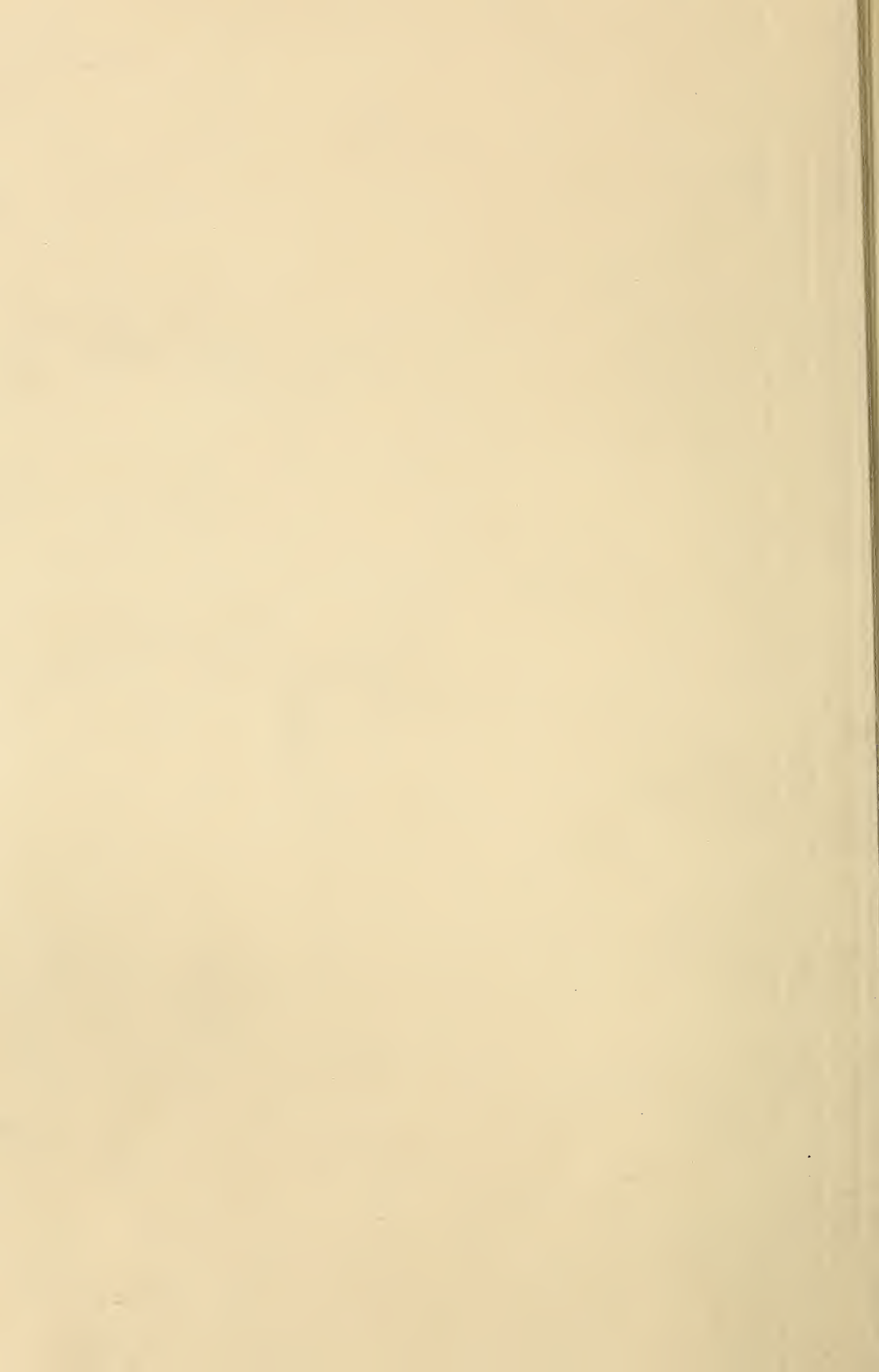


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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
\$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVIII.

OCT. 15, 1900.

No. 20.



J. M. CUTTS pinched the head off a queen, apparently because she flew when he tried to get her, p. 775. Cutting off a wing would have stopped her flying, without the loss of a queen.

IF YOU HAVE the exceedingly unaristocratic habit of sugaring your porridge, try a little honey on it instead of the sugar some morning. You will find it a great improvement on sugar.—Martha's Management, in *Chicago Record*.

YOU SAY, Mr. Editor, you would have broken up that nucleus that kept using up virgin queens, p. 762. Very likely that would have been wise, and I was urged to do so; but my Dutch was up, and I said that nucleus should raise a queen if it took all summer, and it did take all summer.

IT'S BEGGING the question for Chalon Fowls to assume that candied honey can not make a fine display as well as the clear liquid. It's all a matter of taste and association. Here are two displays in bottles—one clear as crystal, the other dark brown. If one is told that one is honey and the other soft soap, he admires the clear display. But if told the two are kerosene and maple syrup, which does he admire? But I'm willing to compromise with Bro. Fowls, and let him sell in liquid form if he'll let me sell in the candied state.

PROF. GILLETTE'S experiments showed that, with the best foundation, bees built comb as light as natural worker comb; also that natural worker comb was lighter than natural drone comb. Without foundation, bees build largely drone comb in sections. Taking these three facts together, it is hard to get away from the conclusion that, with best foundation, there is less gob than where all is entirely natural. [Just so; and Prof. Gillette's experiments coincide almost exactly with our own; and you will remember that we (Mr. Weed and I) advanced this proposition some two years ago.—Ed.]

MR. EDITOR, you call C. H. Pierce's plan of moving bees, p. 772, "a new plan," which is hardly correct, except the cellaring. The plan has been given before, and is all right. Somerford's nucleus plan is on the same principle. I've made fair success by simply moving bees in the evening and letting them stay shut up till they became very uneasy about getting out next morning. Mr. Pierce's cellaring is good for the wind-up. [Perhaps you are right; but I do not remember where a plan similar to Mr. Pierce's was described in GLEANINGS.—ED.]

A FOREIGNER once remarked to me what a strange thing it seemed to him to see this nation of free and independent people such abject slaves, bound hand and foot by the ties of political party, the most intelligent submitting to the lash of the bosses. But the bonds have been strained a little too tight, and are beginning to break, when a plain law like the canteen law is nullified. Thousands of men who may not speak out as plainly as A. I. Root, on page 779, will yet speak with some emphasis their disapproval at the ballot-box.

THE FOOLISH NOTION that bees can not sting one while he holds his breath has started the rounds again. The trouble is that almost any error will be copied; but when contradicted as an error, the papers that gave it currency will not take the trouble to give the contradiction. To this day one sees Chapman's honey-plant lauded in this or that paper; but the statement that it is of no practical value seldom follows in later issues. [The article on the Chapman honey-plant has been stricken from the latest edition of the A B C book, now in the press. What was said about the plant was all true, and the truth makes the readers anxious to try it in spite of the statement that its cultivation will not warrant the investment.—Ed.]

PROPOLIS may yet come to be in great demand, if a report in *Leipziger Bzig.* is to be trusted. A quantity of propolis was sent to the English army in South Africa, and wounds treated therewith healed promptly without suppuration, whereas the same kind of wounds were very troublesome previously, making many amputations necessary. When the supply of propolis was exhausted, the serious

character of the wounds returned. [Now look here, Mr. M. D. Why didn't you tell us what this p—, p—, pro—propolis is? I will stop right here and look at the dictionary.—There! I have just consulted the Standard, but I do not find the word. From what you say I should judge it was a preparation made from propolis.—ED.]

A QUEEN-CAGE as a glossometer may be all right in *your* hands, Mr. Editor, but something else might be better in the hands of us common bee-keepers. After the queen-cage has done its work, if I understand the matter rightly, the real measuring of the tongue has yet to be done with a micrometer. What is wanted is an instrument that will automatically register the length of tongue, with no care on the part of the bee-keeper but to give the bees the loaded feeder or glossometer. But nowadays I am more interested in measuring a colony by the number of pounds it stores. [But why, doctor, do you want the glossometer to be *automatic*? And, again, I do not see how you could possibly eliminate the one item of "care" on the part of the investigator, as you suggest.—ED.]

AN ITEM is going the rounds of foreign bee-journals to the effect that when bees are stupefied with ether their dispositions are so changed that colonies with laying workers immediately proceed to rear queen-cells from worker brood given them. But will not such colonies often rear proper queen-cells when they utterly refuse a queen? [Yes; but is it not possible that the fumes of ether or chloroform *might* have the effect of compelling a colony to accept a queen or some queen-cells which they had formerly refused? Either drug would leave a slight odor. In any case it would take the bees some time to get over their "drunk." While I do not believe it is a good idea to encourage drunkenness among human beings for the sake of rendering them more docile (for it works the other way), yet it *might* have a beneficial effect with a stubborn colony.—ED.]

MR. EDITOR, I am indebted to you for straightening me out when I was inclined to consider bacilli as animals instead of plants, and now you are misleading by speaking of "the eggs of the microbes." Quit that, and call the spores seeds and not eggs. [In speaking of "eggs" I used the term somewhat apologetically (as you will notice by referring again to the sentence), in order that the average reader might understand a little better the idea I was attempting to convey. One can see how an egg-shell might be thick enough to resist the effects of acids; but he would scarcely credit the notion that the covering of any seed would be equally acid-proof. A bacillus is a genus of bacteria, a form of microscopic vegetable growth that is exceedingly common. In some cases the bacteria cause fermentation, and in others decomposition. In most cases they are harmless; but in others they are exceedingly destructive and dangerous, as in the case of those causing consumption, diphtheria, and like diseases. There now, I didn't mean to offer instruction

to a physician, so I'll stop lest I put my foot in it.—ED.]

BEEES SEEM to have quite a habit of carrying wax from one place to another. Experiments reported in *Le Rucher Belge* used foundations of different colors. In one hive a frame of green foundation was put, and many cells of the other combs were sealed green. That's how dark sections come in this locality. They are sealed white, and afterward black wax from the brood-combs is plastered over them. [Bees have a way of appropriating wax wherever it sticks out in minute hunks, so that they can easily carry it to some place where it will be of some use in the general economy of the hive. It is owing to this fact that side storing was generally abandoned years ago. That is to say, there was a time (you remember the time, doctor, when we were boys) when wide frames containing sections were put in the brood-nest; but, if I remember correctly, so many of those sections were discolored by reason of their proximity to dark or black old combs, that bee-keepers soon found the necessity of having all sections filled in the upper story; and now it has come to pass that top storing is used almost exclusively all the world round.—ED.]

MY TOP-BARS are $1\frac{1}{2}$ wide, and the space between two top-bars is $\frac{1}{4}$ inch. I've been leaving a space of $\frac{1}{4}$ inch between the outside top-bar and the side of the hive. But that leaves only $\frac{3}{8}$ inch space between the brood-comb and the side of the hive, and the space between two brood-combs (unless the combs are very old) is $\frac{1}{2}$ inch. If a half-inch space is needed between combs to hold enough bees to keep the brood warm, the same or greater space is needed on the outside. So there should be a space of at least $\frac{3}{8}$ inch between top-bar and wall of hive. But when honey is sealed in brood-combs, there's only $\frac{1}{4}$ inch space between them; so if the outside comb is to be used for honey, the top-bar should be $\frac{1}{4}$ inch from wall. Shall I space to favor honey or brood in the outside comb? [I'd cater to convenience. If the hives are left outdoors all the year round, they should be double-walled; and in such hives I would have bee-spaces approximate $\frac{1}{4}$ inch. If the hives are single-walled when carried into the cellar or other repository, there will be not much more need of the extra $\frac{1}{8}$ space than there would be if the hive were double-walled. Many facts from continuous observation are forcing us to believe for Medina, at least, that a double-walled hive is not only a good thing during winter, but a good thing all summer. It is a protection against the great heat occasioned by the direct rays of the sun; and during the spring, early summer, and late fall months the double walls afford a most decidedly beneficial protection. I am beginning to believe that the time will come when double hives will be found to be more economical in the end than those of single-thickness lumber. Our Mr. Wardell has found it to be an advantage to leave cushions on top of the supers or brood-nests all summer. This is no new idea. It has been advanced by many others. Now

then, if the cluster is protected, is not the bee-space conundrum solved?—ED.]



Now in clouds the leaves are falling
Silently and slow—
Sitting types of human frailty
And of honors here below.

AMERICAN BEE JOURNAL.

The prominent feature of the Old Reliable just now is the report of the late Chicago convention. This is doubtless the best report of the best convention the bee-keepers of this country ever had. This report alone is worth all the paper costs for a year.

They've been having grasshoppers in Utah in such numbers as make the plague of hoppers in Egypt easy to be believed. Mr. Love-sey says:

So far as looks were concerned, you couldn't tell an alfalfa field from a barnyard, or an apple-tree from a plum-tree; and some days, just before sundown, the grasshoppers would gather up to roost on the beehives so thick that you could scarcely tell a white hive from a black one; and while they bit and killed a few bees, they did leave the hives; but I felt mean enough to wish them all in the lake or some other good place.

There is another old adage, that things are never so bad but they might be worse, so one morning I went out to the bees, and I don't know which feeling predominated, discouragement or disgust; and what should I find but those blessed gulls from off the islands in the Salt Lake, devouring the "hoppers" by the wholesale?

