to rush down at a rapid rate, and the next day the bees were practically all out of the supers.

All the brood chambers were very full of brood just then, and when all the bees that had been in the supers were crowded down into the brood chambers, large quantities of bees clustered on the front of every hive. About the 20th of August I put on the feeders and gave each colony about fifteen pounds of syrup (as the season had closed in my locality). The bees soon crowded this syrup into the brood chambers and ripened it well. On the 7th of September I started to rush the feeding, and soon had 100 feeders in use. The weather being very warm, and every colony very full of bees, I could get the stores well ripened—one of the most important parts of the work to get well done. But, the brood chambers being full of brood just then, the bees could not store the syrup any faster than the brood would hatch, and of course it took the bees longer to carry down the syrup. About the 15th of September my bees began storing honey from clover—a very

unusual thing for bees to do in my locality so late in the season—and this, with the feeding that I was doing, caused the bees to build combs in many feeders. For safe wintering I always want all combs capped, so as to rest the bees by shutting off all brood-rearing until near spring. When the feeders were taken off I took the two outside combs out of each colony and put in division boards to fill the space, and left the bees crowded on seven combs of well-capped stores. Bees in colonies prepared this way cluster closer, keep quieter, consume less, come through the winter stronger and build up faster in the spring than bees in colonies not so well prepared. My colonies are packed in winter cases with four inches of maple leaves at each side, front and back, and about six inches on top of the queen-excluders, which are left on to give the bees a bee space over the combs. I place the hive lid on top of the leaves and then finish up by putting on the cover of the winter case.

ANNUAL CONVENTIONS

Of Horticultural and Vegetable Growers' Associations

The annual convention of the Ontario Horticultural Association, which is the central organization of the horticultural societies in the Province of Ontario, will be held at the City Hall, Toronto, on Tuesday and Wednesday, November 10th and 11th, commencing at 2 p.m. A very interesting programme has been arranged bearing on all phases of horticultural work, and a large attendance is expected.

On Thursday, Nov. 12th, the Ontario Vegetable Growers' Association will hold its annual convention in the City Hall, the first session starting at 9 a.m.

Both these conventions are being held during the week of the Ontario Horticultural Exhibition, when single fare rates are in force on all the railways in Ontario, thus enabling delegates and all others interested in horticultural and vegetable growing to be present at a minimum expense.

Nov. 1908
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A FOOD THAT FILLS THE BILL

There are ever so many prepared foods on the market nowadays, and it's a dull month that doesn't add another to the list.

We are frequently surprised by our grocer offering us something in that line which we never before heard of.

The new food may prove attractive, appetizing and nourishing, and continue to tempt us to buy, or we may tire of the novelty and long to go back to the old standby that has proved its value by furnishing us with muscle or brain force to tussle with life's hard problems.

Food, to meet the requirements of the human system in this busy, work-a-day world, must possess at least three qualities. It ought to be

1. Nutritious
2. Appetizing
3. Digestible

The first because our physical natures need rebuilding all the time. The wastes caused by labor or exercise, by growth, and, in fact, by the simple act of breathing, must be supplied by food.

The second because we need all the pleasure possible to be had out of the rebuilding. If the wind should blow some shingles off our house every day, and we were doomed to climb a ladder every day to replace them, whether we liked it or not, we'd soon get tired of repairing the house. But if somehow we could make fun out of the job instead of work, the shingles might fly and we wouldn't care.

It is fun to eat when things taste good.

The third requirement is necessary because our modern life has impaired our digestive organs more or less, and some foods which the aborigines might have gulped down with impunity are a menace to our nervous and impaired constitutions. Our comfort and our health depend on our digestion.

Not only do the staple foods come under these requirements, but the so-called luxuries, condiments and seasoning foods may aid or retard the digestive process. If they are agreeable to the stomach and

are readily assimilated they aid in sustaining the body and in building up the wasted tissues. Good butter is nourishing, agreeable to the taste and digestible in small quantities.

Cane sugar is nourishing and agreeable to most people, but not readily assimilated. It taxes the stomach and kidneys and often leads to serious ailments.

As an appetizer, taking the place of butter or used as an adjunct thereto, supplying the demand of the body for sweets, there is nothing which quite equals honey. This is a sweet distilled in Nature's laboratory that has never been excelled by the genius of man. He may try to imitate, but he cannot impart the aroma, the delicious flavor of the wild wood or the blossoming garden or the scented field. He may distill something from corn that looks like it, but he cannot fool the bee into thinking it honey. And he can't fool the chemist, either, and wherever the pure food law is in force the chemist traps the man who is calling glucose honey. Therefore there is little adulterated honey on the market, but if one wants it in the liquid or extracted form, let him buy only from reliable men, or under the guaranty of the National Bee-keepers' Association. And if one wants to be absolutely sure he is eating the genuine, heaven-distilled and bee-manipulated article, let him buy comb honey, with the assurance that no man has ever yet been able to imitate the bee by faking the delicate comb which holds it or the delicious syrup that fills it.

Not only is honey appetizing, but it is nourishing. It is a real food. It builds wasted tissue.

Not only is honey palatable and nutritious, but it is assimilable. It agrees with most people. It is much more easily digested than cane sugar, because it needs one less transformation in the stomach. It enters more readily into the circulation and doesn't tax the organs that are overworked in trying to take care of commercial sugars. Kidney diseases are comparatively unknown among persistent users of honey.

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When the clover fields are white with bloom, and the linden shakes its creamy cups, and summer is drunk with a thousand perfumes, the provident bee garners the matchless food that needs no cook to prepare it, no spice to season it and no fair hand to tempt us to eat what God has provided in the great storehouse of Nature for all His children.

TWO QUEENS IN A HIVE

I read with interest the letter "More Than One Queen in a Hive," by C. A. Proconier. Will you kindly advise, through your columns or otherwise, the best method of introducing several queens in one hive? I have tried to have two virgins together in a nucleus, but found in every attempt that one of them was killed by the other.

W. N. FANTON.

Charlottetown, P.E.I.

[We must frankly admit we do not know of a plan whereby you can secure two queens in a hive. There has been much written upon this question during the last year. Some few say they have successfully done so. Some advise allowing a young queen to live with her mother when the mother is about three years old. The two queens are tolerated for a time, but one soon disappears. Our advice is to leave the matter alone, unless you want to do experimenting. So far the matter is only a fad among the experimenters. Again, two queens are not needed in a hive. One can lay all the eggs that the bees can take care of up to the honey flow. In tropical countries this may not be so, but it is true of Canada. We believe it would be a loss of valuable time, expensive and troublesome, with nothing to be gained. Ed.]

The value of honey imported into the United Kingdom in the month of August, 1908, was £3,570.—From a Return supplied to the Irish Bee Journal by the Statistical Office, H.M. Customs, London, England.

A FEW MORE DON'TS TO BEGINNERS

I see by C.B.J., page 379, October issue, that one of my friends is still depending on his good friend Jock for the C.B.J. and other information, as he gathers it around corners in reference to pilfering to economize. None of that done at the convention in Detroit, as there were no arrests and no disorder, only lots of hammers, that followed us from hall to hall.