Mr. L. Kreuzinger, a prominent bee-keeper living near Chicago, gave a honey harvest on the 15th of September. About 200 people from the city took part. Among the visitors were Mr. Toshiro Fujita, consul of the Japanese empire, with his chancellor, Mr. T. Funatsu; Mr. Baron A. A. von Schlippenbach, Imperial Russian consul; Dr. Walther Weber, consul of the Imperial German Government; and about 12 teachers from the public schools. Such things can not fail to do much good in introducing progressive apiculture into Europe, and popularizing it here at home.

Policeman Smith found a honey-bee's storehouse in the middle of an old tree that blew down in Rogers Park, Chicago. His long absence caused a search to be made for him, when he was found seated near the fallen tree, lading honey from the stump, and putting it into his mouth. Policemen are sometimes found in worse business than that.

Concerning the right to a certain place to keep bees, as against the right of any other man, Dr. Miller says: "A man who has for 25 years kept in a given locality an apiary sufficiently large to stock the territory, has a better right to that territory than any new comer." He well says, that is the position of the entire fraternity.

There are very few, I hope, who will not enter fully into the feeling that animated Mr. C. P. Dadant when he again stepped foot on the shores of his native land, France, and once more entered the city he once called home. His own words are interesting:

It is now 37 years since we landed in America, and we are more attached to our adopted country than to the land of our birth; but a visit to the scenes of one's childhood has an irresistible attraction. I went to see the city where I was born—Langres—on top of a high cliff, a walled fortress, such as does not exist in America; and when I reached it I found myself much in the position of Rip Van Winkle after his 20 years' sleep, with the difference that the time was 37 years, and that I had been wideawake a good portion of that time. But, one generation has passed, and I find the sons where the fathers used to be. Friends of 25 are now 62. It is old age instead of youth.

BRITISH BEE JOURNAL.

A correspondent inquires as to the nature of propolis, the substance referred to by Dr. Miller in Straws. The editor says:

We are hoping to have some further information regarding the substance referred to and so named by its "inventor" from our esteemed contributor, Mr. R. Hamlyn-Harris. Meantime we are not very clear as regards the analogy between "propolis" and the propolis of the bee-hive.

In giving an account of apiarian exhibits, Mr. E. H. Taylor says the hives exhibited by The A. I. Root Co. are not, in his opinion, adapted to the cold winters of England. In view of the perfect success attained here in wintering, and where, too, we have arctic winters for four months, the remark seems like a joke, especially as the climate of England is what we call moderate at all times. Mr. Taylor says Great Britain was about the only nation not represented at Paris among the bee-keepers. The exhibition as a whole seems to have been a great success. Mr. Taylor pays a high tribute to the thoroughness with which the bee-keepers of the continent of Europe study bee-keeping.



IMPROVEMENT OF RED CLOVER AND BEES.

What has been Done by Seedsmen and Fruit-growers in the Development of New Varieties; the Time Factor; why Shorter Corolla-tubes are More with-
in our Reach than
Longer Tongues.

BY S. P. CULLEY.

Red clover with short corolla-tubes, bees with very long tongues, and bees improved as to industry, energy, capping, non-swarmling, etc., are things desirable of attainment; but how long will it take to accomplish given results? is an important question.

"Uncle Lisha" writes many very plausible and interesting things about what has been done by selection; but he has not yet discuss-

ed the time factor. He speaks of pigeon-skulls, page 615, and says there is a variation of nearly an inch. True; but to get that variation has required hundreds of years of selection. See?

Meditating on the time factor in the red-clover problem, I decided to write to Mr. Burpee, one of America's leading seedsmen. I asked him how long it took to produce Burpee's bush lima bean from the pole lima, etc. Mr. Earl replied to my questions as follows:

Mr. Palmer, with whom the Burpee's bush lima bean originated, worked on the variety for a period of about four years. We do not know from whom you could obtain a strain of red clover with a short corolla, and think that this could be procured only by means of very constant and careful selection.

W. ATLEE BURPEE & Co.
Per EARL.

Now, it appeared to me when I wrote, that, to change a vegetable so "set" in its ways as the pole lima bean, from the vine to the bush form, was a greater task by far than to shorten the tubes of red clover. I was much surprised, therefore, that the change had been effected in the brief interval of four years. As red clover is a biennial, while the lima bean is an annual, it would be proper, perhaps, to allow eight years equal to four. So, according to this suggestion, we should be able to get short-tubed red clover in eight or ten years. This would seem to cross Mr. Hasty's idea, page 681, that "five years or ten will be only a circumstance in it;" but in the same article Mr. Hasty gives it away that he actually succeeded in finding a red clover that "seemed to be pretty much all one could ask, gained at one leap." The trouble was, his "prize" proved to be a shy seeder. In other words, he succeeded, except in getting seed, and succeeded in "one leap." Mayhap the next diamond will not have this "lamentable shortcoming." I wish he would "try those three seeds for all they are worth." I wish he would cross the flowers of one plant with some prolific-seeding long-tubed plant. The result of such a cross *might be* a short-tubed clover that would seed freely.

By the way, this is a work for the specialist. Working with fruits, there is Mr. Burbank, "the wizard of horticulture." He plants 50,000,000 plum seeds, crosses and re-crosses "every-which-a-way," gets 20,000,000 "new creations" in plum varieties, a few of which prove veritable prizes, worth \$3000 each. Then there is Mr. Burpee, or the men who sell him their results. Look at the wonders they perform in the vegetable kingdom. Now, if we bee-keepers properly present our case so as to convince some of these experts and specialists that there's money in producing the red clover of the future, we shall soon have what we want. Who will furnish a basis to estimate the cash value to the originator of red clover with a short corolla?

"Improvement is the order of the age." We feel sure it will be easier to originate a red clover with short tubes than to lengthen bees' tongues to reach the nectar in our present red clover. We base this on the idea that at present red-clover tubes are more than twice as deep as a bee's tongue is long. To double the

length of our bees' tongues will require about a century, if it can be done at all.

Would the farmers sow short-flowered red clover after it is originated? At present the first crop is cut for hay, as it is practically seedless. The short-tubed variety would bear seed the first crop as well as the second. Clover hay with seed in it is not desirable, as it causes horses to slobber, and is otherwise an unwholesome feed for stock, especially horses. Would our proposed new clover be tabooed on this account, or could that be overcome by earlier cutting?

We should spare no pains to improve our bees. Securing longer tongues is not all of bee improvement by far. The difference between black bees and Italians does not arise from differences in tongue-lengths so much as a difference in energy. This may be proven during any strong white-clover or basswood flow. Given a colony of blacks and one of Italians of equal strength during a flow easily accessible to both, and the Italians, by reason of superior energy and industry, presumably, will far outstrip the blacks.

It seems a pity that the Cyprian energy should be lost. Extensive experiments should be made with Cyprian crosses. If we could get a strain of bees combining the good qualities of Italians and Cyprians, especially retaining the remarkable energy of the Cyprians, such a strain might form the working basis for "the coming bee."

Higginsville, Mo., Sept. 10.

Later.—Since the foregoing was written we have received a letter from Mr. H. H. Hyde, who seems to have been conducting some experiments in crossing the races, with satisfactory and perhaps substantial results. We quote from his letter:

We have found that the very best bee for business was a cross between Holy Lands and Italians. Queens from pure Holy Land mothers mated to golden drones are our preference. . . . This is a superior cross. We will stake our reputation on them as being the finest comb-builders, the finest bees to build up in the spring, etc., in existence.

Now, this, in my opinion, is work in the right direction to accomplish results in bee improvement. If cross-pollination, or crossing, accomplishes such wonderful results in the vegetable kingdom, why may not crossing the races of bees prove an effective means of bee improvement?

What is wanted (in addition to "selection") is to proceed in accordance with established laws and principles of scientific breeding till we get combined the energy and industry of the Cyprians, the honey-gathering ability of the Cyprians and Italians, and the prolificness of the Holy Lands, with the gentleness of the Italians, the beauty of the goldens—till we get these and perhaps other good qualities combined and blended into an *established* race. This may be done point by point; slowly but surely it may be done, not all at a bound. When done we shall have the *Apis boom-lifica perfecto-dorsata* and no mistake, which may be called by a shorter name to be selected later.

It looks as if we should need some man on "desert island" to do the *establishing*, else

we shall keep on getting more mixtures. You are just right, Mr. Editor, in wanting contributions from men who have "done things" in improving and changing other animals. Such information will be of great value to would-be bee-improvers, and enable them to work intelligently.

[Our friend Mr. Culley has perhaps, possibly, hit upon the proper solution of the problem; namely, that we should engage some seed-grower to perform what may be impossible to those of us who have had little or no experience in this line. It would then remain for us to put up a prize for the one who will produce a red clover having corolla-tubes with a quarter-inch-depth hole, say of the present red clovers. The A. I. Root Co. will give a substantial reward to any seedsman or any one else who will produce seed from which the short-tubed clovers can be grown, and which will not backslide into the common species, and, moreover, will guarantee an almost unlimited market for the seed of such clover at good prices.

But it was Dr. Miller, or at least some one, who lately spoke of the fact that, even if we did get one variety of short-tubed clover, our bees would go right in and mingle the pollen of the red and short-tubed varieties, with the result that the next crop of seed would grow a long-tubed clover. If we grow the one variety our neighbors would be almost sure to grow the other. Here is a little mountain in the way. If one were to attempt to grow short-tubed clovers he would have to get all his neighbors to raise the same varieties, and here again we might encounter the difficulty that we have already experienced in regard to alsike.

I am not sure after all but the problem would be easier solved by stretching the tongues of your bees.—ED.]

SELLING AND BOTTLING HONEY.

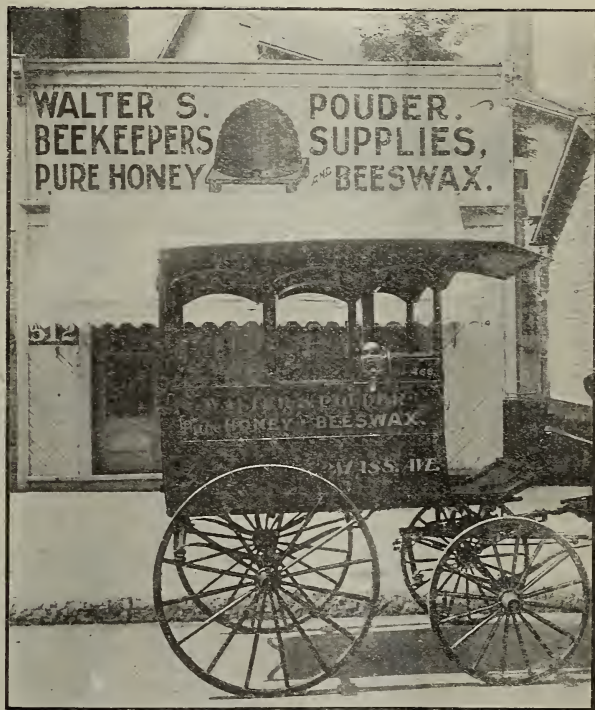
A Few Valuable Hints very Tersely Set Forth.

BY WALTER S. POWDER.

A producer can dispose of a good portion of his honey crop to friends and acquaintances without the least trouble; but when it comes to selling to strangers the trouble begins. A druggist looked at my sample jar of extracted honey, handed it back with the remark, "I can make it just like that; but if you will color it a little more it will appear more like old-fashioned honey." His advice went in one ear and out of the other; but Mr. Druggist has since become a good customer. A grocer

handed back my sample jar with the remark, "We do not handle that adulterated stuff." I am always pleased to hear a grocer say that he does not handle adulterated goods, and I made this man a present of my sample. He is now a good reliable customer. There are times when one feels inclined to walk out and slam the door; but if you do, you were not cut out for a honey-salesman.

If there is a secret in building up and holding a trade in extracted honey it is in putting up only one grade of best quality of honey. The masses think that all honey should taste alike; and if they get a jar of clover honey, and next time get a jar of basswood honey,



they will suspect that something is wrong. When one is constantly having arrivals of different lots of honey, this may seem difficult. I overcome this by using a tank holding 1000 lbs., and this tank is filled by emptying, alternately, 60-pound cans of clover, wild-raspberry, and basswood honey. (I hope the day of putting honey in barrels is past.) From this tank I fill my jars, which are then placed in a hot-water bath, and heated to about 190. Corks are sunk about $\frac{1}{16}$ inch, and half a teaspoonful of hot wax on the corks seals them so that they are safe from granulation for many months. A tinfoil cap and a neat label, and they are ready to deliver.

I have never tried house-to-house soliciting, my trade being principally in the wholesale way; and yet quite a retail trade has been established at my storeroom. The big syndicate stores have taught the people to want al-

most every thing delivered.- For this I use a light spring wagon, which has proved to be a great convenience, and the best local advertiser that I have ever found.

Indianapolis, Ind., Sept. 5.

[Your wagon is almost identically the same as that used by W. A. Selser, the honey-man of Philadelphia. There is no doubt that an attractive wagon as well as attractive goods is half the battle.

In bottling the honey I note that you say that the jars are subjected to a temperature of 190. If the honey also in them is brought to that temperature is not this degree a little higher than need be? 180 is generally the limit set for liquefying or for heating ordinary extracted honey. It always seems to me that, in heating higher than this, its delicate flavor is impaired slightly. The higher the temperature, the greater the impairment of the flavor. A domestic, a few days since, in our house, heated some very fine honey to the boiling-point. She had never been instructed in the matter; but when the same was placed on the table it was several shades darker in color, and a good many degrees poorer in flavor. I have noticed this many times before, when honey is heated to only 180 degrees it is very difficult to detect any loss of flavor, and the average consumer would probably not notice it at all.