I thank my friend for his very kind offer and call it a bargain (page 380), and will promise not to hit him very hard with any stray shots, so get out from behind the shield. I want to whisper how we will succeed in carrying out our plans. Subscribe right away for C.B.J., even if you have to borrow the dollar, and save your pennies and come to Toronto convention; then try and work your way into the ring, and then we may accomplish something.

Don't stop in that class, putting so much dependance in your good friend Jock, for that is where so many have made a failure in life, and woke up when it was too late to find themselves in the poorhouse. I would feel terribly grieved to have a friend that takes so much interest in me to be found in that class.

Don't try to produce comb honey in a square hive, for I see by Gleanings that it cannot be done, especially if you use full sheets of foundation in sections. Whether it is on account of management, or you cannot get bees enough to occupy both sides of section at the same time, we have no trouble in using full sheets in sections on a small hive.

Don't neglect your bees at this season, for this is the most critical period. See that they have abundance of stores, for that is the first step in successful wintering; in the second place, have them well housed for winter and kept perfectly dry, and you need not fear a cold and severe winter.

Don't miss Toronto convention.

D. ANGUISH.

WOMAN RUNS A BEE RANCH

"I have owned and managed a bee ranch in California for something like twelve years now," said Miss Inez Cooley, of Los Angeles County, Cal., who is on her way for a three months' holiday in Europe.

"My parents moved from Tennessee to California when I was five years old and began raising honey for market. While I can't claim to have known very much about the work until after I was grown and left school, simply living on such a place one is forced to imbibe a certain amount of knowledge. I knew in a general way how things should be done, but as it had never been my duty to help or see them done, I can't claim to have known much from actual experience.

"While quite young I developed what my parents believed to be a wonderful voice, and they decided that I should be a concert singer. For that reason I was sent to Boston to study music while still in my early teens. I have a good voice, and I fancy had either of my parents lived to see me start out for myself their dreams for me might have been realized.

"A year before I was to have been graduated at the New England Conservatory of Music I was called home by the death of my father. Two hours after I reached home my mother passed away. It was just at the beginning of the season for gathering the spring honey. While there were several skilled men on the place, my father had always acted as his own manager. The question arose who would take his place. I stepped out, and as far as it lay in the power of a young girl I filled it.

"Of course, I now believe that it was the best thing that could have happened. Being alone in Boston, I had made many acquaintances that were not altogether desirable. Had I gone back there with the liberty to do and spend what I pleased, the result might not have been what either of my parents could have wished. As it was, my work steadied me, led my thoughts into different channels,

and when the autumn came around again I was convinced that I would be happier if I remained in California and managed my bee ranch than if I returned to my musical studies and prepared for the concert stage.

"For a California bee ranch of the present day my ranch is rather small, as there are only between five and six hundred hives. It is at the foot of the Sierra Madre Mountains and at the head of a beautiful gorge. Their principal flower, or pasture, as we call it, is the Rocky Mountain Sage, the flower of which imparts a delicious flavor to the honey, which rivals the still famous Hymettus and the heather honey of Scotland.

"The old way of preventing new swarms from taking flight was to beat tin pans, blow horns and raise all manner of a racket, the real object of which was to drown the voice of the queen. Now the way is to secure the queen in a little wire cage. There is not the slightest danger of not knowing royalty among bees. Once beheld, the queen can never be mistaken for either of her plebian subjects, the drone or the worker. Not only is she far more elegant in shape and brilliant in coloring, but she has the distinctive habit of crossing the tips of her wings. It always reminds me of the helpless manner which some women have of disposing of their hands.

"By securing the queen the swarm can always be controlled and no end of trouble avoided. I keep a record of the ages and the pedigrees of all my queens, and have only to refer to the number and letter of the hives to learn if they are old enough to be superseded. I always kill an old queen myself, though it is a thing that I still dread to do. They are such pretty little creatures that I invariably shut my eyes when I execute their sentence.

"As to the yield of a hive, it is hard to make any definite statement. I believe for a summer's product a hive may be counted on to produce between 75 and 100 pounds of honey. In such a climate as

we have there are a single Italian thousand pounds season. Although California is not increasing, there mand at a good

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DRANT BEE-KEEP

A meeting of the held in the Court I rd, on Saturday, a fair attendance of Amanson, Presiden after considerable ed to hold a v Stanford, and proc al notable bee m ates to deliver add holding a conven et, which would

" was also discus was decided that ace in May next at me, Cainsville. Ar get as many farm

we have there are many instances where a single Italian swarm has produced a thousand pounds of first-class honey in a season. Although the yield of honey in California is enormous and every year increasing, there is always a steady demand at a good price.

"As an occupation I know of nothing that has the charm of bee-keeping. The labor is light and pleasant. When one considers that to produce honey, flowers or some honey-producing grain is necessary, it seems to me surprising that more women do not take it up as a business.

I have two school friends in Pennsylvania who, on paying me a visit, became converted to the business of bee-keeping, and now make additions to their yearly incomes by the sale of their honey.

"They both began with a few swarms bought somewhere near their homes, and I supplied the queens. Of course, the yield of their hives is nothing compared with mine in California., neither is their season as long, but they make enough to pay them for their trouble. As both of them are women with artistic taste, they have planted pastures for their bees in such a way that their homes are now remarkable for their beauty as well as for the excellence of the honey."—Exchange.

BRANT BEE-KEEPERS' ASSOCIATION

A meeting of the above Association was held in the Court House, City of Brantford, on Saturday, Oct. 31st. There was a fair attendance of old reliables. Mr. C. Amanson, President, was in the chair. After considerable discussion it was decided to hold a winter convention in Brantford, and procure, if possible, several notable bee men from the United States to deliver addresses. The question of holding a convention during the summer, which would be called a "field convention," was also discussed and approved of. It was decided that the gathering take place in May next at Mr. James Shaver's place, Cainsville. An effort will be made to get as many farmers as possible in at-

tendance, and any others who may be interested in bees to only a small extent. Practical demonstrations will be made in the manipulation of bees and hives for the benefit of those who may be in need of such instruction. Further announcements will be made. The following are the officers elected: President, William Bayless; vice-president, John Clark, Cainsville; Secretary-Treasurer, W. J. Craig; Executive Committee, the officers and James Shaver.

THE BEE AS A SOCIALIST

That a beehive is "a perfect example of the equalitarian product of state socialism," is the opinion of Prof. Gaston Bonnier, of the University of Paris, expressed in an article contributed to the Independent (New York, October 8). Professor Bonnier's anecdotes of bees and accounts of experiments that he himself has tried on them, are interesting, but not as original as the conclusion that he states in his closing paragraphs. Professor Bonnier's study of socialism among bees leads him to hope that the system will not be adopted widely in human society. He says:

"The isolated bee is without individuality. It is only the colony as a whole which possesses any individuality. All the bees of a hive, all the workers, perform the same task, because they obey a collective order. But the hives themselves differ from one another. I might give many examples of this, but I will confine myself to one. It may happen in a bad season that you will notice that all the hives of an apiary are, with one single exception, inactive. At this one hive you will see the workers flying in and out, 'as busy as a bee.' The reason is that the searchers of this hive have been so keen-sighted or so lucky as to discover, perhaps two or three miles away, a field of blooming colza, which the searchers of the other hives had overlooked.