This question of bottling honey is not so very well understood by the general bee-keeping public, and I would be willing to pay \$10.00 for the best article on this subject, and \$5.00 for the second best. Perhaps our friend Pouder will essay to go into the subject a little more thoroughly. If so, will he explain why he puts the jars into a water bath heated to 190? Why not heat the honey to that temperature, and then put it into the jars cold? There must be some good reason for the course, and I should like to have him tell us more about it.

From some things I have seen and picked up here and there I have ascertained it is very important to have the corks sealed with paraffine or beeswax. In some cases the corks are dipped into the hot waxes before they are pushed into the bottle. Some bottlers are so particular that they will not only dip the corks and wax the tops, but cover them with tinfoil. The latter adds greatly to the appearance of the package, and at the same time makes a more perfect sealing.—ED.]

FEEDING BEES.

Transporting Syrup to Out-apiaries, and Feeding the Same to the Bees; a Practical Method.

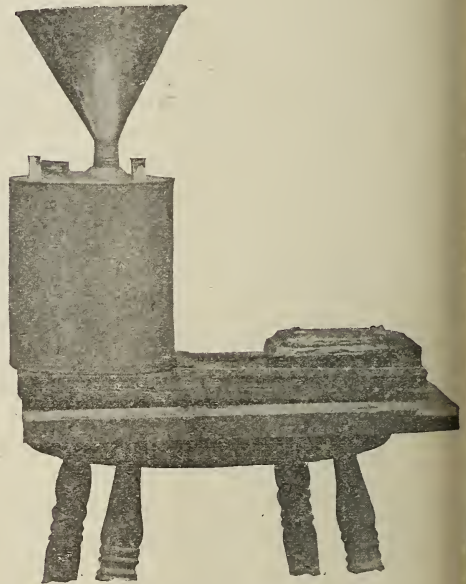
BY J. E. CRANE.

The season of 1899 proved to be the worst for the bee-keepers of Western Vermont for nearly forty years. Thirty-four years ago there was, perhaps, not much more honey, but there were but few bees kept at that time, and the results were not so marked. In 1899, in the towns bordering on Lake Champlain very

few colonies stored any surplus, and scarcely one in a hundred gathered enough to winter on. The great question with bee-keepers was not, "Which is better, a tall or a square section?" or "What is the most desirable super or hive?" but "What is the best method of getting bees in shape for winter?" As feeding seemed to be one of the most important considerations, a few thoughts on the subject may not come amiss for the benefit of bee-keepers in other parts of the country.

As we usually have little honey in this section after July, most bee-keepers have need to feed more or less every year; so we were not altogether unprepared for the past year's experience. Indeed, I have all the necessary implements for feeding constantly on hand; and as we are all apt to think our method the best I thought a short description might not come amiss.

If I were beginning new I might commence with the Miller feeder; but as I have enough tin feeders already on hand I doubt if it would pay to change. Besides, there are some advantages that tin feeders have over the wooden ones, I think, as they are, it seems to me, lighter for their capacity, and more convenient to transport from one yard to another. Besides, when filled and inverted over the frames the feed is nearer the combs than in any style of wooden feeder, which seems important in cool weather in autumn.



CRANE'S FEEDER.

The feeder I use is a modification of the old pepper-box invention, and of two sizes — one holding 9 lbs., and the other 6. The illustrations give a very good idea of them. It is a simple tin can with small holes punched with an awl in one end, with a screw cap on the same end for filling, and two short legs of tin to come as high as the screw cap for the can

to stand on when inverted over the bees or brood-chamber.

"But, how do you tell when they are full?" some one asks.

Just this way: Place them on a scale, and when full the scale comes down—simplest thing in the world!

I melt my sugar on a stove in my honey-room, adding 1 lb. of water to every 2 lbs. of sugar. To prevent granulating I use or add liquid honey, if I have it to spare, something after Doolittle's formula; but last season we did not have it, and I did as some of our best bee-keepers here in Vermont have been doing for some time—I used cider vinegar instead. The rule is, one tablespoonful of vinegar to each 10 lbs. of sugar. I found that half this amount, if the vinegar was sharp, answered very well. While it changes the flavor of the syrup somewhat, it does not taste perceptibly acid, and the bees seem to like it quite as well—I am not sure but better.

I usually melt up about $2\frac{1}{2}$ barrels of sugar in the forenoon, pouring it, as fast as made, into a galvanized-iron tank holding about 800 lbs. This tank is rather flat, or drum-shaped; and, while only about 2 feet high, it extends nearly across my wagon-box, and rests on a wooden bottom made of boards, and cleated at the ends, so that, by prying up the end of the bottom and putting a roller under it, I can draw it to the rear end of my wagon-box to draw off the syrup. Of course, there is a honey-gate near the bottom of this tank, toward the rear end, for this purpose. On top of the can, near one edge, is a screw cap for filling, and in the center of the top is a cone-shaped tube four or five inches high, with screw cap fitted for the escape of steam when filling, and also when moving to outyards if necessary. If such a tank is full, not much steam seems to generate; but if only partly filled, the motion of the syrup generates a good deal of steam and causes strong pressure; and if the can is not pretty strong, or if there is the smallest leak, a part of its contents is liable to be on the outside when it reaches its destination.

I formerly used a pair of iron scales; but as they were heavy and inconvenient to transport to outyards I have made one or two of wood that work very well, and this is the way:

Take a piece of wood, say 8 or 10 inches wide by 15 or 18 long. About 5 or 6 inches from one end make a saw-kerf across the board $\frac{1}{4}$ or $\frac{3}{8}$ deep. In this, place a piece of hoop iron firmly so the edge of the iron will come $\frac{1}{2}$ inch above the face of the board. Now take another board, 6 inches wide, and as long as the first, and 6 inches from one end make a V-shaped groove across it to rest in the upper edge of the hoop iron. Now nail a cleat (it may be thin and narrow) to keep your can in place, and another cleat to keep your weight in its place when you have found by testing where it is. For this weight I use an old flat-iron that has lost its handle; but any thing else can be used as well. Thus you have a pair of scales that will work very well, at a cost not to exceed ten cents, like one on which I have weighed a great many tons of syrup. I build a platform at the rear of my wagon to

set my scales on, with one man to unscrew the caps and hand the feeders and take them away, while another, with his hand on the gate of the tank, draws off the syrup. In this way 1000 lbs. can be drawn off in an hour's time, and in another hour distributed to the hives that need it. As the feeders are drawn off they are usually placed in a large box to keep them warm; for I like to feed the syrup warm, as it quickly arouses the bees and facilitates removing it to their combs.

In removing the filled feeders to the hives I use what I call, for the want of a better name, "carriers," which consist of a simple board, say 6 inches wide by 2 feet long, with a handle made of two half-inch strips nailed on each side of the board, and to the end of a cross-piece at the top. It is placed at the middle, of course, to balance the load. A man can



walk off with two such, thus carrying 70 lbs. or more at once. The illustrations show both the carrier and scales as well as the feeders. The one on the scales has a funnel in, ready for filling.

As I have already stated, I use two sizes of feeders—one holding 6 lbs., and the other 9. In feeding I can use one size or the other as I need. For instance, if I want but 6 lbs., give one small feeder; if 9 lbs., one large feeder; if 12, two small ones; and if 15 lbs., one large and one small six-pounder, and so on. By this method of feeding, two men or one man and a boy and a horse can feed 800 lbs. of syrup a day to a yard of bees many miles from home.

I usually find most of my feeders empty in 24 hours, so they can be used day after day, over and over again, till the close of the season. I have fed some colonies the past year over 30 lbs. at a feed, to find nearly or quite all gone the next afternoon.

Middlebury, Vt.

[You have your method of feeding elaborated into a system that certainly economizes labor. I have been wondering why you used the flat or shallow storage-can for transporting the syrup by means of the wagon. A tall round can would be cheaper to make. You doubtless have a reason, and we should like to have it.]

If you use 1 lb. of water and 1 lb. of sugar you will have a thinner syrup to start with, of course; but it will be much more thoroughly ripened by the bees, and make a much better feed for them, because the bees, in the language of the chemist, "invert" it or make of it a substance having some of the characteristics of honey, but not the same article; but they will not invert one-to-two syrup. By using the proportions half and half it is not necessary to use acid, honey, or any thing else to prevent granulation. We have for several years back used such thin syrup, and now would use no other. All that is necessary is to pour the requisite quantities of each into the extractor-can and turn the reel until it is thoroughly mixed. This can be done at the outyards, thus saving the carrying of water. We find that we get better results from colonies fed half and half than when fed one part of water and two of sugar.

If you, friend Crane, will try it next year, I feel confident that you will ever afterward use the half-and-half proportion.

Formerly, when we fed 2 lbs. of sugar to 1 lb. of water, we had more or less granulating in the combs. The granules would form, and the bees would carry them out and drop them at the entrance. This is now all done away with; and, besides, the labor of making is very greatly reduced.—ED]

BEES FROM TEXAS TO CUBA.

The Success of the Venture; a few Plain but Interesting Facts Concerning Bee-keeping in Cuba; Bee-diseases and other Troubles.

BY F. H. SOMERFORD.

Concluded.

In the afternoon the city of Havana stood out before us, and we were soon drawing down on Morro Castle; and glad I was, having spent four days and a half in this miserable old stock-boat with the bellowing of crippled bulls, braying of kicking jacks, and snorting of mustang ponies, and the desperate hum of smothering bees, that did no harm whatever to their other wild companions.

The discharging of the stock was begun, and continued till late in the night, and resumed early next morning, till by noon nothing remained aboard except the bees, which were purposely left till the last. A barge of cattle was tugged away. This is a miserable plan of discharging a cargo; but steamers here must anchor out in the channel, and unload by piecemeal. From the decks of the steamer to the floor of the barge, which is no more than two or three feet above water, is a terrible descent for stock that have endured so much hardship. At first it was only about six feet, and the stock were driven down the ill-made chutes, the weak ones rolling head over heels, or any old way, and the steamer gradually rising till it was 12 feet above the

barge, giving the poor weak beasts a terrible descent; but such little things are unnoticed here, where cruelty to both man and beast has been the rule of the departing power.

By afternoon all was ready, and bees were handed down a step-ladder of human hands to the barge, soon tugged away, and I bade a hearty farewell to the ship. Arriving at the wharf, the bees were soon placed thereon amid a crowd of open-mouthed wonderers; large mule-carts were near by, waiting to take the bees away. They were soon loaded on, fifty hives to a cart, and rolled away to the stables of cart-men to start on their twenty-mile journey out to this place some time after midnight.



The evening fast drawing to a close, stopping at a hotel I was soon seated at a table well laden with Spanish "municiones de la boca." The seasoning was rather strange to me; but, not having been too well fed on the boat, I managed to take care of a little.

Rising early for the daylight train out to this place (Bejucal) I soon found myself surrounded by some pretty country, palms everywhere to be seen giving an ancient charm to every thing.

Arriving here I was soon busy searching for a desirable place for my bees. Going back a mile from town on the graded road from Havana I found where I could get a small place of shaded ground, an acre or less, for \$100 a year, which seemed rather high to me. Looking around for two hours I found a tolerably good place a quarter of a mile back from the highway, where I could get a piece of ground with some shade, 70 feet long by 30 wide, for two ounces of Spanish gold per year. To accomplish this, or any thing else here, one has to have an interpreter if unfamiliar with the Spanish, as I was. Going back to the road I waited for the carts with bees, which came a little later. Directing them to the orchard I soon had the hives placed in rows, but noted, in handling them, that many seemed to be terribly calm within. Later on, after opening them up I saw that, out of the 200 colonies, I had only 76 left. The empty combs were filled with web-worms before I could get the bees straightened, and a great many were ruined. They kept me busy for two days hiving them, caging their queens, etc., as they did nothing but swarm out and ball queens for that period of time. After this they went to work, it being the 8th of October, and some early flowerers in bloom. On looking around over the

country I found 600 or more colonies of Cuban bees within a league of me, in four different localities. Inquiring around I learned that bees sold here from three to five dollars per gum. I got every thing ready, and bought 50 colonies, transferring them. I soon had my apiary increased to 125 colonies, which now kept me tolerably busy, it taking much more work here for bees than in Texas, owing to the fact that web-worms thrive for twelve months in the year. Ants crawl unceasingly, which are more abundant here than anywhere I've ever been. There are three small varieties that are especially fond of hives, which makes Cuba all but a paradise, together with three varieties of web-worms and three kinds of foul brood or brood disease (I say three kinds, because I've seen these; some of my friends, American bee-keepers, say there are more than three classes); but I've seen brood affected thus: The larva turns black on the head, and slowly dies at any stage of development, but most frequently just before being ready to cap, but often younger; and, again, after being capped, and nearly ready to hatch, if the disease overtakes a bee at this stage it simply dries out, remaining in perfect form, dry and hard. If it dies in the larval stage it sinks down, a watery grayish-white mass, always remaining watery for some time, then drying to a hard cake in the bottom of the cell, but never becoming ropy. The other kind that kills the brood in nearly the same manner becomes more of a solid color, and, when broken by touching with a stick, forms in many little ropes clinging to the stick, and stretches as the stick is withdrawn. In the third variety the brood becomes a powder, a shade darker than yellow ocher. The bees soon drag it all over a comb, and all is soon infected.

The first-mentioned disease is in every apiary and every log-hive ranch in this part of Cuba, and, I believe, in the entire island. Colonies large and strong can usually overcome this disease; but when weak it makes rapid strides toward their destruction.