"We may liken a bee colony to a sort of mammal whose constituent elements are being constantly renewed, which pre-

serves its general form and its own individuality. It resembles a human being with a slow-moving brain, for we have seen that the ruling committee requires considerable time before a decision is made and carried out. Again, the individual bee does not reproduce itself. What is reproduced is the individual formed by the whole colony, and this act is called swarming.

"Swarming among bees is generally due to the hive becoming too small for the increased population, and it occurs as a rule at the end of spring, when it is too warm for so many bees to live under the same roof. The hive selects a new queen; and the old one—not the new one, as has often been supposed—prepares to go forth to found a new hive with the surplus population. Before their departure special searchers are sent out to hunt everywhere in the neighborhood for some old chimney, some crack between blinds, or a hospitable hollow trunk, where the new hive may be formed. It most often happens that no such shelter can be discovered. But they must go forth, nevertheless, for they are in reality driven from the old home. But those who stay behind are not too cruel and selfish, for each emigrant is provided with a good store of honey from the common stock. In case no suitable spot has been found for the new hive, the bees swarm on a branch of a tree, and then move on from branch to branch, the number growing smaller and smaller till it quite melts away.

"If this first swarming has not sufficiently relieved the hive, a second one may take place. You can easily know in advance if this has been determined upon by the council; for, if another swarm is to be formed, the young queens who are still in their cells are not killed, and, to know whether this is so or not, you must listen in the evening to what is going on within the hive. The young newly-born mother utters a peculiar chant—tuh-tuh-tuh; while the queens still shut up in their cells reply, konah-konah-konah. If you hear these sounds, you may be sure that

a fresh swarm is about to quit the parent hive.

"An objection might be raised to this idea of bees being associative. It might be said that a hive is not a society, but a family, since the bees of the same hive are sisters. But this objection can be easily refuted. Thus, we have seen above that during the height of the honey season some bees mistake another hive for their own and are well received by the hive into which they have strayed. Again, the experiment of changing the queen of a colony has shown that this may be done several times. You may put in a hive of Italian bees a Carniolan queen, or vice versa; and yet the society formed in this way by bees of different origins will go on creating, working and planning just as well as it would if none of these changes had been made in it.

"A beehive, therefore, is a perfect example of the equalitarian product of state socialism, where is neither love nor self-devotion, neither pity nor charity; where everything is sacrificed to society and the welfare through ceaseless labor; where there is no government, no rulers; where there is discipline without subordination. It is the realization of ideal collectivism. Motor-cars and balloons may some day perhaps bring about the universal association of men. But if humanity is to be kept on earth only by the sacrifice of all individuality, as among the bees, by the sacrifice of every joy and every virtue, we should not be surprised if, some fine morning, the fancy should seize man to swarm to another planet!"—*Literary Digest*.

THE HABITS OF THE BEE AND SOME MISAPPREHENSIONS

[By Everett F. Phillips, Ph.D. Fellow for Research in Zoology, University of Pennsylvania]

(Continued from page 396)
prior to all experience, to perform certain actions tending to the welfare of the individual or the perpetuation of the species, apparently without understanding

the object at which they aim or without the best methods to accomplish their actions of the kind. By newly-hatched bees we can see no cause that whenever an action which is performed and for which he has no information, he then has the impulse of "instinct" to find a cause that what we so often see in the actions which we observe. I believe, and I am sure, that every instinct is a result of the environment, and we are to arrive at the truth by the actions we have taken. There is a tendency to think that when they understand something, and can use it, they understand it. This is a question, but we must not discuss this. As an example, the duties of the bees. Briefly, they work on their first day or two they work on account of the hive, but they soon take on account of the developing larva. Later, general duties are performed from the hive, and many of the inside work they did before. (Understood that we change their action normally happens. They, of course, fly from the hive, but they exercise flight, but they do not go out that they can smell their sense of smell through this cycle? They may that instinct in these things, but how about it when the impulse unless

the object at which it may be supposed to aim or without deliberating as to the best methods to employ. There are many actions of the bee which are carried out by newly-hatched bees, and for which we can see no cause. The difficulty here is that whenever an observer comes across an action which he cannot understand, and for which he can find no method of formation, he throws it into the general pile of "instincts," without further effort to find a cause. Is it not evident that what we so often call instincts are but actions which we do not understand? I believe, and I am not alone in my belief, that every instinct has a physical cause in the structure of the animal or its environment, and unless we do our utmost to arrive at the ultimate cause of these actions we have not finished our problem. There is a tendency for all men to think that when they have a name for a thing, and can use the word fluently, that they understand all the details of the question, but we must constantly avoid this. As an example of this, let us take the duties of the bees at different ages. Briefly, they work as follows: For the first day or two the young bees do not work on account of their weak condition, but they soon take up the duties inside the hive, such as wax-building, nursing the developing larvæ, cleaning the hive, etc. Later, generally when about sixteen or nineteen days old, they begin to fly from the hive, and ordinarily never do any of the inside work of the hive which they did before. Of course, it must be understood that varying conditions may change their actions, but this is what normally happens. Young bees do, of course, fly from the hive in what is called their exercise flight on warm afternoons, but they do not go so far from the hive that they can be guided back by their sense of smell. Why do they go through this cycle? We can, of course, say that instinct impels them to do all these things, but how much more do we know about it when we have given a name to the impulse unless we look further?

I have not investigated this problem very much, and do not wish it understood that I think that I have arrived at the ultimate and complete cause of this cycle of action, but certain facts seem to me to indicate that there is an organic cause back of all this. The large compound eyes, as well as the ocelli of the young bees, are covered with fine hairs, each one of which is much longer than a single unit of the eye. These hairs are not sensory, as Cheshire claims, since they are in no way connected with the nervous system. I can also see no reason why they should be considered as protective, since the chitinous lens of the eye is very dense and seemingly needs no protection of this kind. These hairs come off gradually, and by the time the bee is ready to fly they are nearly all gone. I do not wish to make the mistake of failing to distinguish between accompanying and casual factors, but I am inclined to the belief that these hairs on the young bees so obscure their vision that they do not fly from the hive to forage because they cannot see clearly enough to do so. As we know, young bees do fly for exercise, but, as before mentioned, only so far that they might be guided back by scent.

Whether my view is correct or most erroneous, all must admit that it is no worse than the position of the man who says that it is all due to instinct, for he doesn't know anything about it, and I profess to know but little.

That bees as well as other animals do certain things instinctively is too evident to be discussed, but what we now need, above all else, in the study of habits is to recognize the fact that the word "instinct" is too often a confession of ignorance, and we must look for other and more fundamental causes where possible.

I have enumerated at some length the difficulties and liabilities of error in a study of the habits of the bee, and if I could but impress on every bee-keeper the fact that these really exist I would be thankful. On the other hand, I know of no more favorable animal for study than

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the honey bee, and if I spend more time on the difficulties than on the advantages it is because the favorable side is better known.

The work of others in the past makes it possible for us to begin where they left off, and this advantage applies particularly to work on bees, where so much has already been done. The interest which we have in the bee from a commercial standpoint makes the work easier, for a person working on bees is doing something of interest to many people, and but few of us have reached that height of scientific perfection where we do not care for at least some popular interest in our work. Lastly, the numerous modern appliances of apiculture make it possible for us to study bees under many varied conditions. Movable frames, observation hives, mating nuclei, and swarm boxes, are of inestimable value in the study of habits.

In discussing the habits of the bee it is hard to know where to begin. Perhaps there is no better way to arrange what is to be said than to follow a colony through a season, taking up the various phases of their activities in the order in which they occur in nature. We can thus avoid unnecessary repetition and still get in all the desired points.

In the spring of the year the colony consists of a queen, whose duties consist in laying the eggs in the cells of the comb, and many workers or undeveloped females. At this time there are no males or drones. During the winter the bees remain quiet, and the queen lays no eggs, so that in the spring there are no developing bees in the hive. The supply of honey is then also low, for they have eaten their stores all winter and none has been collected and placed in the cells. As soon as the days are warm enough the bees begin to fly from the hive in search of the earliest spring flowers. From these flowers they collect nectar, which is transformed into honey, and pollen, which they carry to the hive on the pollen baskets on the third pair of legs. The nectar is

taken into the bee's mouth and then passes to an enlargement of the alimentary canal, known as the honey stomach, where it is acted upon by certain juices secreted by the bee. On its arrival in the hive the bee places its head in one of the cells of the comb and deposits there the nectar which it has carried in. By this time the nectar has been partially transformed into honey, and the process is completed by the bees by fanning the cells to evaporate the excess of moisture which still remains. When a cell has been filled with the thick honey the workers cover it with a thin sheet of wax, unless it is to be eaten at once. The pollen is also deposited in cells, but is rarely mixed with honey. The little pellets which the bees carry in are packed tightly into cells, and if a cell of pollen be dug out of the comb one can usually see the layers made by the different pellets. This collecting of nectar and pollen continues throughout the summer and ceases only with the death of the last flowers in the autumn.

Almost as soon as the honey and pollen begin to come in, the queen of the colony begins to lay eggs in the cells in the centre combs. The title of queen has been given to the female bee which normally lays all the eggs of the colony, under the supposition that she governs the colony and directs its activities. This we now know to be an error, but the name still remains. Her one duty in life is that of egg-laying. She is most carefully watched over by the workers, and is constantly surrounded by a circle of attendants who feed her and touch her with their antennæ; but she in no way dictates what shall take place in the hive. The eggs are laid in the bottom of the hexagonal cells, being attached by one end to the centre of the base. The first eggs laid develop into workers, and are deposited in cells one-fifth of an inch across. As the colony increases in size by the hatching of these workers, and as the stores of honey and pollen increase, the queen begins to lay in larger cells, measuring the

fourth of an inch in diameter. The size of the cells varies with the sex, as with the queen. All the eggs laid are worker eggs in the first few cells, drone eggs in the next few, and male eggs develop in the last few. The first of May in the north.

The eggs do not hatch until the adult bees, as what has just been said, in a few days there hatch into white worm-like larvae. The amount of food is remarkable. It is not until it fills the cell that the worker spins a cap of wax. The worker brood is distinguished from the drone brood in that the worker brood is reared in the cells, and the drone brood is reared in the drone cells. The queen determines at once whether any hive contains a queen, and the time the egg is laid. The bee emerges from the cell through some way during the time the stage being known as the prepupa. For drones the time is about the time the queen appears, the inmate prepares for swarming. The most interesting thing about the colony. The workers no longer lay eggs. In our present development of the colony nothing was said about the fact that there are some developing eggs, which we know are laid. As was stated, the workers are all reared by the old authority on the

fourth of an inch across, and from the eggs laid in these cells drones develop. The size of the cell does not determine the sex, as will be explained later; but the queen almost invariably lays the worker eggs in the smaller cells and the drone eggs in the larger ones. As these male eggs develop and hatch, drones begin in the colony, generally about the first of May in temperate climates.

The eggs do not develop directly into adult bees, as might be inferred from what has just been said; but after three days there hatches from the egg a small white worm-like larva. For several days the larvæ are fed by the workers, and the amount of food consumed is truly remarkable. The larva grows rapidly, until it fills the entire cell in which it lives, and then the workers cover the cell with a cap of wax, while the larva inside spins a delicate cocoon under the cap. The worker brood can at once be distinguished from the drone brood by the fact that the workers place a flat cap over worker brood and a high arched cap over drone brood; and this often is of great help to the bee-keeper in enabling him to determine at once what kind of brood any hive contains. Twenty-one days from the time the egg is laid the young worker-bee emerges from its cell, having gone through some wonderful transformations during the time it was sealed up, this stage being known as the pupa stage. For drones the time is twenty-four days.

About the time the drones begin to appear, the inmates of the hive begin to prepare for swarming, which to any one watching the habits of bees is one of the most interesting things that takes place in the colony.

The workers now begin to make queen-cells. In our previous description of the development of the young from the egg, nothing was said about the queen, and there are some decided differences in her growth, which we will now take up.

As was stated earlier, the queen and the workers are all females. Schirach, an old authority on bees, discovered that the

bees can take a young worker larva soon after it hatches from the egg, and, by giving it special food, royal jelly, all during its larval life, and by constructing for it a special cell, make of the otherwise worker larva a fully developed queen. This it is that the workers of a colony do when they are preparing to swarm. Several young worker larvæ are chosen as the material for queen-rearing, generally located near the margin of the comb. The workers now begin to feed these chosen larvæ an extra amount of food, and at the same time the sides of the cells containing them are remodeled and enlarged by the destruction of surrounding cells. The queen (or royal) cell is nearly horizontal at the top, like the other cells of the comb, and projects beyond them; later the workers construct another portion of the cell, into which the queen larva moves. This is an acorn-shaped cell placed vertically on the comb, about as large as three ordinary cells. As the cell is being built the queen larva continues to grow until the time comes for her to be sealed up and enter the pupa state. Although it takes the worker twenty-one days to complete its development, the queen passes through all the stages and reaches a considerably larger size in but sixteen days.

Before leaving the subject of the raising of queens, it might be well to state that if, for some reason, a queen is killed in the hive, or by chance gets lost, the workers can at any time replace her by the same method, provided, of course, they have worker larvæ on which to work. In the same way they will replace or supersede an old queen when she begins to show signs of decreased power of egg-laying, so that this peculiar performance is not characteristic of swarming only.