The second variety is not scattered everywhere now, as I am informed it was before the war, it having taken hold and destroyed one by one many of the best ranches in Havana Province, which fact is evidenced by the pile of empty hives in the Agricultural and Mechanical College grounds, at the fine Casanova ranch at Jaruco, a ranch at Guanabacoa, and several others, and is now doing its work with some other ranches that I'll not here mention.

The third disease, as far as I've learned, seems to be a new comer. I was in an apiary some 20 miles from my location some three weeks ago, where the proprietor had a great tank of combs in soak to render into wax later, they being well filled with this powdered larva. He showed me other hives he was watching and experimenting on that were just becoming infected. Of all the diseases he had seen, this destroyed quickest.

Returning to the subject, my bees produced, after buying the 50, which increased my ranch to 125 hives, 950 gallons of honey, or an average of 76 lbs. per hive. I did not extract from

all the hives, though, for some never got ready in time. Thus you see my results were no better than I obtained in Texas, where I could produce honey at a great deal less cost than the same amount produced here. I find it here as in the States—one always hears of some one else doing great things. This hearsay plan kept my ambition up for some time in Texas, but I am afraid it won't do so well here, because I hear of others doing much worse than has been my lot. I increased in spring up to 250, of which I have lost 30, and have been feeding too. I have fed nearly 150 gallons of honey. This will carry my bees another week, then I will buy sugar to feed on for the next month and a half, or until the 15th of September. I am told that by that time the bees can obtain their own living.

I became discouraged day before yesterday, having a nice little hive abscond. I mounted my wheel, and went down to where a friend has an apiary of 350 hives, who was feeding sugar when I was last there, some five weeks ago. I found him still at the same trade, feeding three sacks of sugar a week. We swapped troubles, which is always some satisfaction, it being a long-established truth that "misery loves company." While with my friend he had one hive leave. Returning



home in the evening to feed my bees I found that I had lost one hive that day also. I have decided that other things are to be found in Cuba besides "milk and honey."

Feeling it my duty to give your readers my entire experience here, and finding, after reading my article over, that I had failed to tell of the cyclone, I therefore beg to add the following:

This being the rainy season, we've had a shower, a rain, or a flood, almost every day for two months, the rain coming from every direction, and under various conditions, often preceded by terrible winds, one of which struck my place some five weeks ago, coming down the valley from above, blowing one of my sheds to pieces, under which I have my bees, overturning several hives, besides blowing one end of my house down, and blowing down a dozen or two banana-trees. I was told

by the Cubans, though, that another such storm might not strike this place again for twenty years. With this sickly encouragement, and a hope for better times, I procured help, and at some little cost and work I had things right again in a few days, losing only two hives entirely from the blow, besides a few others half drowned by the rain that followed the storm.

Bejucal, Aug. 1.

[It would pay any of our readers who may be contemplating going to Cuba for the purpose of carrying on bee-keeping to read this article very carefully. While, doubtless, some have gone there and "struck it rich," I know of a number who have achieved any thing but success.

We have heard from other sources of the prevalence of bee-diseases in Cuba; and I hope that some sort of law can be passed soon by which every one who keeps bees shall be compelled to treat or destroy affected colonies.

The first disease Mr. Somerford speaks of, and which he says is in every apiary on the island, I should judge was pickled brood. The second one, from the description given, I should say was foul brood, and the third one is probably black brood. While the description does not tally exactly, for the last named as we find it in New York, yet it does in some respects; and from the fact that it is a newcomer it would appear that it is the regular black brood. Harry Howe says he has found this disease in Cuba as well as foul brood; and as he is somewhat of a microscopist as well as a bacteriologist he is in a position to know.—ED.]

NOTES OF TRAVEL IN EUROPE.

Continued from Last Issue.

BY J. T. CALVERT.

We spent the most delightful week of all our trip in Switzerland in sight of its snow-capped mountains and its superb lakes whose waters are not like any other I have seen in all my travels. The ice of the glaciers, when seen in the mass from beneath, is of a beautiful sea-green color, and all the Swiss lakes partake of this same distinctive color. There are a variety of shades of green, from the dark-green firs on the mountain-sides, the lighter green of the grass, to the bright-green cast of the charming lakes. The snowy peaks, set between the nearer peaks covered with green, make a charming picture that you never weary of looking at.

Leaving Geneva early in the morning we arrived in Paris in the evening, after a long day's ride across a diversified country. Much of the country passed through in France was rather poor and stony, and used as grazing land. We passed rich farming land bearing heavy crops of wheat and oats and numerous other farm crops. In all our travels we did not see a field of corn, which seems to be truly an American crop. More farm machinery was seen in France than in any section we had

gone through yet; but it was not until I reached Scotland that I found the most advanced farming seen anywhere abroad. Through some sections of England some of the modern binders may be seen; but in Scotland they are quite common. These machines in use over there are mostly of American manufacture. There are home-made reproductions which are preferred by some because of the greater ease of securing repairs, or a patriotic desire to encourage home industry. I found, as a rule, this latter feeling was not strong enough to resist the temptation continually presented, of being able to secure for less money better goods of American make. There is no question but the United States is rapidly finding her way into the world's markets, and she will find these markets sure and secure in proportion as she makes an honest effort to supply goods of intrinsic worth, and adapted to the changed conditions found abroad. Some of the first harvesting-machines sent over were entirely too light, and would not stand the strain in the heavier crops on the rich land of England and Scotland. Why, I was told that in the region of Dundee, Scotland, five to eight stone per acre of wheat is considered an average crop. There being 8 bushels to a stone, that means 40 to 60 bushels per acre. In our section of Ohio the farmers consider they are doing very well with half that yield. In what are known as the fen lands in Central England, there are large tracts that are lower than the level of the sea, and are reclaimed by confining the rivers in dykes or embankments, draining the land and pumping the water from the drains into the rivers. Flood-gates are provided at the mouth of the rivers, which allow the waters to flow out at low tide; and when the tide rises they close, thus preventing the sea from flowing in. These fen lands grow very heavy crops of all kinds, and enable the farmers to pay a tax of \$1.00 an acre or over for maintaining the pumps, besides \$8.00 to \$10.00 per acre rent for the land, as well as other dues for maintaining stone roads, established church, etc. I was convinced that the burden of taxation on the American farmer is as nothing compared with that on his brethren on the continent. The usual rent of a farm in Ohio is less than half that paid in England, Scotland, or Ireland. In spite of their much heavier crops, they have all they can do to live and meet the numerous burdens upon them.

It is the very rare exception to find a man tilling his own land. Almost universally the farmers are tenants who do not own the soil they till. In spite of all this, they take life easy compared with the average American. Nine hours is considered a day's work, and even that short space of time must be broken two or three times to eat. Few people have less than four meals a day, and many have a fifth. Even in shops and factories it is the rule for the men to work for an hour and a half, then stop for breakfast. After putting in about three hours and a half more they have dinner. After dinner they work four hours, thus finishing the day.

Another custom that is quite universal is a

Saturday half-holiday. This custom is quite common with us during the summer months, May till October; but in England, I am told, it holds the year through. As a rule they take life easier, and get more enjoyment out of it, than the average American citizen does in his mad rush to get rich and lay up a competence.

I spent a day in the south of England at Ripple Court, near Dover, with F. W. L. Sladen, who is an enthusiastic bee-keeper, and collector of specimens of bees of all species and varieties, and he has indeed a collection to be proud of—humble-bees (or, as they are sometimes called, bumble-bees) of many kinds and colorings and sizes; *Apis dorsata*, of several varieties; bees from all countries on the globe. I did not learn how many different specimens he had; but I should judge from the number of specimen-cases we examined, and the number displayed in each, that there can not be less than 500 different specimens, with very few duplicates. Mr. Sladen is still collecting, and anxious to exchange specimens with others who are making collections, or to receive specimens from any source. He is especially desirous of securing more specimens of American humble-bees, as he has very few of this class in his collection. He has several small hives of humble-bees which he is cultivating and experimenting with.

The main source of honey in this part of England is from sainfoin. Lucerne is also grown, but it does not yield honey, no doubt because they do not have the proper atmospheric conditions for its secretion. Mr. Sladen has over 100 colonies of bees in two apiaries; had taken over a ton of honey, and is getting at wholesale something like 18 to 20 cents per pound. I find, however, that the English bee-keeper prepares his honey for market much more elaborately than we do in America. Extracted honey is usually put into pound bottles, and neatly labeled with the name of the producer; and if he is a member of an association the association label is also added, which does not guarantee the purity of the honey, but the character and good standing of the producer. In this form extracted honey brings nearly the same price as comb, and it is growing in favor. Comb honey is invariably put into cartons of some kind, and they are usually a much more elaborate kind than those common with us. The standards set for the shows require glass both sides, with a lace-paper fringe of a certain depth all round the edge of the glass, the four sides being of pasteboard or tin. Much is also put up in ordinary pasteboard boxes, neatly labeled. There is always a good market in England for honey, and the quality of much that I saw seemed below the average American honey. There ought to be an excellent outlet in Europe for all the surplus honey produced in Cuba, Jamaica, and other West Indies, without any of it finding its way into this country to lower the price of our product. In fact, in good seasons it should be possible to export our surplus at a profit rather than see our market go so low. One thing, however, will not be tolerated; and that is, shams or adultera-

tions; and the United States has lost prestige in Europe in a way that it will be very difficult to regain, because of shams and adulterations in the way of filled cheese, bogus butter, poor meats, as well as adulterated honey. If a producer were to make good connections with distributors in England he might often find a good outlet for a surplus.

The honey crop of Great Britain was cut short, and it is considered a very poor season. The demand for supplies stopped almost entirely in June, while it usually lasts through July and August. As a consequence, most of the dealers have considerable stock to carry over till next season. The sections used in Great Britain are either $1\frac{1}{8}$ or 2 inches wide, and either two or four beeway, about equal quantities of each width and style. The no-beeway has not made much headway as yet, owing to some unfavorable comments of some of the leading writers in the *British Bee Journal*, together with the naturally conservative temperament of the people, making them slow to take up with new ideas, no matter how good or meritorious in themselves. It is worth mentioning in this connection that the first and second prizes awarded for sweepstakes at a pure-food show which it was my privilege to attend in London, just before leaving, was given to bee-keepers who use the no-beeway sections, and showed them in the exhibits which captured the prizes. These two producers in the vicinity of London are Mr. Seymour, of Henley-on-Thames, and Richard Brown, of Somersham, Hunts. They, as well as others who have tried the no-beeway sections, are satisfied of their superior merits in spite of the disparaging words of prominent writers.

I had a pleasant interview with Mr. Brown, and he was loud in his praises of the no-beeway sections. He is, by the way, a wide-awake bee-keeper, ever on the alert for a good honey-pasture for his bees, and ready to move them several times a season as need requires, to secure a profitable yield of honey as a reward for his care and labor.

One of the chief sources of honey in Scotland and north of England and Ireland is heather. This little shrub with its profusion of purplish-pink bloom gives the mountains a ruddy, warm appearance, in spite of the cold wind that often blows amid the highlands. Heather honey has a reputation all its own, and it seems to be an enviable one too. It strongly resembles buckwheat honey, not only in appearance, but somewhat in flavor. The honey is a dark amber color, and the comb is very white. One quite remarkable peculiarity of heather honey lies in the fact that it can not be separated from the comb by the ordinary honey-extractor, but must be pressed out, thus destroying the comb for further use except to melt up for wax. In view of the very thick honey thrown out of the combs in the dry climate of our Western States, I could scarcely credit the universal impression that heather honey could not be thrown out of the comb with a good extractor; yet I had no means of disproving it, and was obliged to accept it as a fact. Presses of various patterns,

and in considerable quantities, are sold for the purpose. In view of the destruction of the comb necessary by this process I inquired why it was that the honey was not universally sold in the comb, to which came the reply that they felt obliged to supply it in the form that it was wanted, and there seemed to be a better demand for the liquid than for the comb, even at the same price; besides, a good article of liquid honey could often be secured from combs that were not in merchantable shape, so the honey-press seemed to be a necessary article in the equipment of a heather-honey producer.

There seem to be very few in Great Britain who make bee keeping a specialty, and who therefore keep a large number of colonies of bees. The great mass of bee-keepers are those who have one or two to six or a dozen hives, and keep them either as a pleasant diversion from business or professional pursuits, or to help out the family store of delicious sweets. The requirements of such bee-keepers in the way of supplies differ quite materially from those of the specialist or large bee-keeper—a difference that we have scarcely made enough of in America. If there is not already a large number of bee-keepers of this class in the United States there ought to be, and more consideration should be paid to him, not only in appliances but in the literature of the periodicals, or at least in the bee-departments of the agricultural press.

It was my privilege to attend the international convention of bee-keepers in Paris, and to meet in person some of the distinguished representatives of the bee-keeping fraternity, not only of the European countries, but from Chili and Japan, as well as from America. The proceedings of the convention were conducted in the French language; and as I do not know French I will leave to our other American delegate, Mr. C. P. Dadant, who is a Frenchman as well as a loyal citizen of Illinois, the task of reporting such of the proceedings of the conference as he considers important. I must acknowledge my indebtedness to Mr. Dadant, who proved so valuable an interpreter for me at such a gathering.



COMB AND EXTRACTED HONEY FROM THE SAME APIARY.

"How do you do, Mr. Doolittle? I came over to see if you think it well to produce both comb and extracted honey in one apiary, or shall I divide the number of colonies I keep into two yards, working one for comb honey and the other for extracted? I wish to decide this matter this fall, so I may be all prepared for action next spring."

"This is a question, Mr. Jones, which often enters the minds of those keeping bees, some thinking that both comb and extracted honey

production should not be mixed together in one yard or apiary."