In the swarming season, at about the time the new queens are ready to leave their cells, the old queen leaves the hive and takes with her a part of the workers, this being known as "swarming." This generally takes place in the morning of a

warm pleasant day. It may as well be confessed that we know very little about this remarkable instinct of the bee. In the first place, under ordinary conditions, the old queen would not allow queen-cells to be constructed in her colony, nor has any one told us why she allows it now. Neither do we know what starts the actual swarming, nor which bees, workers or queen, first set the hive in motion. We are equally ignorant of what is the thing which compels certain bees to leave with the old queen and why the others stay in the old hive with the young queen. Since the prevention or control of swarming is such an important problem in practical apiculture, the value of research along this line is evident. Since our original hive has now divided, let us follow the swarm with the old queen and later return to the old hive to observe the actions of that.

In the hands of a bee-keeper the departing swarm may be put into another hive, provided he wishes to increase the number of his colonies; but in Nature the swarm will find an old hollow tree or some similar place in which to establish itself. The bees, before leaving their old hive, fill themselves with honey until the abdomen is greatly distended, and for this reason it is not necessary for them to collect nectar for a day or two, for they have other work to do. Some of the bees begin to clean up the new quarters and get it fit for occupancy; but most of them begin the construction of new combs. To do this they suspend themselves in curtains from the top of the hive, and remain motionless for some time. The wax used in building comb is secreted by the workers in eight small pockets on the lower side of the abdomen while they thus hang in curtains. Finally, after considerable wax has been thus formed, they begin to build. The small flakes of wax are passed forward to the mouth, there mixed with a salivary secretion to make them pliable, and then are placed against the top of the hive. Other workers then come and place their small con-

tributions of wax on those first deposited, and this continues until the combs are finished. There is more to comb-building than the mere sticking on of wax plates, however; and nothing in all bee habits is more wonderful than the beautiful plan on which they build the comb. The cells are hexagonal in shape, so that each cell in the centre of the comb is surrounded by six others; nor is this the only remarkable thing in their architecture, for each comb is composed of a double row of cells, the base of each cell being formed of three parts, each one of which is likewise a part of a separate cell on the other side of the comb. By this method the bees obtain the greatest possible capacity for their cells with the least expenditure of wax. The accuracy of the cells of the comb has in all ages been an object of admiration of naturalists and bee-keepers; and while the degree of perfection assigned to these cells has undoubtedly been overstated by most writers, yet we cannot but admire and wonder at the remarkable instinct, almost bordering on intelligence, which enables the bees to build cells so well suited to their purpose.

As soon as there are some cells constructed, and even before they are entirely completed, the queen begins to lay eggs, and the workers begin to collect stores of honey and pollen. They also collect in considerable quantity a wax-like substance from various trees, commonly called propolis, with which the inside of the hive is made tight, closing up all openings except the one which serves as an entrance. In this way the new swarm prepares for itself an abode like the one it left; and by sealing up the crevices and gathering stores it prepares for the coming winter.

We may now return to the colony which remained after the swarming took place to see what happens there. The colony left in the old hive retains all the brood and honey stores and has a newly hatched queen. There is then no necessity for wax building nor for sealing up the hive; but this colony is already in a nor-

mal condition, and is not yet ready to swarm. She will receive a very young queen from the worker combs practically about five days (depending on the season) the virgin queen to mate with a several short, before her hive located elsewhere on her return, and in constantly enlarging the air. Thus far we have followed; but few are enough to observe. Sometimes the mating flight, and a lower point, and a fact of witness the mating flight. In the hive, in some many drones to her apiary, provided he has a bee yard, and the queen is successful in the mating flight. She often follow the queen and for an hour or outside of the hive but later they return to their hives. The queen returns to the flight in about half an hour with her general mate, which is killed by the queen. Near the queen is a small sac filled with spermatophores, which is filled with spermatophores after her return this spermatophore fluid; and it is this spermatophore fluid which is the spermatophore fluid. This supply of spermatophore fluid by a queen for the mating flight is rarely happening a second time before the queen can, during her

mal condition, except that the queen is not yet ready to perform her duties, and she will receive our attention now. A very young queen receives little attention from the workers, but goes about the combs practically unattended. When about five days old (the exact time depending on the weather), in the afternoon, the virgin queen flies from the hive to mate with a drone. She first takes several short, preparatory flights to get her hive located so that she may find it on her return, and finally she flies upward in constantly enlarging circles, high in the air. Thus far she may be easily followed; but few have been fortunate enough to observe the actual mating. Sometimes the mating takes place at a lower point, and a few men have recorded the fact of witnessing the completion of the mating flight. The queen, on leaving the hive, in some way attracts a great many drones to her from all parts of the apiary, provided her hive is located in a bee yard, and the swiftest and strongest is successful in the race. The other drones often follow the queen back to her hive, and for an hour or two remain on the outside of the hive after she has entered, but later they return to their former hives.

The queen returns from the mating-flight in about half an hour, carrying with her the generative organs of the male, which is killed during the union of the two. Near the posterior end of the queen is a small sac, which, before the flight, is filled with a clear liquid, but after her return this sack is filled with an opaque fluid; and it is the reception of this opaque substance which is the essential thing in mating. This liquid contains millions of spermatozoa, or male sex cells, each one of which is capable of fertilizing an egg as it glides past the opening of the sac. This supply of spermatozoa is almost always sufficient to supply the eggs laid by a queen for three or four years—rarely happening that she mates a second time before laying. Since a queen can, during her lifetime, lay a

total of 500,000 eggs, most of which receive one of these spermatozoa, it will be seen that the apparatus for preserving them is very perfect, since the queen can not generate more, and they do not divide or increase in number in any way.

The mating of queen and drone never occurs in the hive, but always in the air, on the wing. This fact prevents what is known as in-and-in breeding; for, if the queen mated in her hive she would receive spermatozoa from her brothers, and we know that such close breeding is undesirable in all forms of life. The cause of the undesirable results of in-breeding are yet a mystery; but we do know that they follow, and this habit of the queen of mating outside the hive renders close crossing less probable. After the queen has returned to her hive, the workers remove the male organs. These parts of the male are not absorbed by the queen, as is sometimes claimed; but the spermatozoa contained in them are taken into the spermatheca and the rest dries up and is removed. Almost as soon as the queen returns from her flight there is a difference in the treatment which she receives from the workers. It happens at times that she is not received kindly after taking her flight, and may be killed by the workers, which do not recognize her as their queen, probably on account of some new odor which she has acquired during her absence. This is rare, however, for ordinarily she is the object of much attention on her return. From this time on, whenever she stops for a moment on the comb, either to deposit an egg or to rest, she is surrounded by the workers. In about two days after mating the young queen begins to lay, and this one duty she performs until her death, never again leaving the hive except with a swarm.

The colony with the young queen is now in the same condition as the one which left the hive, both having laying queens, combs, brood, and a sealed hive. Their histories, under normal circumstances, are then practically the same. Both prepare for winter, and the following

spring both cast swarms again, and so the cycle is repeated. Such is the activity of bees under favorable conditions; but, needless to say, this ideal is not always realized, and we will now follow colonies under other conditions.