"But what do *you* think about the matter?"

"I see little if any reason why two yards are necessary for a mixed production of honey."

"Please give your reasons why we should produce both in one apiary."

"Some thirty years ago, when I first began keeping bees, I had considerable trouble about having certain colonies work in boxes; and often after a colony had nearly completed a given number of boxes it would swarm, leaving the bees in the hive so weak in numbers that said boxes would remain unfinished at the end of the season."

"That's just my case exactly. What did you do about it?"

"I tried cutting out the queen-cells and returning the swarm; but this seemed to do little good, for in a few days they would come out again, and thus keep up their swarming till the honey season was over, doing little or nothing in the boxes, as bees having the swarming fever will do little else than prepare to swarm."

"Could you remedy this with the extractor?"

"As I had no extractor at that time (very few if any being in use thus early), the only way I could do which seemed good to me was to cut all queen-cells while the swarm was out, cage the queen between two combs, and return the swarm, leaving the queen thus caged for eight or ten days, when all cells were again cut off and the queen given her liberty. As nearly half of the brood had emerged from the cells during this time, there were plenty of empty cells in which the liberated queen could deposit eggs; and as the bees had no larvæ to nurse, the disposition to swarm was broken up, as a rule, and the boxes would be completed."

"This was quite a scheme, certainly."

"Yes; but I wish to say that, during these eight or ten days, right in the very height of the harvest, little or no honey was stored, as queenless bees, and especially those having the swarming fever, are practically good for nothing as comb-builders, and a colony so treated, at this season, was about as good as queenless."

"How about results?"

"The result was, I lost ten days of the best of the honey harvest, during which time a colony, not having the swarming fever, would store from forty to sixty pounds of honey. This was a serious loss, but not as great as to have the swarm in a separate hive, in which case little save the swarm would be secured. After a little I purchased a honey-extractor, when I found I had this swarming mania, of colonies which should be in better business, practically under my control."

"I never heard of controlling swarming with the extractor when working for comb honey. Tell me how you managed."

"When a swarm issued as we have been talking about, I would extract all the honey from the brood-combs while they were out, removing all the queen-cells, when they would

go to work with a will on being returned, generally losing all desire to swarm. Here I had a plan that accomplished the desired result without the loss of ten days of my best harvest; besides, I obtained extracted honey enough to pay me for my time, while in the other case I received nothing."

"But did none of the colonies so treated offer to swarm again?"

"Now and then a colony would not be cured in this way, although nine out of ten would, in which case I would cage the queen, as spoken of a little back, and wait only three or four days, instead of eight or ten, when I would extract the honey again, allowing the queen her liberty, and in this way I never failed in keeping a colony, which had once commenced in the boxes, at work in the same."

"Yes, but sometimes colonies refuse to enter the sections at all."

"In case a colony refused to go into the boxes, being determined on swarming, I took off the comb honey arrangement and substituted an upper story in the shape of a hive full of empty combs. By raising a frame or two of brood from below into the upper story I was master of the situation, and colonies determined not to work in boxes were made to produce an equivalent yield of honey, by the use of the extractor, equal to those which entered the boxes the most readily."

"Such working of an apiary is news to me."

"The aim of every person keeping bees should be to make all colonies produce an equal value of something readily turned into cash, or of cash value, and the extractor is a great help toward this end."

"Have you any other reasons for using the extractor in the same apiary where comb honey is produced?"

"It often happens that a man has more colonies of bees than he can successfully work for comb honey (which means swarms, taking off sections when filled and snow-white, by going over the apiary once a week, etc.), while by using a part of the number of colonies for extracted honey the whole can be handled by one man, thus saving the wages of an assistant, which would become a necessity, if all were worked for comb honey, or the same number of bees were divided into two yards."

"How could this best be done?"

"By setting apart, in the spring, a certain number of colonies for extracted honey and a certain number for comb honey, one man can care for all by tiering those worked for extracted honey before his time is fully occupied with those to be worked for comb honey, after which little attention need be paid to them, except to add another story, should they become crowded for room."

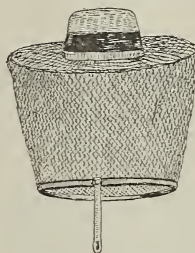
"How about the fall work?"

"After the filled sections are all taken off at the close of the season, then these colonies can be attended to, fixing them for winter; and what honey they do not need, extracted from time to time, as we have leisure, by carrying the same to a warm room, allowing it to

remain till it will extract easily. Thus the apiarist can improve all of his time to the best possible advantage—much more so, according to my belief, than he could to have two separate apiaries, one to be devoted to the production of either kind exclusively. But I must be going now, as I have an engagement to meet at this time."



A GOOD BEE-VEIL.



I have been using a veil of my own construction, now for the last two seasons, and with such entire satisfaction that I will describe it here for the benefit of all. Take veiling 24 inches wide by 36 long. Sew the 24-inch sides together; now take a 1/2-inch-wide elastic, 18 inches long, and fasten on top to go over the hat, and one piece of elastic 1/2 inch wide by 28 inches long to fasten on the bottom; also one piece of elastic 6 inches long, with a button-hole on one end. Fasten to bottom elastic, and button on to trousers button, and I assure you never a bee can go inside. Try it and be convinced.

M. R. KUEHNE.

Pomona, Cal.

FEEDING SUGAR OR HONEY.

My honey crop is a total failure—so dry this fall that buckwheat did no good. I shall have to feed.

Would you advise feeding honey when it can be bought as cheap as or cheaper than granulated sugar? Would you add any water to liquid honey? If so, how much water to 20 lbs. of honey? If honey were candied, how much water should be added? Would there be any danger of honey again granulating after being fed? Would you fill empty combs and put them in hives, or would you prop up the front of the hives and pour in feed? If the latter, how much feed would you give at one time? Would dark honey be safe to feed?

W. D. HURT.

Pleasant Hill, Mo., Sept. 18.

[Whenever honey can be sold at a price equal to the cost of sugar syrup, we would advise selling the honey and feeding the syrup, as the latter is a better feed for winter; but if the honey is already in the combs, and of good quality, I would not extract it and feed sugar syrup in its place. If, however, the honey is to be fed, it should be diluted with water until it would be called a thin honey; but it would not do any great harm if one got the honey too thin or too thick; but, ordinarily, honey fed not thinned down will be more lia-

ble to granulate, and that is one of the reasons why it should be mixed with water.

Syrup or thin honey may be fed to bees by pouring it into the combs from a height, and then giving to the bees; but it is a messy job at best, and the bees can do it far cheaper than we can.

As to the amount of feed to be given a colony, that will depend on how late it is in the season, and whether or not we desire to stimulate brood-rearing at the same time. If the bees are short of stores and settled cold weather will set in in a few days, I would give all the feed the bees require, at one time. If the colony be strong, and they have very little food, I would give them 25 lbs. of syrup in a large feeder; or if no large feeder is to be had, use a smaller one, giving the amount in two or three feeds.—ED.]

Is the honey with which bees fill themselves when smoked a total loss to the bee-keeper, or is it stored in the cells again when the bees become quiet?

A. B. FISH.

Hartford, Ct.

[I do not know; but I believe the honey is not, in the majority of cases, put back in the combs afterward. Too much smoking will sometimes cause the bees to uncap the sections. If they do not consume the honey taken out, then the probabilities are they will store it in the brood-combs. If any one can answer this more definitely I shall be glad to have him do so.—ED.]



F. H. H., Mich.—I would not feed to bees, for winter stores, honey that is slightly fermented; but you can find a market for it at the large baking concerns. You would probably get a price this year that would more than pay you for good syrup. We would suggest that you send a sample, giving quantity you have, to the National Biscuit Co., Chicago, Ill., asking them to name you price that they will allow you.

G. W. B., Mich.—We would not advise you to kill off the drones, for the bees will kill them off quickly enough themselves after the honey season, if they have a queen in normal condition. If you have an excessive number of drones in the hive at this time of year, I should judge that either the hive is queenless or else it has a drone-laying queen, or one or more laying workers. If there are laying workers, scatter the brood and bees in several other hives. A room upstairs would not be a good place to winter bees. Better put them in a cellar and have the cellar darkened.

W. A. C., Oregon.—The statement in the A B C of Bee Culture means that in the ordinary average flights a bee will go a mile in five minutes, which would be the rate a good

fast-driving horse and buggy would make on a common road. I have personally followed bees going at the rate of about ten or twelve miles an hour up the road, for bees will very often fly down or up a roadway because it is free from barriers in the way of hedge fences, trees, and the like. With regard to the weight of bees and the amount of honey they can carry, I would refer you to the 1899 edition of the A B C of Bee Culture. As you may not have that copy handy, I would state that there are about 4000 or 5000 bees in a pound, and it takes about 10,000 bees to carry a pound of nectar; but probably twice this number would be more nearly the average.

F. V., Ga.—It is always a good practice, when robbers have been working at a colony, to close the entrance down so that only one bee can pass at a time. It is true that Doolittle did get 600 lbs. of honey from one hive; but that was some 20 years ago, and it is regarded as a very unusual yield. From 75 to 100 lbs. would be a large yield nowadays in almost any locality. By "spreading brood" is meant the separating of the combs containing brood and putting down between a frame of empty comb for the queen to lay in. This spreads the brood, resulting in a larger increase of bees. For particulars see the new edition of the A B C book, not yet off the press, under the head of "Spreading Brood."

H. Z., Ark.—Entrances to a house apiary should properly face toward the south and east. However, if you build one on the Morton plan I would have the entrances face the east and west rather than the north and south. I would build a permanent building as light as possible, one that can be put upon wheels after it is emptied of the hives, and hauled to a new location. A building 10×20 would accommodate a large number of colonies; and if it is built light it could be easily drawn from one location to another without taking down; but, of course the hives and every thing else should be taken out. I would suggest that you make the inside of the house-apiary exactly on the plan Salisbury does, which you will see described fully in the A B C you have, under the head of "House-apiaries."

A. H., Texas.—We can not explain why your bees carry out pupæ from the combs before they are fairly developed, unless you have moth-worms in the hive. In such case their galleries will extend through the brood, killing some of it, with the result that the little corpses of the pupæ are carried out as you describe. If this is not the case, then the bees must have some disease, or they gather something somewhere that is poisonous; but this hardly seems tenable in view of the fact that the larvæ are permitted to develop to the pupa stage and die. This would point to the presence of pickled or black brood, and you would do well to have a sample or such comb examined by Dr. Wm. R. Howard, a specialist in bee-diseases at Fort Worth, Texas, inclosing \$2.00, which is the fee for making the examination.

H. C. A., Ill.—Colonies apparently queenless will sometimes refuse to start queen-cells

for the simple reason that they have something in the hive either in the way of a small virgin or laying worker that they regard as a queen. We never knew of a case yet where a colony was absolutely queenless but they would build cells when they were given worker larvæ or eggs. You may, therefore, rest assured that the colony you speak of has something that they call a queen and treat as such.



WHEN TO USE THE OUTDOOR AND WHEN TO USE THE INDOOR METHOD OF WINTERING.

THE beginner will often ask the question whether he shall winter indoors or out. The answer to this will depend upon the weather conditions. If one has in his locality cold weather that lasts nearly all winter, with only now and then a day of temperature above the freezing-point, I would recommend by all means indoor wintering; or if the weather conditions are such that there is a month of cold weather ranging from 10 degrees above to 10 below zero, then a warmer spell a little above the thaw-point, followed by three or four days of weather at that temperature, followed again by freezing weather, such weather continuing clear up till actual springtime, then I would still advise the indoor method. But if, on the other hand, the winters are somewhat open, there being perhaps a month of zero weather, followed by a month of warm open weather, continuing thus through the winter, the bees should be wintered outdoors in double-walled hives. We *may* have in our locality a month of real cold weather, but two weeks is about as long as it lasts at a time, when we will have a general breaking-up, a thaw, and perhaps rains. This will last for three or four weeks, when we will have another cold spell, lasting possibly a month. This kind of weather will continue in alternation till along in April. In such a climate the average beginner will do far better with the outdoor method.

DR. LEWIS AND HIS TREATMENT.

LAST week I called at the office of Dr. J. M. Lewis, in the Rose Building, Cleveland, the specialist to whom I referred on page 774 of our last issue. There was only one correction in the article and footnote that he would have made; and that was, that the eating of meat and drinking of hot water does not constitute *all* of the treatment. I think it is only proper that I should make this correction, as some might start off on the beef and hot water alone, and then, finding that it did not bring about the expected result, would condemn the treatment. There is no doubt that Dr. Lewis has been able to accomplish some wonderful cures. He showed me a letter he had received indirectly from a grateful patient, who, when he came to him in the first place, was in the last stages of consumption. I asked that

I might have this letter so I could present it to our readers, and here it is:

Mr. Stewart:—Your letter is received. In reply I will say I took the Salisbury (or Lewis) treatment. I had consumption, both of the lungs and bowels. I had hemorrhage of the lungs about 6 months before I commenced the treatment. About 12 months after I began the treatment my hemorrhage, expectoration, and cough began to grow lighter. I built up very slowly. I stayed right with the treatment—that is, I left nothing undone in the way of the treatment for 2½ years. I was in the lowest stages of the disease. I have *very* good health now. It has now been about 12 years since I was cured. My age is 50 years. I took treatment exclusively of Dr. J. M. Lewis. My advice would be to take of him, as I know he can cure the disease.

Washington C. H., Ohio.

[J. C. GREINER.

In justice to Dr. Lewis I wish to say that he did not ask me to publish the Holtermann letter, nor has he asked me to publish what is given above. I only feel that the world should know more about the treatment that has effected some wonderful cures—that is both scientific and sensible.

MISS ETHEL ACKLIN AND HER BEE-KEEPING SONGS AT THE CHICAGO CONVENTION.



I take pleasure in introducing Miss Acklin, the little lady who furnished most of the music at our national convention at Chicago. A prominent feature of the recent conventions has been music, usually at the opening of each session. This music usually consists

of solos and chorus songs, the music by Dr. Miller, and the words by Eugene Secor. Although the doctor had made all plans to be at Chicago, during the sessions of the big convention, sickness and death among his relatives prevented his presence. We were at a loss to know how to carry out the musical part of our program; but, very fortunately, Mr. and Mrs. York and little Miss Ethel Acklin, already referred to, came to our assistance. Ethel sang several solos, playing her own accompaniment, greatly to the delight of the members of the convention. She not only sang well but "brought down the house" several times. She is a daughter of Mr. and Mrs. H. G. Acklin, of Minneapolis, a prominent dealer in bee-keepers' supplies, and queen-rearer, of their section of the country.

BARRELS VS. SQUARE CANS; A LIVELY DISCUSSION AT THE CHICAGO CONVENTION.

At the Chicago convention quite a spirited discussion took place between Messrs. York, Hatch, *et al.*, on one side, and Messrs. Pickard and France on the other. The question was, "Resolved, That the square can is the only suitable package for marketing extracted honey." Many arguments were presented on both sides, and the discussion waxed warm. The affirmative argued that there was always a loss of honey due to its soaking into the wooden staves of barrels; that the staves would shrink; that the barrels would leak; that they were heavy to handle. Mr. Hatch spoke of having jammed his fingers in handling barrels. It was admitted that barrels were slightly cheaper, but that square cans would deliver a larger percentage of honey to market in good order, and were therefore more economical in the long run. The advocates of the barrel side of the question argued that the cans were very awkward to handle; that two of them in a box were very unwieldy and awkward to lift, making an aggregate of something like 130 to 135 pounds gross; that it was much easier to roll a barrel into and out of a wagon; that it could be ended up without much difficulty where boxes with square cans had to be lifted by main brute strength; that so far as leaky barrels were concerned, square cans, in their opinion, were just as bad. If one of those 130-lb. boxes were to drop it would loosen the solder and let the honey run just the same.

It was developed, however, in the discussion, that barrels could not be used in the West, owing to the very dry climate, and therefore the tin packages were the only thing that could be used. It was also pointed out that poor cooperage was responsible for a great deal of the trouble from barrels. Mr. N. E. France, one of the largest honey-producers of Wisconsin, showed the importance of good cooperage, and of stuff well seasoned. He never had any trouble with his barreled honey shipped to market. Many, he said, seemed to think a barrel should be rinsed out with water before putting honey in it. This is one of the greatest mistakes.

The opinions of two commission men, Mr. A. V. Bishop, of Milwaukee, and R. A. Bur-

nett, of Chicago, were then called for. Mr. Burnett seemed to favor the square cans, and Mr. Bishop, who is right in the heart of the barrel country, did not express any decided preference. I fancy, however, if all the dealers in honey in the country had been present there would have been a large showing in favor of the tin cans.

Every now and then we are receiving barrels of honey almost empty. Our readers already know of our experience, of the honey running out, and on to the bottom of the cans, and how the robbers made things lively for all the railroad men. The honey-buyer of The A. I. Root Co. says square cans should always be used for white honey. If we get it in barrels we have to go to the expense of putting it into cans, because our trade calls for it in that way. Low grades of honey are generally put up in barrels because the bulk of it is used for manufacturing purposes. But the best grades should be put into cans, if for no other reason than that the honey can be sold in large or small lots. Many customers will take one or two cans when they would not take a whole barrel.

HOW TO PREVENT SUGAR SYRUP FED FOR WINTER FOOD FROM GRANULATING; AN INCIDENT AT THE CHICAGO CONVENTION.

I RECEIVED a mild scoring at one of the sessions of the Chicago convention. It came about in this way: While the question-box was up for consideration the question was asked, "What is the best way to prevent sugar syrup fed to bees from crystallizing?" One or two answers were given, to the effect that a small quantity of good vinegar or some good extracted honey should be mixed with the syrup during the process of making, using one part of water and two of sugar. I was then asked to give my answer, which I did. I used, I said, one part of water and one of sugar. This made a *thin* syrup approaching somewhat the consistency of raw nectar as the bees gathered it from the flowers; that when this syrup was fed to bees it was better ripened, or, as some might term it, turned into a kind of honey. But immediately this raised a storm of protests from Abbott, Mason, White, and Moore. They considered it almost heresy for any one, particularly the president of the Association, to admit on the floors of the national convention that sugar syrup fed to bees could be converted into honey in any sense of the word, and they demanded that he recant, or be "reduced to the ranks." I soon found they were combatting a proposition for which I was not sponsor, and then explained what I meant. Sugar syrup fed thick, one part of water and two of sugar, could not be ripened by the bees properly, and it therefore had a tendency to turn to sugar again. According to Prof. Cook they could not "digest" it as they would thinner syrup fed slowly. According to Mr. Cowan, of the *British Bee Journal*, they could not invert it so well; and according to others, they could not make it into a kind of honey. Mr. Abbott did not care what the chemists or scientists thought.

Sugar syrup when fed to bees he insisted was *sugar syrup still*. R. L. Taylor, who took the floor in opposition to the gentleman, suggested that he was disagreeing with Mr. Cowan, whose paper had just been read, on the chemical properties of honey. "Can't help it," said Mr. Abbott. I finally explained that I had been misunderstood, that syrup fed half and half was *not honey* in the commercial sense, and only indirectly in the chemical sense. I agreed with the gentlemen, that perhaps it was not wise to give the general public the *impression* that sugar syrup could be fed to bees and made into a kind of honey, because some bee-keepers might be encouraged to put out sugar honey, and because such admission *might* give the general newspaper the foundation for another comb honey canard. When the "smoke of battle had cleared away" it appeared the objectors would be perfectly willing to accept the term "inverted," which term as a compromise I agreed to adopt; but I still insisted that sugar syrup fed *thin* was changed chemically—was inverted—in that the cane sugar of commerce when fed to bees was by them converted to grape sugar. It is well known by chemists that the nectar of flowers is chemically cane sugar; that when it has been gathered by the bees, and stored in the combs, it has been changed to the grape sugar of honey.

This proposition should not be assailed by bee-keepers; for the truth can never hurt us. Here is the point: Honey is the most easily digested sweet in the world, because it can be absorbed by us with little change. Cane sugar, which constitutes three-fourths of the sweets of commerce, is poisonous to the blood, according to Cheshire; and before it can be assimilated by us it has to be transformed by digestion to grape sugar. According to Cook, "If cane sugar is absorbed without change it will be removed by the kidneys, and may result in their breakdown."

Let it be *distinctly understood* that I am not championing "sugar honey," for I have always opposed it; but I do believe we ought to preach the doctrine that honey is distinctly different from any other sweet, that it is more easily assimilated than any other.

OUR \$200 RED CLOVER QUEEN AND HER DAUGHTER.

THIS queen is proving to be more of a prize than we at first supposed. Besides the fact that her bees are the most wonderful honey-gatherers we ever had, storing honey right along when other colonies have to be fed, we find them exceptionally gentle. Twice I have seen the hive opened in the morning when the temperature was almost down to the frost-point. The thin board cover was removed with a snap both times, and yet those bees took it without the least sign of resentment. I have seen colonies before as gentle as this, but they were practically good for nothing for honey; but here are bees that can hardly be coaxed to sting, much less volunteer an attack when handled as bees should be.

We have now learned the secret of their

great honey-gathering qualities. It exists, as I supposed, in the great length of their tongues. I measured them, and found the length to be so much greater than any thing else I had previously placed on the scale that I concluded I must have made a mistake. I then asked one of our men, Mr. R. G. Calvert, who has been measuring the tongues of bees for me to a considerable extent; and I was both surprised and gratified when he said they were the longest-tongued bees he ever measured— $\frac{21}{100}$ —while the average is $\frac{16}{100}$. The nearest approach we have had to this are some bees from J. P. Moore. Their tongues showed a measurement of $\frac{20}{100}$.

I think we may safely conclude that, when there is any particular colony that will gather more honey from red clover than other colonies, the bees of it have longer tongues.

At first I thought there was no very great variation in the tongues of the average colonies, but I find there is considerable. When we find there are differences all the way from $\frac{13}{100}$ up to $\frac{21}{100}$, then it is evident that, by a little careful selection, we shall be able to secure a strain of exceptionally long-tongued bees. If our queen lives through the winter I shall be almost tempted to take her up to some island so that her daughters can be bred to drones from a queen or queens having equally long tongues. The Moore queen, already referred to, would be a good one to take. One colony should be devoted to the rearing of drones, and the other to the rearing of queens. By careful selection we might be able to find, probably, a daughter of these queens, whose bees would give the measurement of $\frac{22}{100}$. If we have already got $\frac{21}{100}$ as the length of the tongues of the bees of a *daughter** of our breeder, then why can we not reach the $\frac{23}{100}$ mark? I think we can. Then bee-keepers will be able to roll in *tons* of honey where *now* they get only hundreds of pounds.

Next summer I shall endeavor to make some sort of arrangement so that we can have the two queens put on an island. It will cost something to rear queens of this kind and in this way; but there is not a breeder in the land who would not be willing to pay \$25.00 for a breeder whose bees could show up tongues $\frac{23}{100}$ long—a plump quarter-inch. Such length, I will venture to say, will reach into most of the clover-heads.

Later.—I have been measuring the corollas of some stray red-clover heads. The longest measure $\frac{3}{8}$ of an inch in depth, the shortest, $\frac{1}{8}$ inch, and the average somewhere about $\frac{1}{4}$ inch or $\frac{25}{100}$ inch deep. So then, if we can get bees with tongues of this length, we have come very near reaching our goal. At this rate we will get there next summer.

By the by, we shall not be able to fill any more orders for red-clover queens this season. We will try to take care of all orders thus far booked; but we can accept no more orders for this season's delivery, as we have been, to use a commercial phrase, "cleaned out."

* We sold this queen as a tested clover. If we had known the length of her bees' tongues we would not have sold her. Now we want to get her back. But who has got her? Our books don't tell.



And he said unto them, Follow me, and I will make you fishers of men.—MATT. 4:19.

There are a great many texts where Jesus called upon his friends to follow him. In several places he says in effect, "Leave all, and follow me." He told the young ruler (Mark 10:21) to sell all that he had, and give to the poor, and come and follow him. Now, the question comes up before us at the close of this century, "How shall we in this present age follow Jesus? If he were on the earth again to-day, where would he go? Would he keep away from the busy cities? Would he hold aloof from the rich, say from the millionaires?" I think not; for he took upon himself the responsibility of inviting himself to dine with Zaccheus; and he accepted invitations from the rich to attend their feasts. I do not remember that he ever neglected or refused any invitation. Sheldon has stirred the whole world by persistently asking the question, "What would Jesus do?" I wish to vary it a little by asking the question to-day, "Where would Jesus go, and how would he behave himself?"

When I first entered the Pere Marquette depot in Toledo, on my first trip to Northern Michigan, I made a good many inquiries of railroad men in regard to my trip. No one could answer me or take the time to answer me. My excursion ticket was to Traverse City. I wanted to visit Manistee first, and I knew I could save time and money by getting off at some station before I reached Traverse City. The conductor said I would have to wait till I had got up into Northern Michigan, and the conductor up there could tell me what I wanted to know. But I saw by the folder we should pass a station near Manistee in the night. There would not be any conductor to talk to, and, besides, I should not have my ticket. As I came into the large depot I noticed a lady presiding at the ticket-office. I overheard a conversation something as follows:

"Why, these folks have got a *woman* in the office there. How long have they had her?"

"She has been here only a short time. I think they got her in Ann Arbor. But she is a hustler, even if she *is* a woman. I have understood the company are exceedingly well pleased with her."

Now, I had an hour to wait, so I was not in any hurry. I thought I would wait till the crowd got away, and then I would see if she could (or would) tell me what I wanted to know. There was quite a crowd around the window. A gentleman asked her several questions. She answered them rapidly and pleasantly. When through he expressed his thanks, and she gave him a pleasant womanly smile—just such a one as a business woman ought to give customers, and nothing more. Then followed questions, tickets sold, and just such business as comes up at the window of a ticket-office when there is a crowd around.