Let us take a colony with a virgin queen like the one left after a swarm is cast. It sometimes happens that the queen is defective in some way so that she cannot fly from her hive to meet a drone. This may be caused by mutilated or weak wings, or possibly the queen shows no disposition to fly. On the other hand, the weather may not be favorable for her flight, or there may be no drones in the air when she does fly. Evidently, any of these conditions will prevent mating; and when this occurs we are enabled to see one of the most remarkable phenomena of the hive. The observer who wishes to study this phase of bee activity may bring about the same conditions by cutting off the wings of the queen or by covering the entrance of the hive with perforated zinc, so that it is not necessary to depend on chance to bring about what we are now to observe.

If a queen remains unmated for a period of three weeks she is incapable of mating, and loses all desire to leave the hive to meet a drone. After that time she may begin to lay eggs, but, strangely enough, these eggs produce nothing but drones, and the queen is then what is known as a "drone layer." Obviously then, drones are produced from eggs which have not been fertilized. Not all unmated queens become drone layers; in fact, many queens die if not mated and many others never lay at all; but if any eggs are laid they produce only drones. From my own experience in trying to bring about this condition I can say that the person wishing to, verify the statements made concerning this strange phenomenon should start several virgin queens in hives, and possibly one or two will lay.

This introduces us to one of the most remarkable phenomena which is known to

occur in Nature, but it is not characteristic of bees alone. In the vast majority of cases in the animal kingdom eggs disintegrate unless fertilized by spermatozoa of the same species. Just why fertilization is necessary is still a disputed point among scientists; but we know that it is necessary in most cases. To the development of eggs without the usual fertilization the name "Parthenogenesis" is applied.

The parthenogenetic development of drones was first completely described by Johannes Dzierzon, a priest of Karlsmarkt, Germany, and a bee-keeper of long experience. It has since been verified by many workers on the subject. As the eggs pass down the oviduct on their way from the ovaries of the queen they pass the opening of the spermatheca, and if the egg is to become a female it receives from this spermatheca one, and only one, spermatozoon; if it is to become a drone it receives no spermatozoon, and consequently remains unfertilized, as do all the eggs of a drone layer. A normally mated queen rarely lays a drone egg in a worker cell, or vice versa, provided both kinds of cells are present, and consequently we are forced to the conclusion, as much as we dislike to admit it, that the queen in some way can control the laying of eggs of different sex, but how this is done is a mystery. I say we dislike to admit this because it is entirely beyond our comprehension and as stated in the earlier part of this talk, one of the difficulties in recording observation is the giving of reasons for things observed.

Another fact which supports the theory of parthenogenesis is that workers in a colony which is hopelessly queenless will often begin to lay eggs. As we have said, workers as well as queens are females, but they are incapable of mating, and the eggs laid by them produce nothing but drones.

This statement of the theory of parthenogenesis or the "Theory of Drone Spermatozoon," as it is commonly called, differs from the usual statements of the theory

that find place in The Theory of Parthenogenesis, which is divided into two parts: (1) the unfertilized, which is called parthenogenesis, and (2) the fertilized, which is called gynogenesis. To this part of the theory we will not subscribe. (2) The unfertilized eggs of the queen are called parthenogenesis, and it becomes female.

The latter part of the theory is founded on a biological basis, and is not a matter of logic only, and is not a matter of opinion. Let us state it in a different manner. Male and female eggs are produced by the queen, and we can see, this is the difference between them, and it is not a matter of opinion, which changes that the conclusion to follow, for is it some difference yet observed, which is the factor, rather than the difference.

Fertilization is a matter of sex-determination, and is not a matter of opinion, else in the animal kingdom it is not claimed that fertilization is a matter of sex. (2)

Formerly considered as a matter of opinion, the theory of parthenogenesis in their part according to some of the writers.

(3) In the vast majority of cases the problem of sex-determination is a matter of opinion, there is strong evidence that the offspring is determined by the sex of the parent.

Observations made during the study of the theory of parthenogenesis tend to show that there is a difference between the unfertilized and the fertilized eggs.

In studying the theory of parthenogenesis I was struck by the conclusion concerning the theory of parthenogenesis, which is a matter of opinion, and is not a matter of fact.

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that find place in the books on apiculture. The Theory of Dzierzon can be divided into two parts: (1) Drone eggs are unfertilized, while female eggs are fertilized. To this part all observations lead us to subscribe. (2) All the eggs in the ovary of the queen are male eggs, and the fertilization of the egg changes its sex and it becomes female.

The latter portion of the theory is not founded on actual observation, but on logic only, and not on sound logic, either. Let us state the theory in a different manner. Male eggs are unfertilized and female eggs are fertilized. As far as we can see, this is the only difference between them, and, since we can see no other difference, this must be the thing which changes the sex. Is it not clear that the conclusion does not necessarily follow, for is it not possible that there is some difference between these eggs not yet observed, which is the all-determining factor, rather than that fertilization is?

Fertilization may have nothing to do with sex-determination: (1) Nowhere else in the animal kingdom, except in animals exhibiting parthenogenesis, is it claimed that fertilization has any influence on sex. (2) The ants, which were formerly considered to be similar to the bees in their parthenogenesis, sometimes, according to some recent work, have females produced from unfertilized eggs. (3) In the vast majority of cases where the problem of sex has been investigated there is strong evidence that the sex of the offspring is determined before the eggs leave the ovary. (4) Certain observations made during the past two summers tend to show that there is some other difference between male and female eggs.

In studying the problem of parthenogenesis I was struck by the illogical conclusion concerning sex, and to test the theory spent some considerable time in observations on the subject. I found that many of the eggs laid by a drone-laying queen never develop at all. According to the theory propounded by Dzierzon and his followers, all the eggs in the ovary

are male, and if they are unfertilized all should develop and become drones. But all do not develop. I have observed drone-laying queens in one-frame observation hives, and in eight-frame hives, and in all my observations there were always a considerable number of eggs which dried up and did not develop. Of course, all that did develop became drones.

From these facts it is possible that the sex may be determined in the ovaries before fertilization. Male eggs do not require fertilization, and therefore can develop when laid by a drone-layer, but the female eggs of a drone-layer require fertilization, and since they do not get it they die. I am as yet unable to give an exact ratio between the number of eggs which develop and those that do not, owing to difficulties in observation, but of the fact that some do not develop I am sure.

Of course, it will be recognized that this is but a theory with a somewhat small basis of fact, but the facts observed seem to me to be enough to throw doubt on the second part of the Dzierzon theory—that sex depends on fertilization. For fear of being misunderstood, let me repeat that my observations confirm the view that drone eggs are unfertilized, so that the first part of the Dzierzon theory remains unchallenged, as far as I am concerned. The entire subject of the parthenogenetic development of the drones is still but little understood. A few facts are well known, but around these facts there has been woven a mass of good and bad guesses which must be cleared up. If the theory could be stripped of these surmises, the whole subject would be much clearer; and one who undertakes to work on this line must drop all but well-verified facts.