Every one who made a purchase or asked a question seemed pleasantly surprised to see her bright, ready, quick in making change, stamping, or writing. Each one expressed his thanks, and each one received more or less of that pleasant smile that I was beginning to understand and appreciate already. My good friend, there is a power in a woman's smile; nay, more—there is *money* in a woman's smile, and I am glad the great railroad companies are beginning to understand it. Well, I had not learned all about that smile, although dozens had been waited on. A poor woman with some crying children dragging at her skirts was in trouble. She asked different ones, but she did not seem to have the faculty of knowing who could or would answer her questions. Many laughed at her. Finally she got space at the window, and explained her difficulty. Then this bright, educated, and intelligent woman in the office made her sister on the other side feel that she was a sister in very truth. It made me think of my talk to you about the good Samaritan. It did my heart good to see the hard lines of trouble relax on the poor mother's face as this other woman told her patiently all she wanted to know, and set her mind at ease, at least for the present. I was already beginning to love the smile that I saw she gave to the multitude who came to her window; but it never came out in its full beauty and wondrous power until she saw a sister in trouble. Most of you have been at a ticket-office when a crowd was around, and have asked questions. Some of the agents are pleasant and courteous, especially if there are not many waiting behind them; but if there are, they are sometimes cross and surly, and snap you up as if you had not any sense at all to ask such ridiculous questions. My turn came pretty soon. I showed my ticket to the lady, and asked if she could tell me at what station I should get off to reach Manistee. Now, Traverse City is a long way from Toledo—several hundred miles; but this woman answered at once off hand, "You will have to get off at Baldwin, and you will lose your ticket from Baldwin to Traverse City. No stop-overs are allowed on this sort of ticket. You will reach there before morning, and if you will tell the porter where you want to get off he will ask the conductor to have your ticket ready for you."*

I told her I was greatly obliged, and that she was the first employee of the railroad I had met who could give me the information I desired. Had there not been other customers behind me about this time, I think I should have told her how it rejoiced my heart to see her help that poor woman. As I thanked her

* Not one of the men-folks, and I inquired of those wearing the railway uniform, seemed to know any thing about their line of road away across the northern side of the State. Did it just *happen* that this woman knew just the proper station to get off at, and the *time* to get off, without consulting a map or timetable? No, my friends, there was not any "happen" about it. She had simply gone to work and made herself familiar with the geography and the stations on their line—yes, with towns and cities twenty or thirty miles away from the Pere Marquette line of road, and that, too, at the extreme further end of the line.

she gave me, too, a pleasant smile that I shall long remember, and then she took up the next difficult problem for somebody else. Later on, when I purchased my sleeper ticket at the same window, there were so many begging her to hurry (for it was train time) that she got the sleeper-berths a little mixed up; but she did not look cross, and did not answer anybody short. On the contrary, she looked up quite pleasantly to let us know she was master of the situation, and said something like this:

"I have got things mixed up a little; but I can straighten it out all right if you will just give me a minute, and I will see that all have time to get on the train all right."

A month later I found this woman at the same window, and she was just exactly the same. I do not think anybody would call her a handsome woman, but yet her face and her *poise* were a wonderful study to me. I do not know whether she is a Christian or not; but she is certainly *Christlike* in her work. She is a *queen*, not only among women, but she is a model in business for our own sex. Some of you may say she is that way during *business* hours, because her bread and butter depends on it; but when she is off duty she may be like other folks. Well, even if this is true, she is head and shoulders above the rest of us, even if she does no more than to carry that gentle spirit with her during working hours.

Dear friends, I would much rather narrate scenes like the above than to complain of the way public officers treat traveling humanity; but I think I can show you better how much Christ's followers are needed in business by giving you one instance on the other side.

An old lady got on the train. I began studying her at once, and I thought she seemed perfectly capable of taking care of herself. I noticed in a little while she was asking the conductor a good many questions. The train stopped at Wayne, Mich., and a lot of the passengers got off, the conductor with them. While he was inside of the station the old lady asked a woman in the next seat if that place was Wayne. She nodded that it was, and pointed to the sign on the depot. At this the old lady gathered up her packages and slowly made her way out on the platform. I wondered why she was so late in getting off. Just as she reached the door of the waiting-room the conductor came out hurriedly. I could not hear what he said, but he took her by the arm, and marched her back into the car, put her down in a seat, and then said, so everybody could hear, "There! don't you get off that seat again until I tell you *where* to get off."

Now, I have made blunders enough in my life so I can realize just how this poor old soul felt. Everybody was looking at her, and most of them were snickering. If the conductor had not happened to come along just then, and had he not remembered her, she would have been a stranger in a strange land indeed. My heart ached for her. Had I not been afraid of meddling, and making matters worse, I would have gone and sat beside her and told her not to feel bad about it at all, for

we all make mistakes sometimes. I rather expected some good woman in the car would go and talk with her; but she sat there all alone in her misery—yes, it *was* misery, for I have had my taste of it—until the conductor told her where to get off.

If Jesus were on earth I think we should find him on the busy railways, among crowds at stations, and possibly in little offices selling tickets. What a glad world it would be, dear friends! and, oh what a glorious thought, that it is the privilege of each and every one of *us* to put *his* yoke upon our shoulders, bear his burdens, and show the Christlike spirit behind the counter and everywhere else that humanity is found!*

I have been telling you for some little time back how much I enjoyed my visit with Mr. Hilbert. To tell the truth, I have not a relative in the world whose mind and enthusiasm run in channels so nearly parallel with my own as does Mr. Hilbert's. He is never tired of learning something more about how things *grow*. He is an enthusiast on strawberries, potatoes, peaches, buckwheat, growing clover, bee-keeping, maple syrup, catching fish, and, in fact, he loves every thing I love, including good square *men* and *women*. We talked and talked, and the more we talked the more we found that was congenial.

Now, I hope my good friend Hilbert will not lose his friendship for me when I tell right out in print that he uses tobacco. That first morning when I called him through the telephone I began wondering if I could tell by the sound of his voice how old he was. I decided he must be somewhere between forty and fifty, and I got it pretty nearly right. While we were riding together in the buggy I conjectured by the smell of his breath that he used tobacco; but as days passed by, and I did not see him take a smoke, I began to feel troubled. This is what troubled me: Everybody who reads GLEANINGS knows how relentless and unsparing I have been in regard to the tobacco habit. He evidently had made up his mind that while I was his guest he would have to give it up. Of course, I am glad to have anybody give up tobacco; but I do not want anybody to break off the habit just on my account or because I am present.

* Since the above was written it has occurred to me that we need followers of Jesus Christ at both ends of our telephone lines; and I think it is fortunate that women are filling so many of these places. Even in our own little town I often hear the remark that when a man presides at the central we can not get any accommodations at all; but when the girl gets around in the morning she is always pleasant and cheerful and accommodating. Mrs. Root says she can tell toward night by the tone of the girl's voice that she is tired, but that she is always patient. I have told you how friend Hilbert gets the good will of his postmaster so he will even open and read letters for him through the telephone. Well, friend H. has a remarkable faculty or gift for keeping the telephone people good-natured. He has a sort of comical pleasantry about him when he wants a favor, that is contagious; and it gets hold of a body, even through the telephone. Now, he is not a church-member; and I am afraid he knows very little by practical experience of the things we talk about in our prayer-meeting; but yet he has a winning way and a winning *voice* that will make him a power for righteousness when he is once enlisted, and marching under the banner of Him who "pleased not himself."

No good can come—at least no very *great* good—from any change or any reform without a better or a deeper foundation. When we became pretty well acquainted I told him to please use his pipe or cigar, whichever it was, just the same during my presence as he would in my absence. At first he declared he was not going to do it, and I told him I could not consent to stay and make myself so perfectly at home unless he would also make himself perfectly at home in his own *house*; and I felt glad to see him get his pipe and take a smoke.

Now, some of you may criticise me right here. You may think I am backsliding, or that I am compromising with evil; but I think you are wrong. I believe I was doing as Jesus would have done. If you will follow his life and read his sayings you will notice he very seldom criticised. He taught great fundamental truths, and let the person make the application. When he provided wine for that wedding, I think it was along in that same line. He for the time being conformed to the customs of the people he was with. When he dined with Zaccheus I do not believe he found fault with the ways of the household, even though many of them might have been bad. He first wanted to gain the hearts of the people in that home, and leave the result to be accomplished with the Christ spirit in the hearts of the people. Mr. Hilbert does not use the foul-smelling tobacco that is to me so exceedingly offensive. He said he could not put up with it any more than I could. He uses only pure home-grown tobacco-leaves. When I first began to smell it in his breath I was wondering what made it remind me of something away back in years gone by. In a little time I guessed what it was. When my father used to take me on his lap, away back in my childhood, and gave me a kiss, and perhaps sing me to sleep, I always smelled the tobacco in his breath; but it was not like the tobacco of modern times. It was exactly the same that I noticed when riding side by side with my good friend Hilbert. Now, mind you, dear friends, I do not love tobacco one bit better than I did a few weeks ago, but I hope I am telling the truth when I say that I have learned to love humanity *more*. My good old mother used to say that we should love the sinner while we hate the sins that make him a sinner; and this is what Jesus taught. In our hungering and thirsting for temperance reforms I am afraid we are sometimes forgetting ourselves, and hating the *sinner* as well as hating his sins. I believe Dr. Dowie, with his *Leaves of Healing*, made his greatest mistake when he began to call people devils because they did not accept the teachings of the Bible just as he does. I am afraid some of our temperance periodicals, especially those that go into temperance politics, defeat themselves in the good they honestly want to do by being too bitter toward the sinner. Christian ministers realize everywhere that almost their only hope of doing good is to gain a hold upon those who are leading sinful lives. Of course, we may carry this thing too far. I once heard of a minister who learn-

ed to smoke cigars, thinking by so doing he could better win the esteem and respect of some of his young men. Of course, he carried the thing too far, and I believe he afterward admitted it.

One evening friend Hilbert and I sat by the fire. I was reading the *Rural New-Yorker*, and he was reading GLEANINGS. I do not know what put it in my mind, but it occurred to me that probably he was in the habit of smoking his pipe while he read the papers; and I told him if that was his custom I wished he would light his pipe as usual.

"Why, Mr. Root, if I have understood you in times past you could not stay in the room where anybody was smoking a pipe."

"Friend H., I want to assure you I *can* stay in the room, and I shall feel more comfortable to have you do in your own home as you do when I am not here than to have you change your habits or put you out because of my presence. Please smoke your pipe exactly as you do at other times," and he did; and I fell to wondering what the readers of GLEANINGS would say could they have a picture of us two sitting chatting as merrily as could be; and, to tell the truth, I did not feel any inconvenience. It made me think of my dear old father, and it seemed specially homelike.

Now, dear friends, do not any of you rush to the conclusion that I have changed my mind in regard to tobacco. If I am correct, Mr. Hilbert's boys do not use it at all. He is exceedingly anxious that they shall not use it; but in regard to setting them an example, that is his affair and not mine. I told him, before coming away, that I feared the habit might grow on him. He uses only a small amount of tobacco now, and that of a very mild kind. If he chooses to give it up of his own accord I shall be exceedingly glad; but I do not mean that tobacco shall break one of the pleasantest friendships I have ever formed. In our zeal to have the world conform to *our* standard or notions of things we should remember there are worse things that afflict humanity than the use of tobacco. The man who makes a profession of religion, and never pays his debts, and keeps contracting new ones whenever he finds a chance, and with no expectation of being able to pay them, is doing far more harm in the world than the man who uses tobacco. Jesus taught us to be consistent; and if we are going to be known of all men as his followers, we *must* be consistent; we must love humanity more than we love to see people accept our notions in regard to things that are sinful. In this way we shall become skillful and successful "*fishers of men.*"

EVEN MILLIONAIRES MUST STOP SMOKING CIGARETTES.

We clip the following from a recent number of the *Rural New-Yorker*:

The chairman of the directors of the Union Pacific Railroad has issued an order forbidding the smoking of cigarettes by employees. George Gould is a director, and he recently came to a meeting smoking a cigarette. This is the way the chairman talked to him:

"My orders just issued to all employees of this company forbid cigarette-smoking. You, George Jay Gould, are a director, and therefore an employee, for you get \$10 for every directors' meeting that you attend. Now, don't you ever come around this office smoking again!"

That's business from all points of view.



Friend Hilbert has just purchased a Robbins potato-planter—that is, his potatoes were planted with it this season. I expressed some surprise to know that it was the only potato-planter anywhere in that region; but the answer given me was a still greater surprise.

THE WAY THEY MARK OUT AND PLANT POTATOES IN THE GRAND TRAVERSE REGION.

I supposed the marking was, of course, done with a horse. Not so. In this great potato-growing country the marking is done as it has been done for years, by dragging a piece of log-chain where the mark is wanted—not one piece at a time, mind you, but three, five, or seven pieces. Take a piece of heavy log-chain with about a dozen links. Tie this with a light rope or strong cord to a pole. The cord should be four or five feet long. Now have as many of these cords and chains attached to the pole at the right distance as you can handle. One man alone could make two marks, and perhaps three. Two men will make five or six, or even seven. When you commence, one of the men takes one end of the pole and goes straight toward a stake at the opposite side of the field. After this, one man walks in the mark made by the outer chain. Of course, it might depend somewhat on how many horses you had and how many men or boys there were on the farm. One thing I like about it is that, when your ground is worked up nice and mellow for potatoes, you do not tramp it up with a team of big heavy horses, or, rather, trampitdown solid.* On the island of Bermuda they wanted their potato ground so that a man could thrust his arm in it up to his elbow. Well, with hand-marking you can *keep* it light and soft. I believe they usually mark their ground both ways $2\frac{1}{2}$ to 3 feet apart. By shoving the strings along the pole that holds the chains you can mark it both ways, and have them 3 feet by 18 inches or 3 feet by 15 inches. Potatoes that are liable to grow *too* large we prefer to have not more than 15 inches apart. Now for the planting.

At Traverse City there is a place where they manufacture a little hand potato-planter. I am going to give you a cut of it later on.

*You may remember T. B. Terry says in his potato-book that when he has got his ground up nice and mellow he would like a balloon or some similar arrangement to pull his tools over the ground in order that he might avoid tramping it down solid again with the horses' feet. Potatoes, to be handsome, must have a soil above (and below) them so loose and yielding that they can swell out in all directions without being cramped into ungainly shapes.

This potato-planter is made of metal, and does not weigh more than a pound or two. It has a wooden handle. The operator has a bag of potatoes swung around his shoulders. He picks the pieces of potato from the bag with his left hand, brings the planter up with his right hand until his left hand can drop the piece in the cavity. Then as he puts it down where the marks cross each other, he sets his foot on it, to get it down to the required depth. In this way one man will plant an acre easily, and some men—yes, and some *boys*—have planted two acres in a day. It is hard work, though. To save lugging a good many pounds of potatoes they are cut and located at each end of the field; but if it is a long one, in the middle also, or oftener still. This way of planting and this way of marking, I can imagine, is specially adapted to fields where the stumps are not all out of the way. A man can get over a stump, or get around it, and still keep his marker going in a straight line in a way that a horse could not or would not; and it just now strikes me this will be a grand invention (for I call it an invention) for those who have small pieces of land and use hand cultivators. By the way, hand cultivators and all hand tools will work just beautifully in that soft, pliable, rich sandy Michigan loam. The operator can very quickly fix a pole with some light chains to mark out an acre, half an acre, or even a village lot, and do it handsomely and accurately. Then with this little planter he can plant it and cultivate it with the little garden plow or weeder. Friend Hilbert has a weeder, but somehow or other he does not take kindly to it. He prefers his drags and smoothing-harrows that he uses after the same fashion he did before weeders came out.

Now, may be some one of our various agricultural papers has published accounts of marking land by dragging a piece of chain, but I have never seen it or heard of it, and yet I have been reading pretty much all the agricultural papers published in the United States, more or less, for years past. If I am making a mistake, will somebody tell me where such an arrangement has been described in print? I know there has been a hand potato-planter carried around, and I have heard the statement that it would enable a man to plant an acre a day or more; but the planter carried around by agents was a heavy and clumsy affair, and no good either. Mr. Hilbert, as well as myself, was swindled into buying one; and neither he nor his boys could use it after they got it. It was a tin-tube arrangement. You do not want any tube at all. This method of marking has been in use ever since the people up there can remember, yet nothing is said about it in our books and papers. I do not know that I can blame some of the old veteran potato-growers of the Traverse region for being skeptical in regard to "book farming." Friend Hilbert said he had noticed year after year the arrangements with pins or runners on them, to be drawn by a horse, pictured every spring in our farm papers; but he could not for the life of him see what anybody wanted of such a rigging. I do not see why the above will not answer for

planting corn and other seeds as well. Of course, the horse planters are the thing for large areas. Friend Hilbert says the Robbins planter is not so much quicker, but it is a good deal easier for the tired farmer, or somebody who is not very strong, to sit on the seat and drive a team than to carry a load of potatoes and carry a planter. Now, I expect to plant at least a part of that 40 acres (it may be a very *small* part) with a chain marker and a hand planter.



Perhaps I had better head it "High-pressure Fruit-growing." Ever since my directions in the tomato-book have gone out about "How to Support a Family on One-fourth of an Acre," there have been calls for facts to support my claim. A few days ago Mrs. Root showed me a peck of beautiful prunes, as handsome as those that come from Oregon and California. When she said they grew in Medina I said she must be mistaken, and I was afraid the man who sold them did not tell the truth. As he happens to be our iceman she told him about it, and he invited me to go down and see his fruit-garden. It belongs to Mr. J. A. Fretter, who lives in the outskirts of the town. On a piece of ground just 40 by 100 feet, or nearly a tenth of an acre, he planted, eleven years ago, 24 plum-trees. They were purchased from J. Austin Shaw, Rochester, N. Y. The trees were planted 12 by 14 feet. The varieties are as follows: Two Moore's Arctic; two Guai; one each of Beauty of Naples and Prunus Simoni; two each of Imperial gage and Lombard; six Bunker Hill; four German prunes; one Hungarian prune. The Hungarian prune is perhaps the finest and largest of all. They are so sweet that no sugar is needed, and they are certainly as luscious as any peach. Two years from the time of setting the trees he began to have plums and prunes; and he has had more or less of a crop every year for nine years. He sprays three times every season with Bordeaux mixture and Paris green. He does no bumping. The plum-orchard is surrounded by poultry netting, and he winters about 24 laying hens in this inclosure, and every season he raises from 100 to 150 chickens. These chickens are confined under the plum-trees. The ground is kept worked over soft and mellow from early in the spring until near fruiting-time. Now for the result:

He has, during the past season, sold about 50 bushels, or an average of about two bushels to the tree, as you will notice—some more and some less. Well, some of the finest brought \$2.00 a bushel, the average price being \$1.75, making \$87.50 from the tenth of an acre, or at the rate of \$875.00 from a whole acre. I do not know what he received for the eggs and chickens, but certainly enough to pay for the care of the plum-trees. I asked him if there

was any reason why he could not manage a whole acre so as to get as good results as he did from the tenth of an acre, and he said he thought there was no reason in the world.

Now, friends, what is there to hinder every one of you from doing likewise with any little spot of ground in your dooryard? In connection with this you want to read Terry's remarks in regard to owning some ground, see p. 819. While I am about it, let me mention a plum-orchard I saw in the Traverse region. It belongs to A. S. Dobson, of Traverse City, Mich. Mr. D. lives about $4\frac{1}{2}$ miles from the city; but after going over the hills to his place on a hot day I should call it a good ten miles. Some of the hills, he tells me, are 700 feet high. Well, right on these hills he has a pretty little home. I think he has only ten acres of land, or a little more. The greater part of it is put out to plum-trees; and there are certainly no handsomer trees in California, Oregon, or anywhere else. From the ten acres, if I remember correctly, he has sold something like \$1000 worth of plums. One block of trees, occupying only a small part of an acre, gave a crop that sold at the rate of \$160 per acre.

One fact that comes out strongly with all these successful stories of fruit-growing is that clean cultivation between the trees until the fruit is nearly mature is the principal point in success. Where stable manure was applied, at least in large quantities, it had the effect of making the trees make too strong a growth late in the season, and rendered them more liable to winter-kill. I believe all agree that spraying is important, and I had supposed there was no success without bumping to get rid of the curculio; but Mr. Fretter has done no bumping at all. The hundred or more young chickens kept among the trees all the time seem to have had the effect of keeping off the curculio. I am greatly pleased to know that the German and Hungarian prunes can be grown both in Michigan and Ohio, and probably almost everywhere. Mrs. Root prefers them to the finest peaches; and they will keep longer, so far as I know, than any other fruit known. We have had them shipped in from Oregon, and have kept them two weeks after that, without spoiling. They seem to have a tendency to dry and shrivel up before they show any symptoms of rot. The Hungarian prune especially is a most beautiful and luscious fruit.

LIKE PRODUCES LIKE.

When the greater part of our Carman No. 3 potatoes had the vines all dead and dried down I noticed two rows at the side of the patch, green, rank, and luxuriant. These two rows stood out sharp, distinct, and clear from the rest of the patch, and I thought they must be a different variety; but when Frank said they were Carman No. 3, like the rest, I replied:

"Why, what in the world should make just two rows so green and thrifty, while all the rest, with only a hill here and there, are all dead and dried up?"

"Why, don't you remember, Mr. Root, you told us last year to pick out all the hills that were green when we got ready to dig, and save the seed, and plant it by itself? and we saved out enough of the 'green tops' to make these two rows."

There it was, a wonderful object-lesson. The vines of these two rows were very much larger; and the way the ground is heaving up with big potatoes underneath it, looks as if there might be almost double the crop. Here is an illustration that like produces like, "with a vengeance." It is all the result of careful selection for just one single season. You may remember I spoke of a similar experiment made by Wilbur Fenn a year or two ago. The extremely hot weather of the past season caused blight, or it may be a sort of hot-weather blight, to an unusual degree; and I am satisfied many vines have died down when they were not much more than half grown. On the other side of the patch from these two rows I have mentioned, there are three rows equally rank and green; but these are the Craigs, and the Craig has always shown on our grounds this same immunity from blight ever since we have had it. As we were ready to put in wheat, and these two strips I spoke of being so rank and green, we have left them to be dug later, for no frost has yet reached us in this locality up to to-day, Oct. 5.

In connection with this incident, permit me to mention that Ernest says we have worker-bees from a *daughter* of that honey queen, whose tongues are as long as those of the bees of the mother colony. Unfortunately (or perhaps fortunately for somebody else), this queen was sold before her bees had hatched. Ernest says he would give \$25 for her in a minute if he could be sure he had the mother of these bees with long tongues. Do you not see, friends, there is a wonderful field opening out before us, not only in improving our potatoes and honey-bees, but in almost every department of animated nature? With bees and potatoes it does not take so many years as it does with cattle and horses and some other things; but there is an outlook for big pay to any patient, faithful, and honest worker along the lines I have pointed out.

HAVING SOME LAND OF YOUR OWN.

In a recent number of the *Practical Farmer* friend T. B. Terry has something so good on this matter that I copy it below:

Hold on to your land, friends, if you have some. If you haven't any, it will be a good thing to work for. It is inspiring to actually own even a small piece of land. Mr. G. tells us how he traded an old watch, not worth a dollar really, for a little piece of poor land when he was a boy. And then his father said he paid too much for it. But he said he went out on that land, poor as it was, after it was deeded to him, and it thrilled him through and through to think he owned the ground he stood on, away down to the center of the earth, away up to the stars. Birds were sitting on the branches of the trees and singing—his trees and his branches, and their songs never sounded so sweetly to him before. It is a valuable ambition for every young man, every boy, to own a piece of land, if no more than an acre. Save your money, boys, toward buying some land where you can make a little garden of Eden your home when you get older. Perhaps it would be well to put your money in a good savings bank, and let it accumulate until the right time comes

for investing it. If you loved the country, with its pure air and sunshine, and quiet and independence, as much as the writer does, you would never pay one cent for tobacco or liquor, but would save every thing possible to be used in getting a country home for your best girl and yourself. I hardly ever talk with a business man in town without finding out that he means to get a farm to live on in his old age. Many men working on a salary have said that, as soon as they could pay for a good farm, they intended to change their business. Most men love the country, in summer at least; and in many sections now it is easy to live on the farm and get into a large place by electric car readily. Thus one can live in the best place and have many of the advantages of town within his reach.

I have felt exactly what friend Terry expresses so well a great many times in my life. The first piece of land I ever owned was traded to me for an old pistol. The land was a deserted stone-quarry. Then I went out and looked it over with just the feelings Mr. Terry describes. I hunted up the few trees that were on it, and made plans for improving the little piece of soil. But a neighbor wanted to get stone out of it, and when he offered me \$50 for my little piece of real estate I reluctantly let it go. I have never bought a piece of ground since, or had a piece come into my possession, without something of the same feeling. Nearly ten years ago I looked over the forty acres I have been telling you about in the Traverse region. There was not much improvement going on in that locality at that time; but when I saw the potato-fields all around it a few weeks ago it gave me a thrill of delight; and when I found a soft-water spring at the back side of it in the dense woods, it gave me another thrill. It is true, the water disappeared again after running a few rods in the loamy sandy soil. The elevation is sufficient, however, I think, to enable me to carry it up to a point near the bay where we are going to locate a summer cottage. Down near one corner of the forty acres is a patch that was cleared off some years ago. This little portion is covered now with a dense heavy mat of natural grasses. Of course, I can not be sure my land is as good as friend Hilbert's, a mile and a half away; but there was one object-lesson right there that almost made me shout for joy. Somebody had begun improvements on the land adjoining mine. There are no fences in that locality, for they do not need any; but on this piece adjoining my own, right up to the line, were some of the finest-looking potatoes I ever saw anywhere. I pushed my hand down into the loamy soil, where the ground was already bursting open, and found great beautiful tubers, smooth, and free from scab, and the tops were not at all touched by blight. This is on new land that has never had stable manure or fertilizer of any sort; and I am planning to grow some nicer seed potatoes here another season than I have ever grown in Ohio. The greater part of the piece is covered by a dense undergrowth that has sprung up since the native timber was cut off—indicating to me, at least, there is a wonderful fertility there. While opening up the spring, and hearing the birds sing around me, I was obliged to think of friend Terry's remarks, for I do not think I ever enjoyed any work in my life more than during the few days I spent there on "my farm in the woods."

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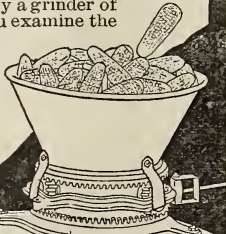
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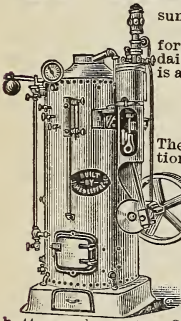
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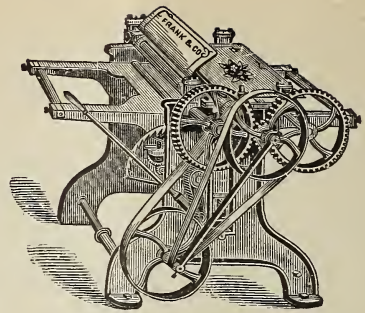


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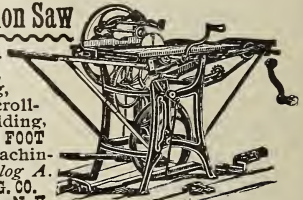
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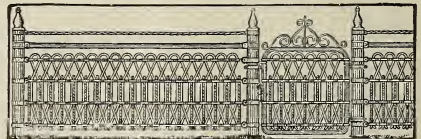
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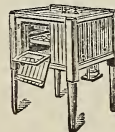


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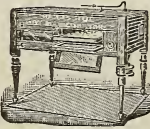
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