There is one other line of work on bees in which I have been interested for some time, and on which there is yet considerable work to be done. According to the views of the majority of zoologists, the variation of animals is the result of cross-

ing two lines of heredity. In other words, worker bees would tend to vary all the way between their two parents, while drones would tend to be like their single parent. This is certainly illogical, but by this time we know that it is not possible to figure out in advance what animals are going to do. To test this I have measured something over a thousand each of drones and workers. In this work I chose certain characters on the wings, for reasons which need not be discussed here. Briefly my results are as follows: Drones vary considerably more than workers, rather than less, as we would logically conclude; and furthermore, this variation depends more on the environment under which they are raised than on any inherited tendency. Some as yet unpublished measurements confirm this view most strongly.

I have mentioned but relatively few of the habits of the bee, and if I seem to have taken the view that our present knowledge is meagre, I hope you will overlook it if you think me pessimistic. The study of the habits of the bee are of the utmost importance to apiculture, and, since so much remains undetermined, let us hope that many will be enough interested to take up the work. My acquaintance among bee-keepers is not as wide as I would wish, but let me say that the best and most successful that I know are the ones who most carefully study their bees. On this account I urge the necessity for still more work on the habits.

I have carefully avoided a discussion of modern appliances in bee-keeping, and especially cut very short any mention of queen-rearing, since this subject will be ably discussed to-morrow by a man who knows that subject better than I do. It is not because I undervalue the practical side of bee-keeping that I have confined my remarks to more theoretical matters, but because I fear that most apiarists rather undervalue the so-called theoretical work concerning the bee. I hold that one depends on the other, and neither one alone will ever be a full success. This is

my justification in giving expression to the views and facts here spoken.

POLICY ON TEMPERANCE REFORM

The Presbyterian Church in Canada

We are asked to give space to the following by the Presbyterian Church, to promote the work of moral and social reform in which that Church is engaged:

The General Assembly's Resolution.—

"The Assembly would reaffirm the deliverance of former Assemblies that nothing short of the prohibition of the traffic in intoxicants for beverage purposes can satisfy as the goal in temperance reform, and would recommend our people in those provinces where there is no immediate prospect of carrying and enforcing prohibition to unite with others in working toward this end, by: (a) The curtailment of the traffic by local veto, (b) the abolition of the bar-room and the public treating system associated therewith, and (c) the prohibition of the residue of the traffic, with this proviso, that where in cities or towns the said sale is demanded by a majority of the qualified municipal electors, such sale shall be conducted under such conditions as will eliminate the element of private gain."—Winnipeg Assembly, 1908.

Observe—(1) That in this resolution, and throughout this leaflet, by "bar-room" is meant all sale of liquor for consumption on the premises.

(2) That by "sale in shops" is meant all sale, so far as the Province can control it, for consumption off the premises.

(3) That by "prohibition" is meant prohibition of the traffic in intoxicating liquors for beverage purposes, so far as this can be done by the various Provincial Legislative Assemblies.

(4) That by "local veto" is meant prohibition within municipalities or districts by by-laws which they have been given the power by Legislative Assemblies to pass on the Local Option plan, or by the Scott Act, or other no-licence law.

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The Import of the Resolution.—It sets Prohibition clearly before the public as the goal in temperance reform, so far as the control of the traffic is concerned. Nothing short of this can satisfy.

It advises Provincial Prohibition as soon as public opinion in any Province is strong enough to compel the Legislature to enact such a law and provide for its effective enforcement.

Until public opinion is strong enough to make the enactment and enforcement of Prohibition possible, the Assembly advises patient, persistent effort by local veto campaigns as the most effective method of creating opinion favorable to Prohibition and of limiting the traffic to ever narrower bounds. In this way, in a comparatively short time, it will be confined to the large cities and a few other centres where special conditions exist.

The Assembly advises, the traffic having been sufficiently limited to make this possible, and yet not sufficiently to secure and enforce complete Provincial Prohibition, that by Legislative enactment:

(a) All bar-rooms be abolished where still remaining, putting an end to all drinking on the premises where sold, and the entire public treating system, which is admittedly responsible for a large proportion of the drinking now practised, and

(b) At the same time the licensed shops, wholesale and retail, be suppressed also, but that

(c) Cities and towns be allowed, by the local option method, the right, should a sufficient majority of the qualified resident municipal electors so declare, to have a limited number of shops authorized to sell liquor for consumption off the premises, provided the said sale is conducted "under such conditions as will eliminate the element of private gain."

Such by-laws would, of course, be in force only for a brief period—a year or two or three, as might be determined—unless re-submitted and carried again by the required majority.

To What Does This Commit the Church?

—Not to any form of public ownership or operation or control of intoxicating beverages as against Prohibition. It is a temporary expedient to meet a practical difficulty, namely, the making of prohibition effective in a large centre if the law is forced upon it by an outside vote, a majority of its own electors being opposed to such a measure. It commits the Church, therefore, simply to giving such centres, under certain restrictions and safeguards, the right of saying whether they will accept Prohibition or insist on having the sale of liquor in their midst. It does not concede to such centres the right of having liquor sold under license for private gain, under any circumstances, but only under such conditions as will eliminate private gain.

When such by-laws are submitted to a vote of the people, the Church is free to work and vote against the by-law and in favor of the general prohibitory law, and therefore at no stage in the process is the Church put in the position of favoring the traffic in intoxicants in any form.

Not the Gothenburg System.—Some temperance people have feared that this was a proposal to try the Gothenburg or Disinterested Company System of Sweden or Norway. No one who knows what that system is would entertain such a fear. The Swedish and Norwegian systems provide for bar-room sale. Under the Assembly's proposal there will be no bar-rooms. The Swedish and Norwegian system allows absolutely free sale of beer, ale, porter, wine, etc., and controls only distilled or strong liquors, and not all of these latter, as there are a number of privileged licenses beyond the control of the "Companies."

Not the South Carolina Dispensary System.—Theirs was a State-wide system substituted for Prohibition. The Assembly's is a temporary expedient in certain exceptional communities to prepare the way for complete Prohibition. Theirs made the salaries of vendors dependent on the amount of their sales, and hence

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FOR SALE—65 colonies of bees, standard-bred Carnio-Italians, and fixtures. This is a dead snap if sold at once. T. K. RALSTON, Box 208, Woodstock.

FOR SALE—First-class apiary of 120 colonies, with all supplies. Write for particulars to J. B. HALL, Box 595, Woodstock, Ont.

WANTED—Comb or Extracted Honey. State probable quantity, quality, how put up, etc. FOSTER & HOLTERMANN, Limited, Brantford, Ont.

FOR SALE—40 winter packing cases for holding two hives; also 24 double-walled, for single colonies, complete with frames; made of best pine; will sell less than cost of lumber. Comb Honey wanted. G. A. DEADMAN, Brussels, Ont.

WANTED—Ladies to do plain and light sewing at home, whole or spare time; good pay; work sent any distance, charges paid; send stamp for full particulars. NATIONAL MANUFACTURING COMPANY, Montreal.

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did not eliminate private gain at all. Their system was framed by the enemies of Prohibition, and therefore left full of loop-holes and weaknesses. The Assembly proposes that the temperance people themselves, with irresistible temperance sentiment behind them, the result of long years of thorough educational work, should frame and carefully safeguard the proposed legislation against such a possibility.

Can "Private Gain" be Eliminated?—There are those who think this would be difficult, if not impossible. It would doubtless not be easy. Nothing is easy in controlling the drink traffic. But it is possible. Salaries must be absolutely independent of sales. Vendors must be

put under heavy bonds. All sales, wholesale and retail, must be registered and open to inspection. The books must be officially audited. The entire business, as now, must be under espionage. The service of special detectives will then, as now, be necessary. Liquors must be frequently analysed. With these and other precautions there can be no doubt about the possibility of securing the elimination of private gain.

Will There be Danger of "Public Gain" Being Substituted?—Was not this the case in Sweden? Yes, it was so in Sweden, but not in Norway, and simply because in Sweden and not in Norway the profits went largely into the municipal treasury to reduce taxes. In Norway this has been avoided by making the profits go into the State treasury and prohibiting their application to the reduction of taxes, and using them for benevolent or non-tax-receiving objects. There can be no danger of "public gain" entrenching the traffic if proper safeguards against this are in the legislation and these will be easily obtained with strong, educated, public opinion behind the law, as the Assembly's plan ensures.

How Would the Business be Managed?—It might be managed (1) by the Government itself, (2) by each Municipality, (3) by a Provincial Commission, or (4) by disinterested companies. There will be a difference of opinion as to which will be preferred. The writer favors a Provincial Commission composed of men whose ability and integrity are above question, giving their services gratuitously as License Commissioners now do. Opponents of the Assembly's plan, ensuring, as it does, a strong public opinion behind such a law, the temperance people could be sure of getting the right sort of men appointed. The Commission would appoint the vendors and control the business in detail. Others would prefer that the Government, which is always directly responsible to the people, should manage it. Others think the "company" system the best. One might be best in one Province and another

another Province factory restriction provided in the statute is more important than the

Important End Plan.—(1) It recovers the serious, practical Prohibition effect force in a large measure as its citizens are aggrieved upon them

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Important Ends Secured by Such a Plan.—(1) It recognizes and provides for the serious, practical difficulty of making Prohibition effective when it goes into force in a large city, if the majority of its citizens are against the law and it is forced upon them by the rural vote.

(2) It will secure the largest possible measure of strict observance of the law.

(3) It precludes the possibility or re-
 sults to a minimum the danger of a re-
 action against a prohibitory law not en-
 forced and made effective. One of the
 most outstanding and uncompromising
 prohibition leaders in Canada said recent-
 ly in the hearing of the writer that "if
 he could by his vote bring Prohibition
 into force at once in Toronto, he would
 hesitate, and probably would not do it,
 in the present state of opinion, unless
 some such plan as that suggested by the
 Presbyterian General Assembly were
 adopted, lest the liquor men should suc-
 ceed in thoroughly discrediting Prohibi-
 tion, secure its repeal by a reaction of
 sentiment, and give the cause of Prohibi-
 tion a setback for a long period of years."
 Such a statement from such a source
 may well impress—profoundly impress—
 temperance reformers.

(4) It will eliminate "The Trade"
 in politics, or reduce its influence to
 the smallest dimensions. The chief source
 of the influence of the liquor traffic in
 politics is not its financial resources, but
 the army of men engaged in the retail
 trade throughout the country. Every bar-
 room is a political committee room, and
 every bar owner and bartender a political
 agent, usually unscrupulous and corrupt,
 exerting a powerful influence because able
 to control a considerable number of votes,
 and every one of them inspired by the
 motive of private gain, his craft and
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 cesses to exist with the abolition

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of bar-rooms and the elimination of pri-
 vate gain from the residual shops.

(5) There are large sections of the pub-
 lic not heretofore actively identified with
 temperance reform which will support
 such a policy and be a source of added
 strength to the temperance cause. These
 include a large number of our own Pres-
 byterian men, many Methodists, Baptists
 and Congregationalists, a still larger num-
 ber of Anglicans, a host of Roman Catho-
 lics, and the majority of the Organized
 Labor men. To unite in the temperance
 movement these hosts is surely worth
 while and warrants us in being confident
 of victory.

Supplementary Dominion Legislation.—
 In addition to the Provincial legislation
 outlined in this leaflet, it will be neces-
 sary to obtain legislation from the Do-
 minion Parliament affecting international
 and inter-provincial trade in intoxicating
 liquors and the manufacture of the same,
 so as to protect territory brought under
 Local Veto, the Scott Act, or Provincial
 Prohibition, against being supplied with

liquor from outside to such extent as to nullify the intention of the Provincial or local legislation. Only the Dominion Parliament has jurisdiction over the manufacture or importation of intoxicants, and it would seem not only fair and reasonable, but essential, that the Dominion should cooperate with the Provinces so as to give effect in this matter to the will of the people of the said Provinces or localities, as expressed in legislation up to the limit of their powers.

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They are bound to read something. They are bound to read trash unless you give them something better that is equally interesting. Try The Youth's Companion. There is plenty of adventure in the stories, and the heroes and heroines

are of the real kind, finding in the line of duty opportunity for courage and unselfishness. More than 250 such stories will be published in the 52 issues of the new volume for 1909. There will be fully as many articles, sketches and reminiscences to impart useful information in the most agreeable way, familiarizing The Companion's readers with the best that is known and thought in the world.

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You do not incur the slightest expense unless you and your friends see benefit and improvement. Your physician, if he is familiar with modern practice in the treatment of pulmonary tuberculosis, will endorse the Lung Bath and its use.

Remember it is not a medicine, but a natural method of invigorating and developing the lungs.

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This company is incorporated for \$150,000.00 and owns land in the very heart of the richest ore belt in Minnesota. Its purpose is to acquire and develop Iron Lands for profit.

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A short distance North of our property a prominent ore company has sunk a shaft and is now mining. In every direction drills have disclosed valuable finds of iron ore. Within 80 rods of our land

drills have blocked out forty million tons of iron ore. The above ore company referred to has offered to supply us with money and take half the profits. We prefer, however, to develop it ourselves and divide the profits among those who invest with us and help develop this valuable land. Consequently, we believe this will be an excellent opportunity for you to receive good dividends on your investment.

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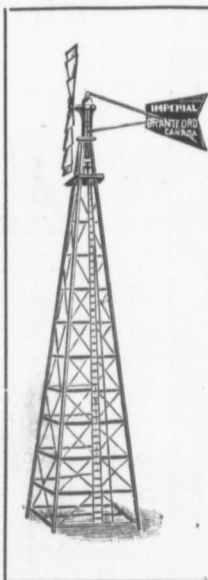
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